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INTEGRATION OF MEDIA AND CRITICAL LITERACY INTO CURRICULUM THROUGH THINKING EDUCATION: FROM TEACHER TRAINING PERSPECTIVE

Research article

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Abstract

This research has pointed out the effects of thinking education on the prospective teachers' critical and media literacies. The research, designed as mixed method with sequential triangulation, has enlightened the efficacy of thinking education on the prospective teachers' literacies. The study group, selected by the sampling criteria, one of the purposive sampling methods, composed of 40 social studies prospective teachers, having been trained in terms of thinking critically on media messages and texts, at Education Faculty, Bartin University during the 2016-2017 academic year. It is concluded that post-test media literacy and critical literacy scores of the trained prospective teachers have increased. Moreover, the positive effects of thinking education on the prospective teachers' media and critical literacies are expressed in detail within the framework of various qualitative data and it is inferred that thinking education reached the goal of training critical literate and media literate individuals. Furthermore, how to integrate media literacy and critical literacy into any curriculum in teacher education has been exemplified through this research. Therefore, these literacies should be taught independently from any subject or a discipline as the objectives of teacher education curriculum.

Keywords: thinking education, critical literacy, media literacy

1. Theoretical Information on Thinking Education, Media and Critical Literacies

Thinking is a cognitive activity, everyone has experienced in every part of life as a student, as a citizen, as a friend, as an adult without realizing how to think. Paul and Elder (2002) emphasized that much thoughts are biased, distorted, partial or uninformed and excellence in thought must be provided in a systematic way. Systematically cultivation of accurate, consistent and logical thoughts with lack of bias, is possible through thinking education focusing on such questions as what does thinking mean?, how does the brain process information?, how are thoughts analyzed, evaluated and reconstructed?, how are thoughts analyzed in terms of standards such as clarity, accuracy, precision, relevance, depth, logic, breadth, significance, fairness? What are the elements of thought? How are the thoughts analyzed in terms of such elements as point of view, purpose, information, interpretation and inference, concepts, assumptions, implications and consequences? That is to say, separating the elements of thinking and scrutinizing the use of each part as well as evaluating thoughts in terms of such standards as clarity, accuracy, etc. can be experienced in thinking education. Because the analysis and assessment of thinking belong to a clear understanding of the parts of thinking and applying the standards for thinking to those parts (Paul and Elder, 2002). Paul and Elder (2002) emphasized that a clear understanding of the parts of thinking, applying the standards for thinking to those parts, above all thinking with regard to these factors on a daily basis will improve the quality of human life significantly.

According to Paul and Elder (2002), beginning to learn how to think critically is like the first step in learning how to play tennis, basketball, etc. in such a way that the first step is to learn the most fundamental elements for both of them. Assessment of any thought relates to analyzes of the parts of thinking. The parts of thinking are summarized in just two sentences: "Whenever you are thinking, you are trying to accomplish some purpose, within a point of view, using concepts or ideas. You are focused on some issue or question, issue, or problem, using information to come to conclusions, based on assumptions, all of which have implications." (Paul and Elder, 2002).

From Paul and Elder's points of view, how to analyze someone's thinking with regard to elements of thought can be explained in such a way: Capturing the purpose or goal of someone's thinking, namely searching for the answer to this question "What is the fundamental purpose of someone's thinking?" is the first step. It is followed by capturing someone's point of view as a critical thinker, familiar with the fact that thinking has some comprehensive focus or orientation, and trying to answer the question "what is someone's point of view with respect to the issue? Then, "what is the key question in someone's thinking?" and "what is the most basic concept in someone's thinking?" are the questions tried to be answered in the process of analysis of thinking. Realizing concepts in thinking means generally thinking within the framework of categories or ideas obtained as a result of analysis of information in someone's thinking. The answer to the question such as "What information is needed to answer the question in someone's thinking?" makes it clear that someone's thinking is based on some set of facts or information. That is to say, the factual basis for thinking become significant. Not only are conclusions and inferences taken into account in the process of thinking but also implications are the other elements to be considered. Fisher (2001) also emphasizes what someone has done upon thinking critically. These are identifying the elements in a reasoned case, especially reasons and conclusions; evaluating assumptions; clarifying and interpreting expressions and ideas; questioning the acceptability, especially the credibility of claims; evaluating arguments of different kinds; analyzing and producing explanations; making decisions, drawing inferences and generating arguments. Fisher's explanation on any critical thinker's behaviors indicates that the parts of thought, stated by Elder and Paul (2002) is analyzed upon thinking critically.

