The Effectiveness of Philosophy Education on Metacognitive Beliefs among High School Students

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Abstract: *The objective of this research is determining the effectiveness of philosophy education on metacognitive beliefs among high school students. The objective of the research is applied and the method of data gathering is semi-experimental, pre-test and post-test with control group. Statistical population includes high school students in district 3 of Tehran in the first mid-term of educational year of 2018-2019 (N=6500). The sample size was considered 30 and for sampling the method of random clustering sampling was used. Data gathering tool, was metacognitive questionnaire of Wells (1997) including 30 articles and 5 subscales with titles of positive beliefs about anxiety, cognitive trust, cognitive self-recognition, negative beliefs about uncontrollability of thoughts, beliefs about requiring to control thoughts in the pattern of four-grade scale and holding educational course of philosophy for children for experiment group for 13 60-miniute sessions based on "philosophy for children, lesson plans" of Michael Burroughs. For data analysis, covariance analysis was used. The results indicated that philosophy education affects metacognitive beliefs among students of first grade high school, as it improves the level of metacognitive beliefs with effectiveness rate of 5.34.*

Introduction

The adolescent period is one of the most sensitive periods of a person's life. As in this period main mental, social and biological changes are happened affecting personality formation, development and nurturing of an individual's capabilities. Meta cognitive beliefs are part of metacognition knowledge that relates an individual's beliefs about cognition and cognitive experience and cognitive experience and emotions (Wells, translated by Mohammad Khani, 2014, p 26). Meta cognitive beliefs have been defined as multi-dimensional concept including knowing and self-control that new conceptualizations has related it to the realm of emotional disorders means knowing oneself as thoughtful creature and this knowing has an important role in precision of solving problems and occurred difficulties, controlling oneself, self-learning and change of behavior in the required conditions (Yerdelen-Damar, 2015, p 1010).

Meta cognitive beliefs include two positive and negative content realms. Positive metacognitive beliefs are related to usefulness in engaging with cognitive activities like "concentrating on threat is useful" and "concern about my future helps me to avoid danger." Negative metacognitive beliefs are beliefs that are related to uncontrollability, meaning, importance, thought risks, and cognitive experiences." They are like "if I have hostile thoughts, I can act against my will" (Farnam 2012, 0 341).

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Examination of different researches indicates that deficit in metacognitive capabilities leads to problems in social functions, lower quality of life and mental harms (Semerari, 2012, p 892). People with metacognitive beliefs are strategic individuals and in comparison with unknowing people show better performance. This superiority is for this reason that metacognitive beliefs enable the person to put aside the negative beliefs in addition to having self-confidence and become positive thinker (Belet & Guven) and basically metacognitive beliefs are based on objectives, they are motivated knowingly and improve the person's attempts (Panoura & Philippou, 2012, p 16).

Performed researches in metacognitive beliefs indicate that the mentioned variable, is less or average among students (Narimani, 2009, p 55) and as this element plays an important role in life of the students and generally in learning, choosing job, and mental diseases, the necessity of dealing with the problem in eliminating concerns, building a healthy personality, emergence of true behaviors in facing with vague positions with applied teachings of problem solving in group work seems an important, provident and crucial element. According to the researchers, philosophy education program was founded by Matthew Lipman an American philosopher with the objective of improving the level of skills among children and teenagers and it is considered a very suitable method for meeting needs of students in cognitive, emotional and mental realms (Kariko, 2016, p 107) and the results of the researches indicate that philosophy education has positive results such as student advancements in school exams, respect and self-confidence as thinker and learner, fluency and high quality of student questions, quality of innovative thoughts, speech arguments, capability of listening to the others and engagement in class discussions (Fisher, translated by Safaee Moqadam and Najarian, 2012, p 32) ant is effective in improving argument capability, creativeness nurturing, critical thought nurturing, ethical thought nurturing, art values, citizenship nurturing and developing interpersonal and extra personal (social) skills (Worely, 2016, p 119).

