The Relationship Between Meta Cognition and Students Training-Learning Process

Mojtaba Rezaei Rad

Department of Educational Sciences,
Sciences and Research Islamic Azad University, Mazandaran, Iran

Abstract: Present study was done to review the relationship between meta cognition and students training-earning process by means of correlation descriptive survey in 2010 and statistic population were consist of 244 teachers of high schools in Sari, Mazandaran, Iran in which from these population, 152 teachers were selected by simple random sampling method. In order to collect data, two standard (MCQ30 Meta cognition) and researcher made questionnaire (training-learning process) were used. To define validity, professor's opinion of this major is used and questionnaire reliability was calculated 0/91 by means of Cronbochs, s alpha. In order to data analysis, descriptive and inferential (Pearson correlation) statistics were used. Study results show that there is positive and significant relationship Meta cognition and training-learning process in students. Also, there is significant relationship between meta cognition and educational tools, learning situations, students motivation and teacher duty.

Key words: Training % Learning % Meta cognition % Motivation

INTRODUCTION

While entering third millennium of human knowledge which become twice in less than 5 years, it is expected that at the early of 2020 (BC), human knowledge become twice in less than 73 days and this quantitative increasing speed of educational systems changed training-learning methods and make them reasonable [1]. Learning methods and skills are divided into cognitive and Meta cognitive guidelines. Skillful learner is a person who equipped by both cognitive and Meta cognitive methods. Cognition and Meta cognition are two complement concepts. Cognition refers to processes which help us to learn, think and recall, while Meta cognition is refers to our knowledge about our cognitive processes and the way of using optimum of them to achieve learning goals [2]. In other word, Meta cognition is refers to science or knowledge about our cognitive system or knowing about knowledge, Meta cognition knowledge make possible person to manage learning, because Meta cognition guidelines are schemes to supervise learning ways and direct these ways. These guidelines tell us which ways to use in order to facilitate learning process recall and organize our knowledge [3]. Just as a manager ´s job in

organization is to manage, every person´ s job is to manage thinking and idea and meta cognition knowledge make it possible for person to acquire this ability [4]. Professional capability of teachers depends on acquiring knowledge and skills which resulted from study and thinking of expert trainers in education and training. Meta cognition theory as a new theory in education and training field has positive effect on professional capability of teachers and trainers [5]. The perception of how students learn is a pivot of decision making about how teachers train. So, meta cognition and training-learning are trying to make realize training for learning by studying learning elements such as teaching methods, motivation, class management and learning evaluation [6]. Many current research which consider ways of using meta cognition methods in education and training essentially based on whether training of cognitive processes can facilitate learning. In this way Derry and Murphy (1986) in their Designing Systems that train learning ability Showed Met cognitive training on improving the academic performance of boys and girls have been effective [7]. Craft (2001) in her research considered "the studying of relationship between meta cognition and the amount of creativity and educational development ". The results

Corresponding Author: Mojtaba Rezaei Rad, Department of Educational Sciences, Sciences and Research Islamic Azad University, Mazandaran, Iran. E-mail: mojtabarezaeirad@yahoo.com.

show that there is significant relationship between Meta cognition and creativity. Also, there is significant relationship between creativity and educational development [8]. Topcu and Ubuz (2008) showed that in multimedia environment with special training about meta cognition, not only has effect on students development but also, has effect on correctness of supervisory knowledge and its usefulness in learning guidelines [9]. Also, Desoete (2003) in the research titled "meta cognition to solve mathematic problem" by considering the intervention of short term meta cognition accompany with learning of cognition algorithm in elementary school environment showed that students participated in meta cognition program, achieve significant results in meta cognition skill in comparison with other educated groups in algorithm condition and educated students could solve the math problem better by means of meta cognition skills [10].

Beckman (2002) and others showed that Meta cognition has significant effect on learning environment or there is relationship between them [3].

Sperling, *et al.* (2002), in one of their research after students answered questions about reading and comprehension, correctly, provide them a lot of provisory feed back and encourage them for their correct answers and also train them how correct their wrong answers [11]. Then the students were educated correct guidelines to study such as repeat main concepts of studying subjects on their own understanding, categorize information, predict possible questions about studying subjects, clarify vague points and the way of solving their problems, i.e., they were educated meta cognition skills to use during learning. Then further results of study showed that these training increase both learning and the rate of transfer learning Schunk (2008) resulted from study that educating meta cognition skills will improve students perception only when fit into course subjects and change into targeted curriculum and transfer to students[12]. Clark (1984) mentioned several survey which resulted that teacher can help student to become more successful learner and plays more active role in their academic destiny by educating meta cognition guidelines [13].

Study questions:

C Is there relationship between students meta cognition and training-learning process ?

C Is there relationship between students meta cognition and educational tools ?

C Is there relationship between students meta cognition and learning situations ?

C Is there relationship between students meta cognition and students motivation?

C Is there relationship between students meta cognition and teacher duty?