Interrelation among the elements of thought are emphasized by Paul and Elder (2002) making analogy between the elements of thought and the essential parts of the human body. Their way to explain these interrelationships is that: "Our purpose affects the manner in which we ask questions; The manner in which we ask questions affects the information we gather; The information we gather affects the way we interpret it; The way we interpret information affects the way we conceptualize it; The way we conceptualize information affects the assumptions we make; The assumptions we make affect the implications that follow from our thinking; The implications that follow from our thinking affect the way we see things, our point of view". That is to say, consideration on the elements of thinking makes someone be aware of thinking process and think critically on someone's own thoughts and others' thoughts. In this case thinking critically means assessing one's own thinking or others' thinking. In addition to analysis of the parts of thinking, assessment of one's thinking also includes applying such logic standards as clarity, accuracy, precision, relevance, depth, breadth, logicalness, and significance to the parts of thinking (Paul and Elder, 2002). This research is designed with instructional activities in which one's own thoughts or others' thoughts are analyzed in terms of the parts of thinking and logic standards. Thinking education has become indispensable for all of us with the goal to develop the skills of inquiry and expression required for being critical thinker and media literate. That is to say, students are enabled to be equipped with these skills through having chance to interpret the media

messages and texts in terms of the parts of thoughts such as point of view, assumption, inference, conclusion, etc. and such standards as clarity, accuracy, precision, etc.

The definition of media literacy in a broader scope points out a critical interpretation of information on media. According to Mizukosi (1999 cited in Shibata, 2002), media literacy means multiple abilities including an interpretation of media information and an expression of feelings and opinions on these media information. Suzuki (1997 cited in Shibatai 2002) also defines media literacy as critical analysis and evaluation of media in a social context. Similarly, media literacy is defined as intersection of skills, giving people chance to think critically on information through the media such as the internet, newspaper, etc. and to express themselves in a creative way (Ichikawa, 1999 cited in Shibata, 2002). Scheibe and Rogow (2008) also emphasizes that being media literate depends on having skill of questioning, required to be critical thinker. Indah (2016) explains the importance of critical thinking in such a way that media texts have values, goals and point of view which belongs to conceptual framework requiring critical thinking. Worsnop (2004) gives importance to thinking critically on media text to get the meaning of the text by being aware of not only the values of the audience but also the values of texts. The most common word, used for the definition of media literacy is "thinking critically". It can be inferred that media literacy includes critical thinking. In this context, thinking critically in each part of life is an indispensable feature to be media literate. Feuerstein (1999) finds out that primary school students, having trained in terms of media literacy, became capable of thinking critically on TV series and newspaper advertisements. Indah (2016) reveals the difference between trained learners on media literacy and those, lack of media literacy training in terms of the use of higher order of critical thinking. The similar inference are made by Kubey (2002) stating students will have higher order critical thinking skills such as critical interpretation, analysis and evaluation in case they have been trained on media literacy. As identified by Ruggiero (2015), the students become aware of how to apply their critical thinking skills upon watching or reading media messages and texts as a result of specific exercises. The importance of media literacy in support of critical thinking is expressed by Feuerstein (1999) in such a statement "Media literacy aims to develop metacognitive reflective strategies by means of study and critical responses towards the content of the media and its messages." Moreover, it is aimed to "develop students' habits of inquiry and skills of expression they need to be critical thinkers, effective communicators and active citizens in today's world" (Facione, 1990). In a broader scope it can be concluded that these studies are the indicators of the relation between the education with the goals to develop media literacy skills and the development of critical thinking skills. According to Willingham (2019), the means of critical thinking is that "You are thinking critically if (1) your thinking is novel—that is, you aren't simply drawing a conclusion from a memory of a previous situation and (2) your thinking is self-directed—that is, you are not merely executing instructions given by someone else and (3) your thinking is effective—that is, you respect certain conventions that make thinking more likely to yield useful conclusions. These would be conventions like "consider both sides of an issue," and "offer evidence for claims made," and "don't let emotion interfere with reason."

Scheibe and Rogow (2008) explain basic ways to integrate media literacy and critical thinking into any curriculum. One of the ways is to give chance to students to be experienced in observing, critical thinking and perspective taking. According to them, this can be possible through such some instructional practices as (1) asking questions enabling students to think critically about information on media; (2) pointing out the possibility of different interpretation of media messages by people with different points of view; (3) discussing both printed and image or sound based texts on media; (4) enabling students to determine and

make comment on the latent elements of media messages such as the technique used to attract attention, the properties of individuals producing the media text, etc. (5) being model as a teacher presenting how to think critically on media texts. Another way for integration of media literacy and critical thinking into any curriculum is to enable students to search for information about the topic of any media text. Because searching for various information and facts are compulsory to think critically on media messages or texts. The other ways are exemplified as "identifying how students' prior ideas about a topic have been influenced by media messages, using media as a pedagogical tool, identifying sources for erroneous beliefs about a topic, develop an awareness of issues of credibility and perspective, comparing the ways different media present information about a topic, using media as an assessment tool, facilitating the use of various media formats for transfer of opinions, etc." (Scheibe and Rogow, 2008). In similar, media literacy and critical literacy can be integrated into a curriculum in teacher education in such a way that the prospective teachers have a chance to practice thinking critically on media messages, interpreting the latent elements of media messages, following the process of thinking critically, modelled by their teachers and searching for information on the topic of media texts, questioning media messages by regarding such standards as clarity, accuracy, precision, relevance, depth, logic, breadth, significance, fairness, comparing the ways different media present information about a topic, discussing the different points of view of various media texts, analyzing media content in terms of misleading information on media texts. Therefore, it can be concluded that integration of media literacy and critical literacy into any curriculum can take place regarding the instructional points stated above. Moreover, equipped the students with these cognitive skills has become the educational goals from primary education to higher education. Therefore, the need for the integration of media literacy and critical literacy into any curriculum with being linked with any course or without depending on the content of any course has emerged.