So many researchers has focused on necessity of philosophy education to children (Kariko, 2016, p 107; D' Olimpio & Teschers, 2016, p 114). Among other advantages of holding philosophy education classes is that in these classes discourse, negotiation, brainstorming, criticism and argument are used for getting cognitive skills and reasonable judgments among learners (Abbasi, 2017, p 96). Basically, the methodology in approach of philosophy education to children and teenagers is the method of discovery circle. The approach of philosophy education to educating is based on discourse and deep thought, because of that is gives an opportunity to a person to solve the social problems instead of forcing with argument. In the circle of philosophical discovery, educational atmosphere is a place for research about student's mindset, expressing opinions and beliefs along with testing thoughts and beliefs. In this atmosphere, teacher is the facilitator of learning ad mind nurturing of student instead of all-knowing person and each idea can guide individuals in obtaining discoverable answers (Hedayati and Mahzadeh, 2016, p 31). According to the proposed advantages, characteristics and requirements about philosophical education and paying attention to this important point along with focusing on philosophical education, this research tries to answer this question that how does philosophical education affect metacognitive beliefs?

Research Theoretical Background

Metacognition is an effective approach for helping learners (like students and college students) in nurturing their knowledge about self-cognition processes (Synder, 2014, p 19). The crucial purpose of the metacognitive education is self-control and self-learning so that learners become independent and can guide, control and modify their cognitive learning processes along with their specified objectives. So many problems of learning and transferring knowledge resulted from lack of metacognitive skills and strategies. The proposed skills and strategies enable an individual to choose, control, manage and finally improve the cognitive processes. Flavell proposed the metacognitive theory in psychology. So, according to Flavell, the knowledge of a person about processes and cognitive products of an individual or whatever related to it is considered among traits of learning (Flavell, p 52). Schraw & Moshman argued that three factors are included in cultural learning, personal structure and peer interaction in crating and founding an individual's metacognitive theories. Meta cognitive theories are formed from cultural internalization of culture through social learning. Common social concepts are transferred to

learners through informal experience and formal education. The most obvious kind of cultural learning is direct education of how to use metacognitive skills and harmonizing these skills among learners. Like a program that its aim is increasing knowledge of conditional metacognition, process and reading. In addition cultural learning affected by formal and informal teaching and nurturing and individuals establish structures or personal organizations to develop their own skills and cognitive strategies and regulate metacognitive knowledge can bring about conditions to become strategic learners. Peer interaction includes process containing social organization distinct from cultural transfer and individual organizing. These people have the same recognition level that interaction with them causes high personal function in recognition task (Sadeqi & Mohtashami, 2010, 144).

Brown Believes that metacognition includes two parts. Static knowledge means that what people say and strategic knowledge is steps taken toward organizing and modification of advancement along with cognitive activities. These steps include planning, prediction, estimation and surveillance. If you can become aware of internal talk inside your own mind, and can know decision making and problem solving processes, you've experienced metacognition. Metacognition is related to recognizing one's own knowing and unknowing. Sentences like "I can't remember" or "I can't understand this issue so well" or "I can't solve this problem so well" are samples of metacognitive thoughts (Brown, 2009, p 89). Pantrig & DGorDet in developing their theory has pointed that in self-organizing learning merely cognitive and metacognitive skills do not suffice and for guiding student toward learning and development it is necessary that the student become motivated for using strategies and because of that they consider self-organizing learning containing cognitive factors and motivational factor that discriminate motivation from self-organizing learning and motivational elements like: 1-expectations and beliefs of students about his/her abilities in performing a task, 2-value elements including beliefs of students about the importance of attraction of a task, 3- emotions including student's emotional reaction to a task. In expectancy element the student answers this question that if I can perform this task, in value element s/he asks how to perform this task and hence searches the reason of doing that task and in emotion element asks himself if I like this task? So the preliminary acts are provided and then the role of self-organizing processes becomes evident (Rachel, 2004, pp. 220-221).