Study Method: The study method is correlation descriptive survey. Statistical population were consist of 244 high school teachers of Sari, Mazandaran, Iran in which from these population, 152 teachers were selected as sample by means of random sampling method. Two questionnaire were used: a) standard meta cognition questionnaire (Kat right, Hatton, vales 2004) to evaluate meta cognition beliefs. This questionnaire consisted of 30 items and each respondent must answer items in the form of multiple choice (disagree, rather agree, average agree, very agree). These choices were scored 1, 2,3,4,5, respectively. b) researcher made questionnaire of training-learning process. This questionnaire is consist of 30 items and each respondent should answer items in the form of 5 point scale (very high, high, average, low, very low). Each choices were scored 5, 4, 3, 2, 1 respectively.

Study Results: First (main) study question: Is there relationship between students meta cognition and training-learning process ?

The results of reviewing data show that P-value (sig. 0/000)at the confidence level of 0/95 is lower than significant level (α =0/05). It means that statistically and with the confidence level of 0/95 we can claim that there is significant relationship between Meta cognition and students training-learning process which the value of regression is 0/3.

Second Study Question: Is there relationship between students meta cognition and educational tools?

Description: The results of reviewing data show that P-value (sig. 0/000)at the confidence level of 0/95 is lower than significant level (α =0/05). It means that statistically and with the confidence level of 0/95 we can claim that there is significant relationship between meta cognition and educational tools which the value of regression is 0/3.

Third Study Question: Is there relationship between students meta cognition and learning situations?

Table 1:   Considering the relationship between meta cognition and training-learning process

statistical index	Value
number of sample	152
measured regression	284/0
degree of freedom	150
regression of critical table	16/0
P-value	0/000

Table 2:   Considering the relationship between students Meta cognition and educational tools

statistical index	Value
number of sample	152
measured regression	281/0
degree of freedom	150
regression of critical table	16/0
P-value	000/0

Table 3:   Considering the relationship between students meta cognition and learning situations

statistical index	Value
number of sample	152
measured regression	385/0
degree of freedom	150
regression of critical table	16/0
P-value	000/0

Table 4:   Considering the relationship between students meta cognition and students motivation

statistical index	Value
number of sample	152
measured regression	177/0
degree of freedom	150
regression of critical table	16/0
P-value	029/0

Table 5:   Considering the relationship between students meta cognition and teacher duty

statistical index	Value
number of sample	152
measured regression	199/0
degree of freedom	150
regression of critical table	16/0
P-value	014/0

Description: The results of reviewing data show that P-value (sig. 0/000)at the confidence level of 0/95 is lower than significant level (" =0/05). It means that statistically and with the confidence level of 0/95 we can claim that there is significant relationship between meta cognition and students learning situations which the value of regression is 0/4.

Forth Study Question: Is there relationship between students meta cognition and students motivation?

Description: The results of reviewing data show that P-value (sig. 0/029) at the confidence level of 0/95 is lower than significant level (" =0/05). It means that statistically and with the confidence level of 0/95 we can claim that there is significant relationship between Meta cognition and students motivation which the value of regression is 0/2.

Fifth Study Question: Is there relationship between students meta cognition and teacher duty?

Description: The results of reviewing data show that P-value (sig. 0/014)at the confidence level of 0/95 is lower than significant level (" =0/05). It means that statistically and with the confidence level of 0/95 we can claim that there is significant relationship between meta cognition and teacher duty which the value of regression is 0/2.

DISCUSSION AND CONCLUSION

Since Meta cognition skills plays an important role on students learning situations, it may be possible to relate the reason into teachers way of application with students. Because the amount of dependence which provided by teachers for students affects on skill development. In other word, these potential differences may cause special attitude in adults which emerged on their behavior and expectation from male and female students and provide cultural base that advice more guidance and support for female students and give more dependence to male students to do their task.

Therefore by applying meta cognition methods, some results can be achieved such as: more chance for useful and productive interaction between students in class. Increasing of logical interaction between teacher and students and encouraging them to argue logically and justify their beliefs and accept laws logically and accept responsibility in learning and behavior in class and finally, development of self-positive system.

According to main question of research: Is there relationship between students Meta cognition and training-learning process? the results considering regression of 0/3 show that there is significant relationship between meta cognition and students training-learning process. Therefore, there is relative average direct linear relationship between meta cognition

and training-learning process in which as meta cognition increases, training-learning process increases and vice versa, by decreasing meta cognition, training-learning process decreases.

Also according to second question of study: Is there relationship between students Meta cognition and educational tools? Statistical data analysis shows that regarding measured regression of 0/3, there is significant relationship between Meta cognition and educational tools. Therefore, there is relative average direct linear relationship between meta cognition and educational tools in which as meta cognition increases, the amount of using educational tools increases and vice versa, by decreasing meta cognition, the amount of using educational tools decreases.

According to third question of study: Is there relationship between students meta cognition and learning situations?, regarding regression of 0/4, there is significant relationship between meta cognition and students learning situations. Therefore, there is relative average direct linear relationship between meta cognition and students learning situations in which as meta cognition increases, learning situations increases and vice versa, by decreasing meta cognition, learning situations decreases. Since meta cognition skills plays an important role on students learning situations, it may be possible to relate the reason into teachers way of application with students. Because the amount of dependence which provided by teachers for students affects on skill development. In other word, these potential differences may cause special attitude in adults which emerged on their behavior and expectation from male and female students and provide cultural base that advice more guidance and support for female students and give more dependence to male students to do their task.