Skolverket (2011 cited in Ekvall, 2013) lists the goals of education as equipping the students with such properties as being creative, competent and responsible and developing "their ability to examine facts and relationships critically". That is to say, Skolverket's views on the goals of education point out critical literacy, each individual should have to read and write critically. Luke (2012) defines the aim of critical literacy as criticizing ideologies, cultures, institutions and political systems and he adds that "as a practical approach to curriculum, it melds social, political and cultural debate and discussion with the analysis of how texts and discourses work, where, with what consequences, and in whose interests" (Luke, 2012). According to Comber and Simpson (2001), one of the domains in which critical literacy has been applied to curriculum is media. Moreover, it is offered by Sperry and Baker (2016) to increase students' awareness to critical literacy and teach them how to question media texts and messages critically. They add that questioning, analyzing texts, identifying points of view, making inferences and drawing conclusions are some learning outcomes obtained as a results of students' decoding content-rich texts (Sperry and Baker, 2016) . Media is considered to provide content rich texts written in multiple perspectives. Media products such as newspapers, reflecting their own political ideologies, need to be read critically (Wolk, 2003). Because of widespread use of media in our technological modern society today, Goodman (2005) adds that the ability to analyze, interpret, evaluate, and produce different forms of communication, such as media should be included in the definitions of critical literacy. Moreover, he emphasizes that "the students with their critical literacy skills investigate power relations within the social and historical context of their lived experience and within the broader frame of their mediated culture" (Goodman, 2005). Moreover, being literate depends on students' critical thinking skills and their reading between the lines to find the latent meanings (Tohidian & Khorsandi Taskoh, 2020). From

Kunnath and Jackson's points of view (2019), critical literacy means questioning the purpose and reliability of information, considering with multiple perspectives and taking action. Capturing the latent message, reading between the lines, questioning texts and messages, considering the context in which an information emerges, searching for additional information are possible for the individuals being critical literate (McLeod & Vasinda, 2008). As a result, critical literate students will become capable of interpreting media messages and using different media formats to express themselves.

Despite such an important educational goal, critical literacy is difficult to be integrated into curriculum (Kunnath and Jackson, 2019). Behrman (2006) explains the reason of the difficulty in integration as lack of instructional methods and strategies. According to Goodman (2005), critical literacy can be thought through such instructional practices and principles as teaching multiple literacies, teaching continuous inquiry and teaching reflection. It ıs inferred from Goodman's expressions that learning how to analyze, evaluate, interpret and generate texts in different forms such as oral, visual or textual is possible with the practices with the goals to teach multiple literacies. Another practice, suggested by Goodman (2005), is to have students question about their experiences and the social, cultural and historical conditions of these experiences and how the media represents these conditions and experiences. As a reflective activity, the students should have chance to reflect what the have learned, for example their own media products.

Behar-Horenstein and Niu (2011) emphasize ability to think critically is among higher education goals to build responsible citizens and add that "a society requires individuals to base their judgments and decisions on careful evaluation of evidence". Equipped the individuals with cognitive skills, including media literacy and critical literacy make their adaptation to the modern society easier because of learning how to analyze, interpret, evaluate an information critically based on facts.

Critical thinking and critical literacy are defined as a related concept, including critical reading and the difference in the meanings of these concepts is expressed as "critical thinking is a process, critical reading is an application, and critical literacy is an ability" (Jeong, 2012). To sum up, critical thinking is a process to be followed by both critical and media literate individuals. Namely, with an analogic point of view, critical thinking is an indispensable way to critical literacy and media literacy. These skills are the learning outcomes, aimed to be gained through curriculum in the field of teacher education in Turkey. Both educators and policy makers have emphasized each one should have life skills such as being media literate and critical literate. In the teacher education programs, such elective courses as "media literacy" and "critical and analytical thinking" aim to teach prospective teachers to be media literate and be critical thinker in each part of life and to be aware of the vital importance of such skills. Occurrence of media literacy course in teacher education programs is the evidence of media literacy education in Turkey. Therefore, media literacy becomes a skill, thought in its' own curriculum, not needing to be thought in other courses' curriculum. This shows the importance of media literacy education with its own curriculum in higher education in Turkey. Although there is a consensus on which media literacy is a skill that should be gained through school education, whether it is thought in its' own curriculum or other courses' curriculum is on debate in the world. For example, media literacy is usually taught in the "English" curriculum by teachers of English in Ontario, Canada (Shibata, 2002). That is to say, media education, the aim of which is to develop students' media literacy, is generally taught within the class hours allotted to other courses' curriculum, along with these courses' contents required to be taught. This means the frequency of media education in class depends on the teacher's decision on time allocated to instructional activities on media literacy. This can cause to move away from standardization. Because it is possible