Philosophy for children is a successful method in teaching thought. Lipman in defining philosophy for children says: philosophy is applied in teaching ministration to nurture skillful students in argument and sophistry. Philosophy for children is a kind of applied philosophy, of course not meaning that there should be a program in which ideas of different philosophers are used for clarification and non-philosophical problem solving, but the aim is to force the students to philosophy and performing philosophical acts. As the names and different dates and special jargons are not evident, children can freely think about philosophy and philosophical activity related to beliefs and their interests. The aim is that the child is helped to gain a thoughtful position, move from indifference to deep thought and from usual thinking to critical thinking (Qaedi, 2015, p 43). Gorard (2015) believes that in philosophy program for children, students participate in group talks concentrating on philosophical issues. Talks are created by a motivator (e.g. a story or a video0 and are based on a concept like reality or equality (p 67). The aim of philosophy for children is tendency and ability to ask, discuss and participation in discussion and ability in reasonable argument. One of the main objectives of philosophy for child and teenager is improving critical thinking, creative thought, and caring/responsible thought from beginning of childhood period. Running program for child and teenager are eleven-year old children classes cause that their intelligence age increases about 72 hours in problems related to formal arguments (Naji, 2004, p 19). Golding (2007) considers objective discovery of children along with mind reconstruction as one the aims of philosophical epistemology for children and writes about this: philosophy for children is in a continuum between mind reconstruction and objective discovery in motion and I believe that pragmatism focusing on two dimensions of discovery and creation is the best label for epistemological objectives of philosophy for children. The role of philosophy in philosophy for children isn't solving theoretical problems of philosophy or speaking and listening for conceptual and theoretical metacognition, but the philosophy in educational program of Lipman plays pragmatic and practical role (p 3).

In other words, philosophy for Lipam, as Divi argues that, plays nurturing act. So the role of philosophy in philosophy for children is like a used method that through which we can teach the children. Lipman writes: whatever is called philosophy for children is an attempt for expanding philosophy with this objective that we can use it as an alternative for education. This philosophy (methodology) is educational in which philosophy is used for motivating mind of the child to attempt in responding meaningful need and desire (Lipman, 1980, p 25).

Khoram Roei (2014) indicated in their study that educating philosophy for children has meaningful effect on increasing metacognitive knowledge, metacognitive strategies and self-organizing but it hasn't so much effect on mathematical self-conception and their motivation. Also educating philosophy for children has meaningful effect on upgrading freedom in expressing thoughts. Worley (2016) in a study with title of philosophy and children, concluded that the program of philosophy for children can be effective in improving argument capability, nurturing creativity, developing critical thinking, nurturing ethical understanding, art values, citizenship nurturing and developing interpersonal and social skills. Topping and Trickey (2014) in a study, examined the role of talk in philosophy for children. The results indicated that emotional-social aspects of learning and ability to talk among studied children have been improved.

Research Hypothesis
Educating philosophy affects metacognitive beliefs among high school students.

Research Methodology
This research has practical objective and semi-experimental, post-test and pre-test data gathering method. Statistical population includes high school students in district 3 of Tehran in the first mid-term of educational year of 1397-98 (N=6500). For sampling the method of random clustering sampling was used. Geographically, Tehran was divided into south, north, east, west and center and then north of Tehran was chosen, after that district three was selected and from district three, two high schools (Yas Nabi and Dr. Beheshti High shools) were selected randomly and then 30 high school students (15 from each school) were randomly selected from list of students' names and were participated in the study. After sample selection and random assignment of students in two experimental and control groups (15 in experimental and 15 in control groups) for testing of experimental group, philosophy education sessions for children were held. Inclusion and exclusion criteria were age, grade of students and attending in education period. Data gathering tool was as following:

1. Metacognitive Questionnaire: this questionnaire was formulated by Wells (1997) including 30-item scale measures peoples' beliefs about their thoughts. Four-degree scale of questionnaire was 1 (I agree) to 4 (totally agree). This questionnaire has five sub-scales with titles of positive beliefs about anxiety, cognitive trust, cognitive self-knowledge, negative beliefs about uncontrollability, and beliefs about needing to control thoughts. For calculating score of each dimension, the score of each question are summed. Shirin Zadeh Dastgiri (2007) has translated and prepared Well's metacognitive belief's questionnaire for population of Iran and alpha Cronbach coefficient of total score in this Iranian sample is 0.91 and for positive beliefs subscales about anxiety, cognitive trust, cognitive self-knowing, negative beliefs about uncontrollability, and beliefs about needing to control thoughts were respectively 0.86, 0.81, 0.80, 0.87 and 0.71. Also validity and reliability of the Well's metacognitive beliefs questionnaire was obtained by two clinical psychologists and one psychiatrist for measuring internal cohesion by halving method and alpha Cronbach coefficient was 0.97. Also for validity (reliability) of metacognitive belief's questionnaire scale was performed on 52 people and its consistency coefficient was 0.88 (Rafaee Zad, 2016). In this research, according to standard questionnaire, nominal and content validity of questionnaire was approved by masters and related experts. Its general reliability was based on alpha Cronbach coefficient 0.87 and each of the subscales was measured coefficients respectively 0.79, 0.80, 0.74, 0.76, and 0.84.
2. Holding education courses of philosophy for children for experiment group: educating philosophy in 13 sessions of 60 minutes was run for experiment group.it should be noted that

