

Critical Thinking in P4C (Philosophy for Children) Educators: An Intervention Study

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Abstract

One of the main issues in determining the place of a nation in the world is to train the personnel in terms of thinking and internalizing the power of knowledge. There are many methods in teaching how to think among the children enabling them to learn philosophy of thinking process. This could enhance clarification, open-mindedness, logical thinking and the organization of mind among the children at schools. Methods could be used to raise the children as a thinking creative. This method deals with teaching stories, guidebooks, notes, and designs to children in a community of inquiry with Socratic method which argues the issue to arrive at the critical thinking. In the present study, 30 teachers used this philosophical method. They were selected to pass a course in which they use philosophy of critical thinking. The purpose of this study was to discover the effect of the philosophical treatment on the educators teach children. The critical thinking pre and post questionnaires were given to the instructors through the instruments of California critical thinking Questionnaire-Version B. Results showed that the level of the instructors' critical thinking was significantly promoted after the course ($p=0.0001$). Findings also showed that there was not any significant relationship between educational level, age and the critical thinking of the participants ($p=0.64$). Findings of the study suggest that the Socratic philosophy method could be used to train the educators who learn critical thinking in the pre-service and in-service courses to teach the preschool educators, and school teachers.

Key words: Philosophy for Children, Educators, Critical thinking, Socratic questioning

INTRODUCTION

One of human beings' needs of life is to from the happenings and exploration of educational issues at the university and higher education levels. This is a need for any child to shape this issue that enables him to be closer to the modern world. Therefore, the society needs smart, innovation and creative members corresponding to these new happenings. Primary schools focus on science and technology based on some cognitive approaches to transfer science and information to the students and ignore the training of creative and thoughtful individuals. However, recently, there is a movement among educational psychologists and other scholars to suggest the educators can train of thinking skills rather than transferring science

and knowledge to the students. Thus, the individuals are able to think through their natural intelligence abilities (Mango et al., 2010).

It means that all the individuals are able to think; however, this potential power should be changed into the actual use. Critical Thinking is one of the dimensions of thoughts. Lipman (2002) makes a difference between ordinary and critical thinking. Ordinary thought is simple and without any criterion but critical thinking is more complex and has objective dimensions. Critical thinking is a dynamic process which helps the individuals analyze the data and reach the conclusion and is able to decide properly. Thus the background of critical thinking goes back to philosophy after John Dewey, who developed it in some published books. Nowadays, the world witness revolution in the critical of thinking (Daniel et al., 2007). Critical thinking is a branch of Logic which is called practical logic. This kind of logic can remove uncertainty, and make transparency, logical reasoning, criticism, and mind discipline (Ghaedi et al, 2015). The purpose of critical thinking is to understand problems, evaluate the viewpoints and give solutions (Sedaghat et al., 2015).

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Cognitive skills of critical thinking include:

Analysis: finding out the purpose of an issue and their relationships.

Evaluation: discovering the validity of issues and evaluating their relationships

Inference: Ability to conclude the issues

Inductive reasoning: Ability to conclusion based on logical reasoning which helps the individual to relate the relationships between the parts of a whole and discover the main objectives.

Deductive reasoning: Ability to arrive at the conclude issues based on a comprehensive basis which helps the individuals thinks and gets the reasons of the happenings and discovers the parts of a whole (Austin et al., 2015).

There is a common sense on the entity of thought that it is genetics which can not be changed or trained. However, educational training emphasize that the critical thinking could be trained such as other skills and sciences. The training of critical thinking can be done and applicable (Trinckey et al., 2004). Nowadays, the role of critical thinking in education has been exhale by the philosophers of pedagogical issues. This is so vast that the researchers deal with it from various perspectives around the world. Moreover, the training of critical thinking has been issued as a goal in different countries. Some scholars have been dealing with it as an activity in schools (Daniel et al., 2011). However, there are several problems in training critical thinking since there are some weaknesses. These problems in teaching critical thinking could be:

