A Comparative Comparison of Metacognitive Knowledge in Male and Female high school students of Golestan Province – Iran

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ABSTRACT

The present paper was formulated in order to determine metacognitive awareness among female and male high school student of Golestan Province– Iran. 360 Metacognitive Knowledge Questionnaires containing 17 questions were randomly distributed among 180 male and 180 female high students and the responses of 360 students were analyzed. The mean metacognitive knowledge for males and females were found to be 44.35 and 55.46, respectively. The results obtained from the present study showed that there is a significant difference between female and male high school students in Golestan Province in terms of metacognitive knowledge where female high school students had significantly higher metacognitive knowledge than male high school students.
KEYWORDS: metacognitive knowledge, high school students, Golestan Province.

1- INTRODUCTION

Intrinsic intelligence had been thought to be an inherited trait for achieving high performance in learning process. However, authors have shown that ability to make use of cognitive and metacognitive strategies may bring about good results in improvement of educational performance.

Metacognitive awareness consists of three parts: thinking of what one knows(metacognitive knowledge), thinking of what one is currently doing (metacognitive skill) and thinking of what one's current cognitive or affective state is (metacognitive experience). What is important is that all this knowledge, the beliefs and perceptions are related to learner autonomy, in that they are needed to make informed decisions about one's learning. If it is the aim of education to let learners take charge of their own learning, then they need to be able to plan, monitor and evaluate their learning. And in order to do so, they need to be metacognitively aware (Zahedi and Dorrimanesh, 2008).

Slavin (1994) believes that educational psychologists have affirmed the necessity of teaching specific learning strategies to students. Furthermore, Lefrancios believes that the most important issue in cognitive psychology is emphasis on learning. Therefore, learning "how to learn" can be considered one of the general objectives in learning and teaching processes (Kadivar, 2000).

In addition, much of the individual differences among adolescents considering the quality and effectiveness of their academic and social behavior can be clarified by their competencies of self-control and self-regulation. Investigation on metacognition and self-regulated learning offers deeper intuition about the processes and mechanisms underlying those competencies (Hasselhorn and Labuhn, 2011).

Metacognition is the awareness and control of own cognition. The idea of metacognition has been valuable for scholars and educators looking for a clarification for why some students have better performance in school than others. The reliable conclusion in over 30 years of research is that more-thriving students display higher levels of metacognitive knowledge about a given field and are more skilled at adjusting their cognitive processes than less-prosperous students (Baker, 2010).

Understanding students' capability to lead their own learning has been a dominant subject of discussion among educational experts. Authors argue that the ability to self-regulate and capability of metacognitionare vital to our assumptions about learning, decision making, problem solving, and resource management in education (Cubukcu, 2009).

The present paper was formulated in order to determine metacognitive awareness among female and male high school student of Golestan Province– Iran.

2- LITERATURE REVIEW

Pilten and Yener (2010)considered metacognitive knowledge as one of the components of metacognition. One of the issues in which metacognitive knowledge plays a central role is mathematical problem solving. The purpose of their study was to assess metacognitive knowledge which 5th grade primary students adopt. The study was qualitative and wasperformed in 2009- 2010 autumn semester. They found that average points of all

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the students for their procedural knowledge, declarative knowledge, and conditional knowledge are very high, above the mid-level, and below the mid-level, respectively.

Yıldız-Feyzioğlu et al. (2013) analyzed individual students' goal setting and metacognitive knowledge using the learning platform developed for the "Electricity in Our Lives" unit. A descriptive case study was applied in this work. The subjects were three fourteen-year-old students from a seventh grade classroom. The data were collected from the students' self-explanations as recorded in the learning platform database. The content analysis demonstrated that the instruction with the learning platform helped the students overcome the complications they felt concerning the concept of electricity and enabled them to set goals with an intrinsic orientation. However, while the students were engaged in the same learning platform activities, they made different reflections on their metacognitive knowledge. Remarkable progress was observed in all but one students' metacognitive knowledge. It was suggested that the students should have educational experiences through learning platform for longer periods and in a wider range of activities so that they can be capable of monitoring their goal setting and metacognitive knowledge effectively.

Akturk and Sahin (2010) analyzed community college students' educational Internet use and metacognitive learning strategies. Their results showed that all correlations between educational Internet use and each metacognitive learning strategy were statistically significant and positive. Also, the variables were analyzed, based upon gender and computer possession. Female students used metacognitive learning strategies significantly higher than male students, while it wasopposite for educational Internet use. Observance of educational Internet use was significantly higher for students who own a computer than for those who do not own a computer. Computer ownership did not have an influence on metacognitive learning strategies.