the mentioned education period was extracted from philosophy education method based on the book "Planning courses of philosophy for children, suitable for classes of thought, research, thinking and life style" written by Michael Barouz and translated by Morteza Barati (2017) (holding education period was carried out in two months) and explaining this period is indicated in table 1. For data analysis in descriptive part, main and dispersion indices and in inference part covariance analysis has been used.

Table (1): Explaining holding philosophy education period for experiment group

Session	Session Details
1	Introducing people, regulations, purpose of course and performing pre-test
2	What's philosophy?
3	Leadership (discriminating kinds of leadership)
4	Manner (what determines correctness or incorrectness of an act?)
5	Equality (what role does economic equality has in equality?)
6	Freedom and theories of social contract 9who can restrict your freedom?)
7	Equality (what's political equality?)
8	Friendship (identifying characteristics, aspects of a friendship, good friendship)
9	Discrimination (ethical permit, pattern imaginations)
10	Freedom (can you freely choose your own communication way with the world?)
11	Leadership (what makes a good leader?)
12	Epistemology (how can you know what are you doing?)
13	Running post-test

Research Findings

Table (2): results of extension and bias coefficients

Variable	Index	Values
Positive beliefs about anxiety	Bias	.017
	Extension	-.502
Cognitive trust	Bias	.109
	Extension	.372
Cognitive self-knowing	Bias	-.697
	Extension	-.060
Negative beliefs about uncontrollability of thoughts	Bias	.128
	Extension	1.312
Beliefs about needing to control thoughts	Bias	.099
	Extension	.074
Metacognitive beliefs	Bias	.901
	Extension	1.494

According to the results of table 2 the bias and extension factors obtained in metacognitive beliefs are in interval of -2 and +2 and we can surely say that research data follow normal characteristics ad we can use covariance analysis test for analyzing research theories.

Table (3): the results of Kolmogorov Smirnov and Shapiro-wilk Tests

Variable	Kolmogorov-Smirnov test		Shapiro-Wilk Tests	
	Sig	SH-W	Sig	K-S
Positive beliefs about anxiety	.094	.966	.201	.101
Cognitive knowing	.134	.080	.959	.052
Cognitive self-knowing	.182	.125	.937	.054
Negative beliefs about thought uncontrollability	.140	.095	.942	.067
Beliefs about need to control thoughts	.100	.200	.976	.292
Metacognitive beliefs	.095	.200	.948	.063

According to the results of table 3, the results of Kolmogorov Smirnov and Shapiro-wilk Tests indicate that obtained meaningful levels in two variables of metacognitive beliefs is larger than 0.01 and we can surely say that research data follow normal characteristics and we can use covariance analysis for analyzing research hypotheses.

Table (4): the results of "Loon" Test

Variable	Loon Statistics	Freedom degree1	Freedom degree2	Meaningful level
Positive beliefs about anxiety	.081	1	28	.970
Cognitive knowing	1.275	1	28	.292
Cognitive self-knowing	1.364	1	28	.055
Negative beliefs about thought uncontrollability	.887	1	28	.055
Beliefs about need to control thoughts	1.904	1	28	.053
Metacognitive beliefs	1.151	1	28	.337

According to the results of table 4 the results of "Loon Test" indicates that obtained meaningful levels in metacognitive belief variable is larger than 0.01 ad we can surely say that group variances has congruence and null hypothesis in "Loon" Test is that the variance of both groups has congruence and is approved. As the homogeneity principle of variances has been observed, we can use covariance analysis for analyzing research hypotheses.