1. The main weakness may be lack of understanding in teaching critical thinking or teaching about the critical thinking. This problem may impose itself to our educational settings and complicate its process. Lipman notes that the objective of critical thinking training is to train people how to think. This needs teaching critical thinking criteria, rules and principles. However, the educational situations are now out of controlling this. In other words, there is a need to make the learners think critically not to learn about the critical thinking (Lipman, 2003)
2. According to Lipman, the other weakness is that the university level is too late for learning critical thinking and thinking styles, evaluation and logical reasoning (Lipman, 1993). The reason behind this is that firstly, it needs more than one semester and secondly, the children at the school level could learn it with readiness. Thus in the second period of 20th century, the educators can practice critical thinking in primary schools.
3. Lipman believes that teaching critical thinking can develop all children's thinking capabilities of thinking

on sciences and develop their knowledge of critical thinking. However, children and adolescents may learn some other issue rather than critical thinking. In other word, they just can learn critical thinking like learning is as the same as critical thinking. Lipman proposed a reformed plan to train the critical thinking. But he noticed later that critical thinking is not enough by itself since there are not the issues like conceptualizing and skills which are available in the formal philosophy and logic. In Lipman's perspective, critical thinking cannot make children think deeply in the philosophy. He believed that critical thinking makes individuals to think carefully but philosophy can make it deeply (Lipman, 2003).

4. The other criticism with critical thinking is in the McPack's (1981) critics on the critical thinking training. It is believed that the tutees should be trained after some other prerequisite courses in various disciplines. However, the reality is that there are not any appropriate correspondence between logical or problem solving techniques and the practice of critical thinking (Meyers, 1995). Thus McPack believe that training critical thinking in each discipline could be specific since basic knowledge in each discipline is a part of that discipline (McPack, 1981).

With regard to the above shortcomings, Lipman tried to plan a philosophical program for teaching critical thinking to children (P4C) which dealt with key and the critical thinking and made it deeply rooted in children's cognition, creative thinking and caring thoughts. He gave true exercises in the children's curriculum regarding the childhood and adolescent activities. These could remove the weaknesses one and two which are mentioned above. The emphasis on the third weakness is to make children ask the questions as the prerequisite issues and evaluate the responses. This can answer the McPack's (1981) problem.

Therefore, philosophy for children and adolescent could be a great step to elevate their inferencing, decision making and discriminating power (Niakan et al., 2015). P4C with the emphasis on children thinking training was used by Lipman (1999) in New Jersey, the USA center. This was noticed by more than 100 countries around the world. Lipman define philosophy for children as an applied philosophy. This does not mean that it is used for knowing the philosopher's ideas on different issues. It means children's knowledge on how to use their thinking process on different issues and arrive at their own results.

P4C is to make historical philosophy with the help of book stories and book guides. In fact, these stories are the tools for thinking philosophically. These tools are used to reach other goals which are beyond the thinking process. The objectives

are put in a story which contains an issue for leaving to think. After finishing the story, that issue or problem will be discussed in the classroom (Gasparatou et al., 2012). Telling the story is going to be done by children in a circle since they could discuss their ideas on the story. In Lipman's ideas, teaching the principles of thinking should be the basic part of pedagogical training like working with scientific issue such as the use of lenses in a microscope. Lipman refers to logical reasoning as the science that cannot be learned just by mathematics. Children need a unique pattern which helps teachers to teach logical reasoning to arrive at the answers. Planning such patterns could not be easy but applicable. Using story telling activates in groups or individuals can help them not only achieve logical reasoning but they learn how to be philosophers. These understanding are needed for living in the new world (Millett et al., 2012). In this case, teachers and trainers have a great role in doing this job. The teachers are facilitators rather than the knowledge givers. Lipman criticized traditional teaching in which the teacher is the expert. In this new perspective, the teacher is a motivator in the children's circle of discussion and interaction on questions and answers raised in the classroom. There are teacher-student and student-student interaction (Murriss, 2016).