enthusiastic teachers on media literacy separate much more time for teaching media literacy than less eager ones. Therefore, the component skills such as critical literacy and media literacy should be acquired independently from the curriculum of any course. Similar debate has occurred whether critical thinking should be thought in stand-alone subjects or whether it should be thought within any subject or discipline. The emergence of this debate depends on how to interpret critical thinking. While ones defining critical thinking as a generic set of skills associated with reasoning emphasize that critical thinking should be thought independently from any discipline (De Bono, 1973; Ennis 1987; Feuerstein, et all, 1980; Robinson, 2011), others relating critical thinking to any subject or discipline, believe that critical thinking should be thought within any subject or discipline (McPeck, 1981). Moreover, many studies indicate that critical literacy is thought being integrated in any course curriculum (Ekwall, 2013; Jeong, 2012; Park, 2012; Tohidian and Khorsandi Taskoh, 2020).

Considering Goodman's statement "Critical literacy aims to teach students the skills and capacity to read critically at this most developed level—in between the lines and beyond the lines—whether those lines are alphabetic, painted, videotaped, or spoken.", media texts, including different goals, points of view and values with various formats such as oral, written and visual, are appropriate to be thought critically on. Therefore, various media texts and messages were brought to class to be analyzed, evaluated and interpreted critically to develop prospective teachers' not only critical literacy but also media literacy through this study. Within this theoretical framework, the effects of thinking education on the prospective teachers' critical literacy and media literacy is purposed to be determined through both qualitative and quantitative data in this research.

2. Research Method

The study was conducted to determine the effects of thinking education, the course taken by the prospective teachers being trained at Education Faculty, Bartin University. In particular the effects of thinking education on the prospective teachers' such skills as critical literacy and media literacy were aimed to be presented via mixed method. Preference of mixed method is related to the purposes of the research, such as triangulation and complementation. According to Morse, (1991, as cited in Tashakkori & Teddue, 2003) mixed methods are classified as concurrent triangulation and sequential triangulation in terms of the sequence of data collection and the dominance of data sets. In this study sequential triangulation, gathering both qualitative and quantitative data sequentially, is used. Moreover, quantitative data was firstly gathered to give information on the prospective teachers' critical and media literacy skills before and after the research. Then, qualitative data was gathered to explain the phenomenon deeply. The prospective teachers' views on the classroom activities and the results of the activities on their skills were presented with the help of qualitative data. In contrast to other research methods, superiority of mixed method is emphasized by Tashakkori and Teddue (2003) stating the advantages of mixed method such as presenting different views, making strong inferences, answering to research questions not being able to be answered by other research methods.

The study group was selected by the sampling criteria, one of the purposive sampling methods. Voluntary participation in the study and doing the homework and worksheets regularly were the selection criteria of the study group. Therefore, the study was conducted with the participation of 40 social studies prospective teachers, taking selective course "Thinking Education" at Education Faculty, Bartin University during the 2016-2017 academic year. The participants haven't taken any course before, aiming to train students to

get thinking skills. The research was continued during 14 weeks. Weekly research design is presented below:

1st Week: The aim of the course named "Thinking Education" was presented and the participants were informed on the content and instructional methods. Critical Literacy scale and media literacy scale were applied to get quantitative data on the prospective teachers' literacy levels.

2nd and 3rd Weeks: Theoretical information on thinking, thinking process and skills, thinking obstacles were given. Articles on thinking process and skills were examined. They were asked to define critical thinking with their own words. Moreover, their opinions on thinking obstacles and their suggestions on how to overcome these obstacles were taken. The fields in which they can think critically and not were defined.

4rd and 5th Weeks: What is critical reading and how to read and think as regards logic elements was explained. The participants had experiences in reading and thinking as regards logic elements (aims, questions related to subject, assumptions, information, practice and results, concepts, viewpoint, inferences). The researcher became model on how to think on "being academician" in terms of logic elements. The participants were asked to define the effects of this activity on their critical literacy and media literacy.

6th and 7th Weeks: The students were asked to evaluate "thinking education course" in terms of logic elements. Then, they were asked to select any news, published on the newspaper or on the internet and evaluate it in terms of logic elements. Moreover, the news were analyzed in terms of the standards such as accuracy, clearness, logic, importance, relevance, etc.). The participants were asked to define the effects of this activity on their critical literacy and media literacy.

8th Week: The news, presenting an event from different point of views were compared. The students were asked to find such news and compare them in terms of their viewpoint. Then, they shared the news and their evaluation on the news with other participants. The participants were asked to define the effects of this activity on their critical literacy and media literacy through the figure. They chose the figure, symbolizing their critical and media literacy most correctly and explained the reason of their choices.

9 th Week: What is "disinformation" in media was explained and examples of disinformation were examined. The students were asked to give an example of disinformation and analyze it. Then, they shared their examples and their thoughts on the news in terms of disinformation with other participants. The participants were asked to define the effects of this activity on their critical literacy and media literacy.