Table (5): the results of M-box test based on variance-covariance matrixes homogeneity

Meaningfulness level	F-test statistics	M-box test statistics
.196	1.041	40.749

According to the obtained results of table 5 the meaningful level of M-box test is 40.749. As this value is larger than meaningful level of (0.01) required for rejecting null hypothesis, our null hypothesis is based on covariance matrix homogeneity and it is true as one of the assumptions of multi-variant covariance analysis test.

Table (6): the results of regression line slant homogeneity

Variable	Change sources	Total squares	Df	Mean squares	F statistics	Meaningful level	Effect size	Statistics power
Metacognitive beliefs	Pre-test group Error Total	1684.65 12371.2 125566	2 27 30	842.328 458.195 -	7.729 - -	0.002 - -	0.364 - -	1 - -

**p<001/0

According to the results of table 6 the effect of group interaction (independent)* pre-test (overlap) for metacognitive beliefs is 0.364 that obtained value is larger than 01/0 so homogeneity hypothesis of regression slants is accepted.

Table (7): the results of covariance analysis in pre-test and post-test scores

Variable	Change sources	Total squares	Df	Mean squares	F statistics	Meaningful level	Effect size	Statistics power
Positive beliefs about anxiety	Pre-test group effect Error Total	15073.3 72.583 209.067 15355	1 1 28 30	1573.3 24.194 3.733 -	4037.50 6.481 - -	0.000 0.001 - -	0.986 0.258 - -	1 1 - -
Cognitive trust	Pre-test group effect Error	15168.6 81.400 398 15648	1 1 28 30	15168.6 27.133 7.107 -	2134.27 3.818 - -	0.000 0.015 - -	0.974 0.170 - -	1 1 - -

	Total							
Cognitive knowing	Pre-test group effect Error Total	13801.6 84.333 528 14414	1 1 28 30	13801.6 28.111 9.429 -	1463.81 2.981 - -	0.000 0.039 - -	0.963 0.138 - -	1 1 - -
Negative beliefs about uncontrollability of thoughts	Pre-test group effect Error Total	14260.4 84.583 426 14771	1 1 28 30	14260.4 28.194 7.607 -	1874.60 3.607 - -	0.000 0.017 - -	0.971 0.166 - -	1 1 - -
beliefs about needing for uncontrollability of thoughts	Pre-test group effect Error Total	12098.4 142.800 714.800 12956	1 1 28 30	12098 47.600 12.764 -	974.832 3.729 - -	0.000 0.016 - -	0.944 0.167 - -	1 1 - -
Meta cognitive beliefs	Pre-test group effect Error Total	350829 2285.73 4337.20 357452	1 1 28 30	350829 761.911 77.450 -	4529.74 9.837 - -	0.000 0.000 - -	0.988 0.345 - -	1 1 - -

**p<01/0

According to the results of table 7, the experiment group after philosophy education got meaningful difference in scores of metacognitive beliefs compared with control group (respectively, p<0.01, F=6.481=9.837, 3.729, 3.706=F, 2.981=F, F=3.818,F). Hence philosophy education affects metacognitive beliefs of high school students and according to eta square we can say that the extent of effectiveness of philosophy education strategy on improving metacognitive beliefs in studied students is 5.34 and the extent of effectiveness of philosophy education on each element of metacognitive beliefs is as following:

1- The extent of effectiveness of philosophy education on improving positive beliefs about anxiety among studied high school students is 8.25.
2- The extent of effectiveness of philosophy education on improving cognitive knowing among studied high school students is 17.
3- The extent of effectiveness of philosophy education on improving cognitive self-knowing among studied high school students is 8.13.
4- The extent of effectiveness of philosophy education on improving negative beliefs about uncontrollability of thoughts among studied high school students is 6.16.
5- The extent of effectiveness of philosophy education on improving beliefs about needing for uncontrollability of thoughts among studied high school students is 7.16.