The teachers who believe in critical thinking should think of the goal, beyond the issues in the classroom and make the class situation ready for critical thinking. The place for critical thinking (i.e., correct, unbiased, cooperative, logical reasoning and self-critics) should value the critics' ideas and questions and motivate the learners to evaluate the related issues. The learners need to believe their thoughts and present their beliefs freely (Huang et al., 2016).

The teacher is an educator who asks questions based on facts and ideas clearly to make a discussion. The teacher should motivate the learners to think on similarities and differences to arrive at the conclusion. The teacher teaches the learners how to learn and think about basic issues this makes the learners thoughtful. These students can classify different subjects and recognize that daily activities which are the collection of several issues interwoven issues. The learners should discover knowledge, evidence, and logical reasoning through meaningful outcomes regarding their life issue outside schools (Madtes et al., 2013).

The teacher who believes in individuals and thinking freedom does not give the knowledge as a ready-made result to the learners. The trainers should guide them who to think and ask related questions which help the learners to arrive at the response. The trainer should not give the conclusion as a teaching activity. The trainee should get the response in a logical manner. They these trainers should know how to teach and learn how to make appropriate questions in a guided manner (Ku et al., 2014).

One of the methods of teaching critical thinking is classroom questioning that the teachers and educators can use regarding Socrates' questioning. This is a kind of questioning is with a loud voice which asks the utterance meaning and correctness. In Socrates' discussion, the learner's thought and feelings are asked and the trainers let them think and evaluate their thoughts. In other words, the trainers help the learners to arrive at a framework or a planned design. This can make the learners to be serious and disciplined regarding their beliefs. Using Socrates' questioning emphasizes several points: (1) each thought has its own logical reasons, (2) it is giving a claim which is meaningful, (3) has implicit and included meanings, (4) it foregrounds some issues and backgrounds some others, (5) It has intentions, (6) it has some criteria, (7) it is clear or unclear, (8) It is deep or shallow, (9) it is questionable or simple to be understood, (10) it is mature or immature, (10) it has one logical reasoning or multi-logical reasoning (McLachlan et al., 2016).

Socrates' training may have several methods regarding questioning technique may be done by teachers or students. These questions could be done in a large group, pairs or individuals. They have the main objectives that focus on the questions of raising individuals' motivation and curiosity (Garside et al., 2012). Socrates' discussion needs the question skill which is an art and trainers should be sensitive to various questions in appropriate situations and contexts. Thus the teachers should train philosophy for children and raise their critical thinking level based on cognitive processes which help them to elevate this type of thinking.

In the present study, the teachers knew the Socrates' method and understood the effect of philosophical training on children's critical thinking at the preschool and primary school levels in Abadan Hoda Andisheh Institute.

MATERIALS AND METHODS

Design

The design of the study is quasi-experimental with the pre and post- test questionnaires research objectives. It is an applied research with pedagogical objectives.

Research Population and Sampling

The research population included the educators of Abadan Hoda Andisheh Institute. They were participated in the course planned for how to train children's philosophical thinking. Thirty trainers were selected through simple random sampling. This research tried to assess the effect of training courses among educators who teach philosophy for children. The textbooks included several units on critical

thinking for trainers at pre-schools and primary schools. In these two courses, they learned P4C as well as how to think critically, questioning and data collecting. In this treatment period, the book “thinking together” developed by Filip Camwas covered in six sessions, each took 90 minutes. The sessions were: first session, “learn together” (i.e., learning how to think deeply, and Vygotsky’s ideas on thinking together), second session, “philosophical activity” (i.e., Lipman’s ideas on philosophical inquiry, recognizing philosophical questions and processes in thinking deeply), third session, educational materials (i.e., effect and role of story in thinking, recognizing good stories, having discussion plan for better performance), fourth session, philosophical inquiry (i.e., make children familiar with discussion, make questions and motivate them to participate in discussion), fifth session philosophical inquiry (i.e., make familiar them with logic, criterion, reasoning and logical Issues), sixth session, planning a discussion (i.e., knowing the importance and readiness to work with the discussion circle). The second book was the great ideas for young children: specific for “primary school and pre-school teacher” developed by Wartenberg (2014) that was taught in two introductory sessions, each session took 60 minutes. The sessions included: (1) teaching philosophy in primary schools (i.e., instinctive philosophers, I became the teacher of philosophy for children, learner-centered teaching, and philosophical game), and the second session dealt with ready for teaching (i.e., familiarity with philosophy in primary schools and preparing lesson plans). Both sessions dealt with Socrate’s questioning approach. After introductory classes, 10 practical sessions were run with the help of trainers who taught philosophical questioning based on Socrate’s idea in the classrooms. Then they filled in the California critical thinking skills test (CCTST) at the end of the sessions.