3- METHODOLOGY

Statistical population in the present study consisted of all female and male high school students in Golestan Province. The overall population is 82508 people where 42755 are males. Questionnaires were randomly distributed among 180 male and 180 female high students and the responses of 360 students were analyzed.

The tool adopted in the present study was Metacognitive Knowledge Questionnaire containing 17 questions and it includes three levels of metacognitive knowledge (person knowledge, task knowledge, strategy knowledge). Validity and reliability of this questionnaire have been confirmed by Salarifar (1996) and Suonson (1990), respectively.

Subjects were randomly selected and they were individually interviewed to fill in the questionnaire. Each interview took 20-25 min. Scoring was performed according to a 6-degree range. The maximum and minimum scores were 5 and 0, respectively. Finally, the data were subjected to statistical analysis by use of SPSS Software (version 18). Independent t-test was adopted to compare means of two groups.

Tajalli and Satari(2013) mentioned that the average student with a hearing ailments graduates from high school with reading comprehension skills at about fourth grade Level. Metacognitive strategies are one of the approaches that have substantial applications in educational issues, especially in reading. The main objective of their research was recognizing the effectiveness of metacognitive strategies for development of reading skills of students with hearing disorders. Research design was pretest- posttest randomized group. The sample was formed from 10 students with hearing disorders, 9-10 years old whom were matched and assigned randomly to experimental and control groups. For assessing reading skills, kiyadarbandsari (2007) reading test was administered. Students of experimental group participated in an intervention program for 8 sessions (each session 45 minutes). The t-student test was used to analyze data. Their results indicated that metacognitive strategies training were useful for improving reading skills of students with hearing disorders.

Temur et al. (2010) mentioned that metacognitive awareness demonstrates diversity from person to person based upon their types, such as their language skill levels and age groups. The purpose of their study was to examine the differences among 6th, 7th, and 8th grades with regard to their metacognitive awareness in the field of reading. The research was directedby means of a correlational method. The study group consisted of 101 students from a public school in Kutahya province of Turkey. The result of the study revealed that there was a positive correlation between grade level and metacognitive awareness in reading, but the difference was not statistically significant.

4- RESULTS

Table 1 depicts statistical indices related to the variable of the study in female and male high school students. As it can be seen, mean scores, standard deviation, and mean standard error were shown for both genders. Furthermore, as it can be seen, number of male and female students were 180 for each gender.

Table 1: statistical indices related to the variable of the study in female and male high school students in Golestan Province

The variable	Gender	Number	Mean	Standard deviation	Mean standard error
Metacognitive knowledge	Males	180	175.32	14.455	1.077
	Females	180	178.51	13.422	1.000

As it can be seen in the above table, the mean metacognitive knowledge for males and females were 44.35 and 55.46, respectively. The results obtained from independent t-test were shown in Table 2 to find significant differences. The mean score in male and female students were found to be 14.455 and 13.422, respectively. Furthermore, mean standard error for male and female students were found to be 1.077 and 1.000, respectively. Also, the mean scores for male and female students were 175.32 and 178.51, respectively.

Table 2: The results obtained from independent t-test ofr male and female students in terms of their metacognitive knowledge

	F	Sig.	t	df	Significance level	Mean difference	Standard error difference
Metacognitive knowledge	1.566	0.212	17.89	358	0.000	-11.11	0.621

As it can be seen in the above table, the obtained t (17.89) with the freedom degree 358 and alpha level 0.05 is smaller than the table t (1.96). Furthermore, significance level (Sig.) is smaller than alpha level (0.05). Therefore, it can be said with 95% confidence that metacognitive knowledge in female high school students is higher than that of male high school students.

5- DISCUSSION AND CONCLUSION

The results obtained from the present study showed that there is a significant difference between female and male high school students in Golestan Province in terms of metacognitive knowledge where female high school students had significantly higher metacognitive knowledge than male high school students.

The results obtained from the present study is in agreement with the results obtained by Ekhtyari Ardakani (1998) who showed that females had better performance in problem solving after learning strategies compared with males. Research on metacognitive strategies has indicated that use of metacognitive strategies elevates learning and improves educational progress and development. Additionally, clever students benefit more from metacognitive strategies in comparison with less-clever students. It was also approved that there is a relationship between performance of students in class problems solving and metacognitive knowledge. Consequently, it can be concluded that teacher may teach metacognitive knowledge, especially to less-clever students so that they can be able to overcome many problems.

Since metacognitive knowledge have important effects on emotional health, mental reaction, economic growth of society, and educational progress as one of personality traits and learning strategies, effective measures should be taken in order to provide a basis for flourishing such knowledge in students which may lead to personality growth and higher metacognitive knowledge.

It is recommended that Education Organization and other authorities should find methods for increasing metacognitive knowledge among students. Also, it is suggested that more realistic expectation should be directed toward students with regard to their individual differences.

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