Discussion and Conclusion
The obtained results indicated that the experiment group after philosophy education got meaningful differences in scores of metacognitive beliefs in comparison with control group (p<0.01). So philosophy education affects metacognitive beliefs of high school students. According to eta square we can say that the extent of effectiveness of philosophy education strategy on improving metacognitive beliefs in studied students is 5.34. Metacognitive beliefs refer to the knowledge of a person about processes and cognitive products of himself/herself or whatever related to it (Richardson, 2012, p 353). According to the results philosophy education affects metacognitive beliefs of high school students. As the extent of effectiveness of philosophy education on improving positive beliefs about anxiety among studied high school students is 8.25. Also the extent of effectiveness of philosophy education on improving negative beliefs about uncontrollability of thoughts among studied high school students is 6.16. In explaining

these findings we can say that this result indicates students are enabled by philosophy education to repel negative thoughts from themselves like superstitions, punishment, unduly anxieties … and instead of that replace positive thoughts and beliefs. There was congruity between obtained results and the results of study by Hedayati and Mahzadeh (2017), as they indicated that participation in children and adolescents' program of philosophy education results in improving both negative and positive orientations to the problem. According to the results, the extent of effectiveness of philosophy education on improving cognitive knowing among studied high school students is 17. This result indicates that, students with the help of philosophy education are enabled to refrain from unduly labeling to themselves like I am a lazy person; I don't have ability to learn, my memories is weak … and live based on reality and without any obsessive thoughts. According to the results, the extent of effectiveness of philosophy education on improving cognitive self-knowing among studied high school students is 8.13.

There was congruity between obtained results and the results of study by Khoram Roei (2014), as it indicated that educating philosophy for children has meaningful effect on increasing metacognitive knowledge, metacognitive strategies and self-organizing among student of Hamedan. According to the results, the extent of effectiveness of philosophy education on improving beliefs about needing for uncontrollability of thoughts among studied high school students is 7.16. There was congruity between obtained results and the results of study by Worley (2016) Topping and Trickey (2014). This result indicates that students re enabled by the help of philosophy education evaluate their activity results and developments, guide them to right path and actually use control and surveillance strategies. Basically philosophy education for children and adolescents is a successful method is thought teaching and learners of philosophy education learn to upgrade their knowledge and insight level about their ability and personal skills and use it in their intellectual life and present positive performance in realms of education, personal life, and even future job.

This research gained a positive result for effectiveness of philosophy education on metacognitive beliefs of high school students; the results indicated that philosophy education has had positive effect on metacognitive beliefs of high school students. Therefore we can use of philosophy education method as a new approach in educational system of our country while it is changing regarding new transformations of basic change documents of education ministry, but educational system resists to some extent against teaching philosophy to its learners, hence we should use this course to improve metacognitive beliefs with the purpose of gaining mind development, spiritual joy and felicity and consider philosophy education as a useful strategy in educational system of the country.

References

1. Abbasi, M., Zabih, P., Sarmadi, M.R., & Taghvaee, D. (2017), The Effectiveness of philosophy Education Program for children on Critical Thinking and its Components in Female Students, Iranian journal of educational Sociology, 1 ,4, 96-103.
2. Barouz, Maicheal (2000). Planning courses of philosophy for children, suitable for classes of thought, research, thinking and life style, translated by Morteza Barati (2017), Teran, Tash City.
3. Belet, D., & Güven, M. (2011), Meta-cognitive Strategy Usage and Epistemological Beliefs of Primary School Teacher Trainees, Kuram ve Uygulamada Eğitim Bilimleri Educational Sciences: Theory & Practice, 11, 1, 51-57.
4. Brown, A.L. (2009). Metacognitive development and reading, Theoretical issues in reading comprehension Hillsdale, NJ: Lawrence Erlbaum.
5. D'Olimpio, L., & Teschers, Ch. (2016), Philosophy for Children Meets the Art of Living: A Holistic Approach to an Education for Life, Philosophical Inquiry in Education, 23, 2, 114-124.

6. Farnam, Alireza; Gholizadeh, Hossein; Pirzadeh Jaber, Hokmi, Eesa, Rasolvand, Sadeqi, Ahmad (2012), Comparison of Metacognitive Beliefs of Depressed Patients, Obsessive-Forcing and Healthy Group, Journal of Medical School of Kerman, 18,4, 339-3384.

