METACOGNITION AMONG COLLEGE STUDENTS IN RELTION TO THEIR GENDER AND DISCIPLINE

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Abstract

Metacognitive knowledge includes knowledge about oneself as a learner and the factors that might impact performance, knowledge about strategies, and knowledge about when and why to use strategies. This research article briefly describes the metacognition of college students with regard to gender and their discipline. In order to study the problem, the survey method was used to collect the data. The sample for the study was collected from the three degree colleges of Sonipat city (Haryana). 180 students (90 male and 90 female) were randomly selected from three discipline (Science, Commerce and Arts). Metacognitive inventory developed by Govil P. (2003) was administered to the selected sample to assess metacognition. The data so collected was analyzed statistically by employing mean, SD and t-test. The finding reveals that the level of metacognition of college students is found to be average. The research reveals that there is no significant difference between male and female students in their metacognition but there is significant difference with regards to their discipline.

Introduction: With the rapid development of information diffusion technologies, students can acquire new knowledge with ease. However, in face of diverse e-learning environments, how they can choose useful information and monitor their self-learning process is an issue that educators should pay attention to. Metacognitive regulation is the

monitoring of one's cognition and includes planning activities, awareness of comprehension and task performance, and evaluation of the efficacy of monitoring processes and strategies. Metacognition is awareness and management of one's own thought. (Kuhn & Dean, 2004) Metacognition plays an important role in communication, reading comprehension, language acquisition, social cognition, attention, self-control, memory, self-instruction, writing, problem solving, and personality development (Flavell, 1979). Wang, Haertel, and Walberg (1990) discovered that metacognition ranks first among the 200 some factors affecting schooling outcomes. They pointed out that metacognitive skills is the ability to associate important messages with prior knowledge, draw inferences, and monitor or assess personal performance demonstrated in the reading process. Flavell (1979) research yielded two key concepts: metacognitive knowledge and metacognitive experience. A person may have metacognitive knowledge of some factors that affect his/her learning (these factors may relate to beliefs about oneself as a learning creature, the learning task, or the strategies engaged to achieve the learning goal). Simultaneously, one may have metacognitive experiences that can be explained as conscious thoughts or feelings about the learning process the very moment this occurs. Pintrich (1994) defines academic metacognition as a construct comprised of three major elements: (a) active control over learning-related behaviors such as when, how much, and with whom a student is learning; (b) self-regulation of motivation and affect, in which students learn how to control their emotions and even use them in goal setting; (c) control over various cognitive strategies for learning, such as rehearsal and memory strategies. More precisely, it refers to the processes used to plan, monitor, and assess one's understanding and performance. Metacognition includes a critical awareness of a) one's thinking and learning and b) oneself as a thinker and learner. Metacognitive practices increase students' abilities to transfer or adapt their learning to new contexts and tasks (Bransford, Brown, & Cocking, 2000; Palincsar & Brown, 1984;). They do this by gaining a level of awareness above the subject matter. Brown (1987) also commented that metacognition was seen by many as a blanket term under which many cognitive and other non metacognitive phenomena could be hidden. It is a special type of knowledge and ability that develops with personal experience and with schooling. It is in a recursive loop with cognitive development in that it both produces and is a product of cognitive

development. (Paris and Winograd, 1990). Further, Schraw (1998) describes metacognition as a multidimensional set of general, rather than domain-specific, skills. These skills are empirically distinct from general intelligence, and may even help to compensate for deficits in general intelligence and/or prior knowledge on a subject during problem solving. Hacker's (1998) definition is considered to sum up efficiently the core meaning of metacognition as viewed in this paper: "It is the knowledge of one's knowledge, processes and cognitive and affective states; and the ability to consciously and deliberately monitor and regulate one's knowledge, processes and cognitive and affective states". In addition, several studies have shown that meta- cognition is not a set of idiosyncratic behaviors but a finite set of common skills that are highly correlated to academic success (Garcia & Pintrich, 1994; Pintrich, 1994). There is also ample evidence that metacognition can guide further cognitive development (Kuhn, 2000). Those who know their strengths and weaknesses in these areas will be more likely to "actively monitor their learning strategies and resources and assess their readiness for particular tasks and performances" (Bransford, Brown, & Cocking, p. 67). Metacognition is "not generic" (Bransford, Brown, & Cocking, 2000) but instead is most effective when it is adapted to reflect the specific learning contexts of a specific topic, course, or discipline (Zohar & David, 2009).

A variety of studies have examined the influence of metacognitive skills on adult performance. Metacognitive practices help students become aware of their strengths and weaknesses as learners, writers, readers, test-takers, group members, etc. The effective use of metacognition has been shown to predict learning performance (Pintrich & DeGroot, 1990). Students with higher metacognitive skills outperformed those with lower metacognitive skills in problem-solving tasks, regardless of their overall aptitude. Research has consistently shown that students who are high achievers in academic learning domains such as reading, writing, math and science also exhibit higher levels of metacognitive knowledge about that domain, and have developed greater abilities in self-regulation (Baker & Cerro, 2000). Therefore educational institutions and the instructors are in need to prepare students to enable the metacognition while teaching any subject, which helps the learners to solve the concern problems. In this context it is imperative to assess the metacognition students.