10th-11thWeeks: The participants were asked to find news, written prejudicially. The news were analyzed in terms of prejudice and perspective. They were asked to write the text again objectively. The participants were asked to define the effects of this activity on their critical literacy and media literacy.

12th -13th Weeks: How to think critically on advertisements was studied. Some advertisements were analyzed. The participants were asked to choose an advertisement to be analyzed. After having analyzed it, they shared their studies with other participants. Therefore, their criteria in analyzing advertisements, their views on advertisement before and after the activity, the effects of the activity on their critical literacy and media literacy were questioned.

14th Week: Thinking education was evaluated by the participants in terms of learning outcomes, instructional methods and the instructional activities. Then, the effects of thinking education on their critical literacy and media literacy were questioned. They made

suggestions on thinking education. At the end of the education critical literacy scale and media literacy scale were applied to get quantitative data on the prospective teachers' literacy levels.

2.1. Data Collection Tools

2.1.1. Quantitative Data

The prospective teachers' media literacy was determined before and after "Thinking Education" with the help of "media literacy scale" developed by Karaman and Karatas (2009). The scale was designed as a 5-category Likert-type scale. The scale was scored as "(1) never", "(2) rarely", "(3) sometimes" "(4) frequently" and "(5) always". Exploratory factor analysis indicates that the scale has a structure of 3 factors consisting of 17 items. The first factor that consists of 7 items is named "having knowledge"; the second factor that consists of 6 items is named "analyzing and giving reaction"; the third factor that consists of 4 items is named "judging and getting an implicit message". Three factors altogether explain 42,5 of the total variance. Cronbach's Alpha of reliability for the whole scale is .840 and the factors' reliability values are.721, .705 and .680 respectively.

Critical Literacy Scale developed by Yilmaz (2013) was applied to the prospective teachers before and after education. The scale designed as a 5-category Likert-type scale was scored as "(1) never", "(2) rarely", "(3) sometimes" "(4) frequently" and "(5) always". Exploratory factor analysis indicates that the scale has a structure of 2 factors consisting of 14 items. The first factor, consisting of 7 items, is named as "critical reading"; the second factor, composed of 7 items is named as "critical writing". Two factors altogether explain 50,937 of the total variances. Cronbach's alpha of reliability for the whole scale is .82, and Cronbach's alphas for the scale's factors are .76 and .71 respectively, indicating the scale's reliability.

2.1.2. Qualitative Data

Journals, including open-ended questions, were collected from the prospective teachers during 14-week research. Journals, in which the questions were asked to get knowledge on the prospective teachers' media and critical literacy, were gathered before and after "Thinking Education". Moreover, the data about the effects of each instructional activity on the prospective teachers' both critical and media literacy were gathered after each instructional activity through journals. The prospective teachers also evaluated their critical literacy and media literacy both at the beginning and at the end. Moreover, the prospective teachers' general evaluation on each instructional activity (goals and objectives gained after an activity, instructional methods, etc.); the effects of an activity on their critical and media literacy; the problems, encountered in an activity; suggestions on how to overcome the problems were emphasized through journals. These types of questions were asked at the end of each instructional activity. Therefore, journals were expected to show the prospective teachers' improvement in media literacy and critical literacy from first to last. The questions in the journals were evaluated by an expert, a professor in the department of curriculum and instruction studying on critical thinking, in terms of such criteria as understandability, clearness, content validity, number of question, etc.

2.2. Data Analysis

SPSS 22 program was used to analyze quantitative data. Pre and post-test mean scores gained from both critical literacy scale and media literacy scale were tested to indicate whether there is any statistically meaningful difference in the prospective teachers' critical and media literacy level before and after thinking education. Paired sample t test was applied to determine whether there was a statistically significant difference in pre-test and post-test scores gained from critical literacy scale. The same process was followed for analysis of the

quantitative data obtained from media literacy scale. Paired sample t test was applied to present whether difference between pre and post-test scores of critical literacy occurred or not.

The qualitative data was analyzed through content analysis method in seven phases. (i) Organizing the data, (ii) immersion in the data, (iii) generating categories and themes, (iv) coding the data, (v) offering interpretations through analytic memos, (vii) searching for alternative understandings and (viii) writing the report for presenting the study. The data were reread and notes were taken to organize data. The data were also organized according to what was gathered and when, where, how, from whom the data were gathered. Then, Schemas for recording data were used to manage data and guard against losing the findings. Categories and themes were generated. Then, the data were coded. Generated themes and codes were interpreted. In other words, interpretation means making sense of the findings, drawing conclusions and making inferences. Then, all generated codes and themes were searched for alternative understandings again.

2.3. Reliability and Validity Studies

The prospective teachers' voluntarily participation in the research and their responsible behaviors in keeping journals during the research are the factors, providing internal validity of the study. Moreover, statistical analysis of data collection tools such as Cronbach's Alpha Reliability values and exploratory factor analysis findings, supports reliability and validity of the study. The course syllabus was designed by both researcher and a professor studying on how to design critical thinking activities and they together instructed the prospective teachers. The course and the data gathered after each instructional activity were evaluated at each week. Reformation on the following instructional activities was done regarding these evaluations.