Data Collection Instrumentation

Demographic information questionnaire

This questionnaire included several subsections on the participants’ age, experiences, and educational level.

a) CCTST

This questionnaire was developed by Facion and Facion (1994) who evaluated the critical thinking skills in the individuals and standardized it with the help of 46 experts in the domain of critical thinking based on its concepts. This questionnaire evaluates specific skills of critical thinking in five areas including Analysis, Inferencing, Evaluation, Inductive and Deductive reasoning. In this scale, each correct response gets one mark. The minimum is zero and maximum is 34. The marks in each section are between zero and 16. Thus in the analysis section (9 marks), Evaluation (14 marks), Inferenc (14 marks), and Deduction (16 marks). Thus

each individual can get 5 scores on critical thinking skills which and are totally between zero and 34. Time allocated to this questionnaire was 45 minutes. To measure the learned critical thinking among the students, California Type B was also used regarding its uses in several studies (i.e., Castilino, 2002; Chen, 2011; Goul, 2006; Wheeler, 2003).

b) The books

Two books were used in philosophical training classrooms. *Thinking together* (Cam, 1998) and *Great Ideas for little children: For pre and primary school teachers* (Wartenberg, 2014) were used as the materials for teaching philosophy for children.

Data Analysis

Data were analyzed through descriptive and inferential statistics (i.e., Paired Samples *t*-test and Pearson Correlation Coefficient).

RESULTS

Thirty pre and primary school teachers participated in this study. They were females with the age ranging from 18 to 21 years old. The average of experiences was 18 months (i.e., the minimum 6 months and maximum 30 months). 86% of the participants were BA and the rest was MA, Diploma and post diploma. Descriptive statistics showed that the total average score of critical thinking in the pre-test was (0.266) and in the post-test was (0.455). The maximum was evaluation with 0.244 in the pre-test. In the post-test, the maximum was also evaluation with (0.566) and the minimum was inferencing with (0.406). The results are presented in Table 1.

Total score of critical thinking difference between before and after the treatment were compared through Paired Samples *t*-test at the level of ($p=0.0001$). This shows that there was a significant difference between the scores of the pre and post-tests. In other words, the average score in the post-test were higher than the pre-test. The results are presented in Table 2.

The significant difference before and after training courses was met through Person Correlation Coefficients and the results showed that the correlation was (0.419) at the level of significance ($p=0.0001$). In other words, the correlation between the scores and the teachers’ critical thinking was highly significant ($p<0.0001$) (Table 3).

The correlation between the level of critical thinking before and after intervening with the level of education are not significantly correlated ($r=0.3$). This shows that

Table 1: Average and SD of critical thinking

Procedure	Variable	Average	SD
Pre-test	Total critical thinking	0.266	0.07
	Inferencing	0.257	0.09
	Deductive reasoning	0.252	0.08
	Inductive	0.314	0.1
	Analysis	0.259	0.1
Post-test	Evaluation	0.244	0.2
	Total critical thinking	0.455	0.09
	Inferencing	0.406	0.1
	Deductive reasoning	0.450	0.1
	Inductive	0.481	0.1
	Analysis	0.485	0.1
	Evaluation	0.566	0.2