Objectives of the study

1. To find out the level of metacognition of college students.

2. To find whether there is any significant difference between college students in their metacognition with regard to their gender.

3. To find whether there is any significant difference between college students in their metacognition with regard to their discipline (Science, Commerce and Arts).

Hypotheses

1. There is no significant difference between college students in their metacognition with regard to their gender.

2. There is no significant difference between college students in their metacognition with regard to their discipline.

Methodology: The researcher used the survey method for the present study. For data collection, the investigator used the "Metacognitive inventory" which comprises of 30 items, developed by Govil P. (2003). For the purpose of the present study, random technique was used and 90 male and 90 female students were selected from three degree colleges of Sonipat city (Haryana). The subjects were equally selected from Science, Commerce and Arts disciplines. The data were analyzed by using Mean, Standard Deviation and t-test.

Analysis of data: The data were subjected to statistical treatment leading to the findings which may satisfy the requirements of the objectives of the study.

Table 1: Level of metacognition of college students with regard to gender and discipline.

Variables		N	Low	Average	High	Very High
Gender	Male	90	22%	38%	33%	7%
	Female	90	18%	49%	20%	13%
Discipline	Science	60	20%	73%	4%	3%
	Commerce	60	27%	27%	33%	13%
	Arts	60	13%	30%	44%	13%

It is inferred from the above table that majority of the college students have average level of metacognition irrespective to their gender and discipline.

Table 2: Shows the mean, standard deviation and t- ratio for testing the significant difference in male and female students belonging to science, commerce, and arts stream

Groups	Gender	N	Mean	S.D	S_{Ed}	t-value	Level of Significance 0.05
Science	Male	30	83.26	9.26	1.89	1.47	Not sig.
	Female	30	86.05	4.61			
Commerce	Male	30	95.27	11.24	3.09	1.13	Not sig.
	Female	30	91.77	12.69			
Arts	Male	30	89.06	10.44	2.74	1.70	Not sig.
	Female	30	93.73	10.79			

It is inferred from the above table that there is no significant difference between male and female students in their metacognition with regard to all the discipline- Science, Commerce and Arts. A close look of table clearly reveals that mean value of metacognition of female students from Science and Arts groups are higher than male students whereas in Commerce stream male students are better than female students, but the difference in all the groups are not significant so the hypothesis, "There is no significant difference between college students in their metacognition with regard to their gender" is accepted.

Table 3.1: Shows the mean, standard deviation and t- ratio for testing the significant difference in students belonging to science and commerce stream

Category	N	M	S.D	S.Ed.	t-value	Level of significance 0.05
Science	60	86.05	7.78	**1.84**	**3.97**	**Sig.**
Commerce	60	93.37	11.99			

Table 3.2: Shows the mean, standard deviation and t- ratio for testing the significant difference in students belonging to commerce and arts stream

Category	N	M	S.D	S.Ed.	t-value	Level of significance 0.05
Commerce	60	93.37	11.99	2.08	0.95	Not Sig.
Arts	60	91.4	10.78			

Table 3.3: Shows the mean, standard deviation and t- ratio for testing the significant difference in students belonging to Science and arts stream

Category	N	M	S.D	S.Ed.	t-value	Level of significance 0.05
Science	60	86.05	7.78	1071	3.13	Sig.
Arts	60	91.4	10.78			

The second hypothesis was that there is no significant difference between college students in their metacognition with regard to their discipline (Science, Commerce and Arts). The findings of the study show that there is significant difference between Science and Commerce students in relation to their metacognition. Table 3.1 shows that Commerce students are better than Science students as the mean values are 93.37 and 86.05 respectively.

As far as the Commerce and Arts students are concern, no significant difference was found regarding their metacognition (Table-3.2).

The mean value of metacognition scores of Arts students is 91.40 whereas for Science students is 86.05, which reveals the fact that Arts students have higher degree metacognition knowledge, while Science students have lower. It is clear from the table 3.3 that there is significant difference between Science and Arts students in their metacognition.

Findings of the study

The major findings derived from the study are:

1. The level of metacognition is found to be average with regard to gender and their discipline. Female students found to be little better than male students in their metacognition.

2. There is a no significant difference between male and female college students in their metacognition. While comparing the mean scores of male and female students, female students are better than male students in their metacognition.

3. There is a significant difference between college students in their metacognition with regard to their streams. Commerce students are better than Science students. While comparing the mean scores of Commerce and Arts students, no significant difference is found in their metacognition. While comparing the mean scores of Science and Arts students, Arts students found better than Science students in their metacognition

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