Strategies to provide internal validity for qualitative side of the research were external audits, rich explanations, a set of evidence and triangulation. (Creswell, 2003). In this sense, detailed description of instructional process, presenting findings together with quotations, gathering both qualitative and quantitative data to explain the findings in detail are the strategies for the internal validity of the study. In addition, themes, codes and qualitative data together were reviewed by an expert and the reliability of coding was proved by Miles and Huberman's reliability formula (1994) [Reliability=Agreement/(Agreement+Disagreement)]. Also, agreement score was found as 94.5 The calculated intercoded reliability are thought to prove the internal validity of the study.

3. Findings

3.1. Findings of Quantitative Data

The results of paired samples t-test for determining whether pre and post-test mean scores for media literacy differed statistically or not are presented in Table 1.

Table 1. *Comparison of Pre and Post Test Scores for Media Literacy: Paired Samples T-Test Results*

	Factors	Test Time	n	Paired Samples Correlations		Mean	sd	df	t	p
				Correlation	p					
Media Literacy	Having Knowledge	Pre-test	38	,244	,140	29,57	3,19	37	2,835	,007
		Post-test	38			36,46	15,44			
	Analyzing and Giving Reaction	Pre-test	38	,262	,112	24,76	9,29	37	1,818	.077
		Post-test	38			29,06	13,95			
	Judging an Implicit Message	Pre-test	38	,376	,020	14,89	2,54	37	4,390	.00
		Post-test	38			16,81	2,25			
	The Whole Scale	Pre-test	38	,276	,094	69,22	11,82	37	3,543	.001
		Post-test	38			82,33	23,04			

Note. p<.05

The difference between pre-test and post-test mean scores gotten from media literacy scale was observed statistically (t37 =3,543; p=.001). Pre-test mean score for media literacy was calculated to be 69,22 with a standard deviation of 11,82; post-test mean score was 82,33 with a standard deviation of 23,04. Moreover, pretest mean scores for such factors of the scale as "having knowledge" and "judging and getting an implicit message" differs from post-test mean scores statically (t37 =2,835, p=.007; t37 =2,835, p=.00). For the first factor named "Having Knowledge", pre-test mean score was calculated as 29,57 with a standard deviation of 3,19; post-test mean score was 36,46 with a standard deviation of 15,44. That pre-test mean score on the factor of "judging and getting an implicit message" was higher than post-test mean score proves the statistical difference between the test scores. It can be inferred from these findings that the prospective teachers' post-test media literacy scores have increased compared to their pre-test scores. Furthermore, their post-test mean scores have increased in having knowledge, judging and getting an implicit message. It was also observed that pre and post-test scores of the second factor, informing how the prospective teachers can analyze and give reactions, didn't differ statistically. Compared to second factor named "Judging and Getting an Implicit Message", there isn't any statistically meaningful correlation between pre and post-test scores.

The findings on the difference of pre and post-test mean scores for critical literacy, attained through paired samples t test, are presented in Table 2.

Table 2. *Comparison of Pre and Post-Test Scores for Critical Literacy: Paired Samples T-Test Results*

	Factors	Test Time	n	Paired Samples Correlations		Mean	sd	df	t	p
				Correlation	p					
Critical Literacy	Critical Reading	Pre-test	38	,212	,202	26,59	2,81	37	2,464	,019
		Post-test	38			31,39	12,29			
	Critical Writing	Pre-test	38	-,033	,846	25,32	5,73	37	2,256	,030
		Post-test	38			25,32	16,40			
	The Whole Scale	Pre-test	38	,036	,831	51,91	6,87	37	3,275	,002
		Post-test	38			63,14	20,23			

Note. p<.05

Upon viewing Table 2, a statistically significant difference is observed between pre and post-test mean scores for critical literacy (t37 =3,275; p=.002). While pre-test mean score for

critical literacy was calculated to be 51,91 with a standard deviation of 6,87; post-test mean score was 63,14 with a standard deviation of 20,23. Pre-test mean score for critical reading was calculated as 26,59 with a standard deviation of 2,81 and post-test mean score for critical reading was 31,39 with a standard deviation of 12,29. Thus, it is proven that pre-test mean scores for critical reading differed from posttest mean scores statistically. The similar findings were observed for critical writing. In a short, pre-test mean scores for both critical reading and writing differed from post-test mean scores statistically. Moreover, these findings are supported with the correlation values between pretest and post-test mean scores for both critical writing and reading.

3.2. Findings of Qualitative Data

The results of qualitative data analysis on learning outcomes of thinking education are presented in Table 3.