7. Fisher, Robert, (2005). Education of Thought to Children, translated by Masoud Saffaee Moqadam and Afsaneh Najariyan, 2012; Ahvaz, Rasesh Press

8. Flavell, J.H. (2008). Cognitive development, Englewood: Prentice-Hall. Golding, K. (2007). Pragmatism, Constructivism & Socratic Objectivity: The Pragmatic Epistemic of Philosophy for Children, Australasia Conference Presentation, Philosophy of Education on Society of Australasia, 14, 1, 1-21.

9. Ghaedi, Yahya (2015), Examination of Theoretical Principles of Teaching Philosophy to Children. Tehran, Dovavin Press

10. Gorard, S., Siddiqui, N., See, & B.H. (2015). Philosophy for Children: Evaluation Report and Executive Summary. Education Endowment Foundation, 9th Floor Millbank Tower, Millbank, London,
Karikó, S. (2016). The New Responsibility and Challenge of Education: The Current and Prospective Situation of Philosophy for Children, Practice and Theory in Systems of Education, 11 2, 105-117.

11. Hedayati, Mehrnoosh; Mahazar, Hamed (2017), "Philosophy for Children" and Social Problem Solving Skill, Nurturing Science Journal, 23, 1, 29-54.

12. Khoram Rouee, Saeed; Hashemi, Somayeh, Behroozi, Maryam (2014) Examination of Effect of Philosophy Education by Philosophical Exploration Method on Creativity level and Metacognitive Knowing of Sixth Grade Students in district one of Hamedan, 2013-2014, Articles of sixth international congregation, child and adolescent psychologist, Tabriz: Tabriz Medical School.

13. Lipman, M. (1980), Philosophy Goes to School. Philadelphia, Temple University Press.

14. Naji, Saeed, (2005), the Concept of Philosophy in Program of "Philosophy for Children and Adolescents". Knowledge and Religion; 25, 28, 20-19

15. Narimani, Mohammad (2009), Examination of Contrastive Skills and Ambiguity Tolerance among Female Introvert Students; Research Quarterly of Retarded Kids, 9, 1, 55-62

16. Panoura, A., & Philippou, G. (2012), young pupils, Meta cognitive abilities in mathematics in relation to working memory and processing efficiency, University of cyprus, Cyprus.

17. Rachel, M.A. (2004). Classroom applications of mnemonic instruction: Acquisition, maintenance, and generalization. Exceptional Children, 58, 3, 219-229.

18. Richardson, M., Abraham, C., & Bond, R (2012) Psychological correlates of university students' academic performance: A systematic review and meta-analysis. Psychological Bulletin, 138, 2, 353-387.

19. Sadeqi, Zeinab; Mohtashemi, Reza (2010), the role of Metacognition in Learning Process, Educational Strategies, 3,4, 143-148.

20. Semerari, A., Cucchi, M., Dimaggio, G., Cavadini, D., Carcione, A & Battelli, V (2012), the development of the Metacognition Assessment interview: instrument description, factor structure and reliability in a non-clinical sample. Psychiatry Res, 200, 2-3, 890-395.

21. Snyder, M.M., & Dringus, L.P. (2014), an Exploration of Metacognition in Asynchronous Student-Led Discussions: A Qualitative Inquiry. Journal of Asynchronous Learning Networks, 18, 2, 18-27.

22. Topping, K.J., & Trickey, S. (2014). The role of dialog in philosophy for children, International Journal of Educational Research, 63, 69-78.

23. Wells, Adriyan (2009), Practical Guide to Metacognitive Treatment of Anxiety and Depression, translated by Shahram Mohammad Khani, 2015, Tehran: Varae Danesh Press

24. Worley, P. (2016) Philosophy and children, The Philosophers' Magazine, 72, 119-120.

25. Yerdelen-Damar, S., Özdemir, Ö.F., & Ünal, C. (2015); Pre-Service Physics Teachers' Metacognitive Knowledge about Their Instructional Practices, EURASIA Journal of Mathematics, Science & Technology Education, 1, 5, 1009-1026.