Therefore by applying meta cognition methods, some results can be achieved such as: more chance for useful and productive interaction between students in class. Increasing of logical interaction between teacher and students and encouraging them to argue logically and justify their beliefs and accept laws logically and accept responsibility in learning and behavior in class and finally, development of self-positive system.

According to forth study question: Is there relationship between students meta cognition and students motivation? By considering regression of 0/2 and confidence level of 0/95 we can claim that there is significant relationship between meta cognition and students motivation. Therefore, there is relative low direct linear relationship between meta cognition and students motivation in which as meta cognition increases, the amount of students motivation increases slightly and vice versa, by decreasing meta cognition, the amount of students motivation decreases slightly.

According to fifth study question: Is there relationship between students Meta cognition and teacher duty? Data results and regression of 0/2 shows relationship between Meta cognition and teacher duty. Therefore, there is relative average direct linear relationship between meta cognition and teacher duty in which as meta cognition increases, teachers duty increases and vice versa, by decreasing meta cognition, teachers duty decreases.

So, in classes in which teachers teach with meta cognition, there is control, discipline I terms of interaction process between teacher and student and students participate in class panning and organizing. So, it is suggested that since meta cognition is able to optimize teaching and learning and can provide rich and various learning environments, our educational system by proper and systematic use of it, can make improvement in educational process and course planning. According to employed researches and results, we can suggest followings: Methods such as playing role, group discussion, question and answer, individual and group reporting and other schemes which participate students in learning activity, can be used. Also teachers by means of group work in class, as much as possible, evaluate students individual features and provide ground for creativity, invention and participation in group, leadership and coordination, effort and accuracy, flexibility and endure others opinion and eager to go beyond the problem and seriously avoid mere using of traditional teaching method like memorizing and repeating or lecturing. Also avoid of making students to do homework which the level of difficulty is out of their ability and avoid from neglecting students interests, propensity and talent in expressing opinion and solutions. Dear teachers should provide necessary mental readiness by expressing educational goals and using educational tools in order to aware students what they want to know during training and the way of using educational tools end employing them should be identified for students. By considering the role and importance of Internet on education, employing internet and virtual net and correct use of them should train to students.

Also the spirit of participation and coordination should be encouraged in students and coordinate learning groups should be employed.

Also, the priority of student's experiences should be interesting for them and increase their early achievement sense and confidence. This can be seen in sport competitions.

Because of importance of class environment, try to show it attractive by proper and pretty designing in order to remove students mental tiredness. Rewards should be prepared because of their success. Don ´t wait until educational come down happen and then encourage success.

Regarding the important role of teacher in education, force students to compete with those who have more capability than them should be avoided.

Also force students to be quite in class and listen to teacher boring lectures must be avoided. Let learners to formulate concepts while talking I class and listen each other opinions ad discuss about approval or rejection of concepts.

REFERENCES

1. Amini Zarar, M., 2007. A study of relationship between Meta cognition beliefs and mental health and educational development. Educational initiatives quarterly. N. 19. 6th year, spring.
2. Ali, A., 2005. To study the effect of class management methods on students meta cognition skills; MA Thesis in Educational management; Mashhad: Educational and psychological science Department; Mashhad Ferdowsi University.
3. Beckman, P., 2002. Strategy instruction. Eric Digest.
4. Schraw, G. and D. Moshman, 1995. Metacognition theories. Educational Psychology Review, 7: 351-371.
5. Bransfond, J.D. and N.S. Mc Carrel, 1974. A sketch of a cognitive approach to comprehension. In W.B Weimer and D.S. Palermo (Eds) Cognition and symbolic processes (pp: 103-123) Hillsdale NJ: Erlbaum.
6. Schunk, D.H., 2008. Met cognition, self-regulation and self-regulated learning: Research recommendations. Educational Psychology Review, 20(4): 463-467.
7. Derry, S.J. and D.A. Murphy, 1986. Designing Systems that train learning ability: From theory to practice. Review of Educational Research, 56: 1-39.
8. Craft, Anna, 2001. An Analysis of Research and Literature on Creativity in Education. [Online].
9. Topcu, A. and B. Ubuz, 2008. The Effects of Met cognitive Knowledge on the Pre-service Teachers' Participation in the Asynchronous Online Forum. Educational Technology and Society, 11(3): 1-12.
10. Desoete, A. and H. Roeyers, 2003. Can off-line met cognition enhance mathematical problem solving? Journal of Educational Psychology, 95: 188-200.
11. Sperling, A. Payne, *at el.,* 2002. Measures of children's knowledge and Regulation of cognition. Journal of contemporary Educational psychology, 27: 51-79.
12. Schunk, D.H., 2008. Metacognition, self-regulation and self-regulated learning: Research recommendations. Educational Psychology Review, 20(4): 463-467.
13. Clark, R., 1984. Research on student thought processes during computer-based instruction. Journal of instructional Development, 7(3): 2-5.