Table 3. *The Results of Qualitative Data Analysis on Learning Outcomes of Thinking Education*

Themes		Codes	Frequency (f)
Learning Outcomes	Knowledge	Realizing that media messages can be biased	3
		Realizing that an event or situation may have hidden causes	3
		Understanding what thinking means	2
		Knowledge of thinking skills	1
		Understanding what media literacy means	1
		Understanding what critical literacy means	1
	Affective Features	Having positive attitudes towards the course because of an interactive learning environment	4
		Avoiding from making a judgement with lack of knowledge	3
		Having positive attitudes towards making research	3
		Believing improvable thinking skill through education	1
		Accepting the importance of listening	1
		Opposing the acceptance of information without being questioned	1
		Recognizing the importance of moving away from prejudices	1
		Caring about different thoughts	1
	Skills	Critical thinking	28
		Questioning media messages	9
		Questioning social media messages	4
		Being objective	3
		Reseach skills	3
		Emphathy	3
		Cooperation	2
		Creative thinking	2
		Awareness of the thinking process	1

When Table 3 is examined, it is seen that the learning outcomes are defined under the themes which are knowledge, affective features and skills. Under the theme knowledge; the most frequently expressed codes are *"realizing that media messages can be biased"* (f=3) and "*realizing that media messages as well as events or situations may have hidden causes''* (f=3). Some of the opinions of the participants about affective features include *''having positive attitudes towards the course because of an interactive learning environment''* (f=4); *''avoiding from making a judgement with lack of knowledge"* (f=3) and *''having positive attitudes towards making research''* (f=3). In addition, it is clear that ‘*''critical thinking*

skills'' (f=28) is the most expressed code by the participants under the theme skills. The following excerpts are related to the themes and codes above.

> *''My ability to evaluate circumstances from a different point of view, empathize, think critically and distinguish my feelings and logic has increased.''* (prospective teacher 18)
>
> *''After class, I really find out that thinking can be taught and I am unprejudiced about thinking education now.''* (prospective teacher 8)
>
> *''I am more critical of the news or advertisement texts I encounter on TV or social networking sites.''*(prospective teacher 11)
>
> *''While I was reading a text in this course, I realized that I had to think thoroughly. I have learned to empathize and think by considering different feelings and thoughts. I think I have gained critical thinking skills. First of all, I start giving importance to be knowledgeable.''* (prospective teacher 7)
>
> *''I have realized what thinking is. I have learned that purposeful thinking is real thinking and everything we watch in media is not true. Now, I am able to discover the message in advertisements of companies branded with advertising analysis. Also, I question the reliability of the products.''* (prospective teacher 1)

The qualitative data analysis results related to the positive effects of thinking education on the prospective teachers' critical literacy are presented in Table 4.

Table 4. *The Effects of Thinking Education on the Prospective Teachers' Critical Literacy: Qualitative Data Analysis Results*

Themes			**Codes**	**f**
Positive Effect	**Critical Literacy**	**Feature**	Questioning everytime	13
			Being a researcher	6
			Doubting the accuracy of the information	5
			Examine any text from different perspectives	5
			Using different sources of information	1
		Transferability	Being a critical thinker in all areas of life	3
		Affective Feature	Gaining critical literacy awareness	18
			Understanding the importance of critical literacy	3
		Media Literacy	Thinking on media messages critically	12
			Analyzing media messages in detail	10
			Noticing the implicit media messages	7

When Table 4 is analyzed, it is seen that thinking education has a positive effect on the prospective teachers' critical literacy. The participants state that thinking education affects them under the theme feature in terms of *"questioning everytime"* (f=13); *"being a researcher"* (f=6); *"doubting the accuracy of the information"* (f=5); *"examining any text from different perspectives*" (f=5) and '*'using different sources of information''* (f=1). In addition, they are of the opinion that as a critical thinker in all areas of life they have the ability to transfer the acquired critical thinking skills into daily life under the theme transferability. It is evident that they acquire positive features related to critical literacy such as *"gaining critical literacy awareness"* (f=18) and *"understanding the importance of critical literacy"* (f=3) under the theme affective feature. It is found out that the participants gain some skills under the theme media literacy such as *"thinking on media messages critically"* (f=12); *"analyzing media messages in detail"* (f=10) *and "noticing the implicit media messages*" (f =7). It is concluded that thinking education course contributes to the participants' media literacy level. Direct quotations on these themes and codes are given below.

''Although I used to get the information without questioning and thinking enough, now, I think more critically thanks to the activities in this course.'' (prospective teacher 23)

''The ad analysis, activities and assignments we have done in the course have improved my critical perspective by enabling me to be more inquisitive to events, situations and advertisements, to learn the actual reasons of events, and to find out positive and negative aspects of ads and events.'' (prospective teacher 26)

''I used to read the news superficially and unquestioningly, but now I evaluate the news, events and texts in terms of some criteria. I make comments and inferences by examining the accuracy, importance and reliability of the news within the framework of logic components.'' (prospective teacher 3)

''I care about accessing different sources. Questioning information presented from different perspectives from different sources has increased my critical literacy.''(prospective teacher 7)

''I learned what critical literacy is and why it is necessary. I can easily use these skills in my life.'' (prospective teacher 18)

''I have realized that critical literacy is important in my life. I constantly encounter news and new information in my daily life. I accepted new information without questioning before taking this course. After this course, I have started thinking systematically. I have learned how to become a critical literate.'' (prospective teacher 21)

The qualitative data analysis results related to the positive effects of thinking education on the prospective teachers' media literacy are presented in Table 5.