Table 2: Difference between total averages of critical thinking scores

Variable	Procedure	N	Mean	SD	t	df	Sig. P-value
Total critical thinking	Pre	30	9.06	2.5	-11.4	29	0.0001
	post	30	15.5	3.07			
Inferencing	Pre	30	2.83	1.01	-8.4	29	0.0001
	Post	30	4.46	1.6			
Deductive reasoning	Pre	30	4.03	1.3	-7.5	29	0.0001
	Post	30	7.20	2.05			
Inductive reasoning	Pre	30	4.40	1.9	-4.8	29	0.0001
	Post	30	6.73	1.9			
Analysis	Pre	30	1.37	0.2	-6.02	29	0.000
	Post	30	1.51	0.2			
Evaluation	Pre	30	2.33	1.3	-4.6	29	0.0001
	Post	30	4.36	1.5			

Table 3: The correlation coefficient between critical thinking level before and after intervention

	Correlation coefficient	P
Critical thinking first stage	0.419	0.0001
Critical thinking second stage		

the individuals' educational level is not effective in their critical thinking and there should be more than this as an effective variable. Since the participants approximately held the same age and training experiences, determining a significant correlation between the critical thinking and these variables were not possible.

DISCUSSION AND CONCLUSION

Since the 21st century faces technological development and new changes which affect human beings' lives, there is a need to have human beings learn cognitive abilities to be innovative and creative in their thinking. Regarding the bases of researching and curiosity in childhood (i.e., the pre and post primary school periods), teachers need to learn and then teach critical thinking in these years to children.

The teachers should help the learners to adapt themselves with cultural varieties in the society to overcome the environmental problems and can face different situations to solve their problems in creative manners. One of the educational activities which should be emphasized is the skill of thinking, especially critical thinking (e.g., P4C). The other worlds, Lipman's P4C can be done through Vygotsky's formalist approach, Dewey's practical manner and Socrates' questioning method. This is a gradual and organized plan which has been designed for children between 4 and 18 (Lam, 2012). The objective of this plan is to help the children think rather than store knowledge in their mind. They should decide and judge various issues (De Marrisio et al., 2011).

Nowadays, this idea has been used by many educational institutes in different countries (Letskoka, 2014). In Iran, this approach has been noticed and researched newly. In fact, in the circle of learners' critical thinking, the learners and teachers do the research cooperatively. They talk and discuss the issues and accept the frameworks of logical reasoning proposed by children. Discussion in the circle of critical thinking has some practical consequences including agreement, determining, deciding, concluding and judging. There are not any imposed or biased ideas in this program and they agree on the results of the group's judgment.

Lipman (1993) believes that philosophical thinking does not mean thinking and reasoning but it means thinking about thinking (Benade, 2011). This can be done if the trainers understand cognitive processes and try to elevate them. In fact, the trainers could be the most important factor of critical thinking process. Moreover, training the teachers is very important. If the trainers are not competent in following critical thinking procedures, they could affect children's lack of creativity. Therefore, teacher training in performing philosophical procedures should be emphasized as a priority since the trainers should make the class discussive and guide the class in a cooperative manners (Green et al., 2012).

On the other word, it should be noted that there are a pool of researches which have focused on critical thinking. However, a few researches have dealt with the effect of philosophical thinking on children's educational efficacy. Thus, this study has investigated the research questions to discover whether teaching philosophical education to trainers can affect the learners' critical thinking. Results showed the trainers' competence on critical thinking level was elevated after intervention. This shows that the trainers can elevate their critical thinking which affects the children's critical thinking level too.

Since the less experienced teachers face challenges too to work with the students in the research-based classes,

the teachers need pre and in-service training courses at the beginning of their service. Thus it is suggested that in-service training are held to train teachers how to deal with pre-school and primary school children in terms of elevating their level of critical thinking. This may train the thoughtful, creative and critic children. Textbook developers may give appropriate tasks which elevate critical thinking to encourage the learners to think critically rather than store some information. There is a need to focus on future research in this area and investigator-related issues by means of conducting more comprehensive studies to promote the level of critical thinking among the students and teachers in educational settings.

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