Table 5. *The Effects of Thinking Education on the Prospective Teachers' Media Literacy: Qualitative Data Analysis Results*

	Themes		Codes	f
Positive Effect	**Media Literacy**	Critical thinking	Questioning media messages	17
			Noticing the implicit media messages	2
			Examining media messages from different perspectives	2
		Affective Feature	Awareness of being a media literate	13
		Objectivity	Discovering bias of media messages (ideology, etc.)	7
			Reading media messages objectively	3
		Access to Information Sources	Evaluating media messages using different sources of information	5
			Being a researcher	1
		Theoretical Knowledge	Having theoretical knowledge about media messages analysis	3

According to Table 5, it is understood that the effects of thinking education on the prospective teachers' media literacy are positive. The participants state their opinions related to their improvement in media literacy under the theme critical thinking and affective feature as follows respectively; *''questioning media messages''* (f=17); *''noticing the implicit media messages''* (f=2); *''examining media messages from different perspectives''* (f=2) and *''awareness of being a media literate'' (f=13). The codes under the theme objectivity are ''discovering bias of media messages''* (f=7) and *''reading media messages objectively''* (f=3). The participants' opinions under the theme access to information sources and theoretical knowledge include *''evaluating media messages using different sources of information''* (f=5); *''bei*ng a researcher'' (f=1) and ''having theoretical knowledge about

media messages analysis'' (f=3). Below are some responses of the participants regarding the themes and codes above.

> *''I had a superficial perspective while following media. After the course, I'm more concerned with the authenticity of the text in media. While I was at the stage of conducting ideas from a single source, now I have learned that evaluation of opinions from different sources is necessary.''* (prospective teacher 2)
>
> *''Thinking education course has enabled us to evaluate news, ads etc. from a more in-depth and questioning perspective.''* (prospective teacher 23)
>
> *''I realize that I can not read, watch, and understand media and I can not notice the implicit media messages.''* (prospective teacher 24)
>
> *''I find out that I should not believe ads blindly. I learn to question the accuracy of them.'' (prospective teacher 26)*
>
> *''I hardly knew the systematic conceptual and theoretical information I needed for media literacy. Thanks to this course, I learn how to become a conscious media literate and I can use it in my life.''* (prospective teacher 5)
>
> *''I do not believe in every news in media, I do a deep research and evaluate it within the context of logic components.''* (prospective teacher 9)

The results of quantitative data analysis on why thinking education is recommended by the prospective teachers is presented in Table 6.

Table 6. *The Results of Quantitative Data Analysis on Why Thinking Education is Recommended*

Themes			**Codes**	**f**
Reasons for Recommendation	Learning and Teaching Process		Use of instructional methods and Techniques (discussion, brainstroming, case study, etc.)	5
			Interactive participation	2
			Analysis of case studies	2
			Homeworks facilitating learning	1
	Learning Outcomes	Knowledge	Discovering thinking skills	2
		Skill	Being a critical literate	9
			Considering different perspectives	7
			To obtain questioning skills	6
			Being a media literate	3
		Affective Feature	Positive attitude towards thinking education (usefulness, necessity, motivation, etc.)	14
			Awareness	3
			Objectivitiy	2
			Research awareness	2
			Being curious	1
	Transferability		Transfering to daily life	4

According to Table 6, it is clear that all of the prospective teachers make recommendations for taking the thinking education course. *''Learning and teaching process'', 'knowledge'', ''skill'', ''affective features''* and *''transferability''* are the themes that emerged regarding the recommendations of thinking education. Under the theme learning and teaching process, the reasons of the participants to recommend thinking education course include *''use of instructional methods and techniques''* (f=5); *''interactive participation''* (f=2); *''analysis of case studies''* (f=2) and *''homeworks facilitating learning''* (f=1). The most frequently produced codes under the themes knowledge and skill are as follows respectively; *''discovering thinking skills''* (f=2); *''being a critical literate''*

(f=9) and ‘*’considering different perspectives’’* (f=7). Contributions of thinking education are expressed by the codes under the theme affective features such as ‘*’positive attitude towards thinking education’’* (f=14) and *’’awareness’’* (f=3).*‘’Transferring to daily life’’* (f=4) is the only code under the theme transferability. The opinions of the participants in this regard are as following:

> *‘’I suggest that all of my friends should take the thinking education course as it allows me to think more, think consciously, question, and evaluate critically.’’* (prospective teacher *26)*
>
> *‘’This course positively adds value to my worldview and increase my awareness level in response to events.’’* (prospective teacher 11)
>
> *‘’It is a necessary course to develop thinking skills. In addition, it is a course that allows to gain thinking skills by getting rid of stereotypes and routine perspectives.’’* (prospective teacher 5)
>
> *‘’It was interesting to do critical thinking studies on news and ad texts. I think everyone should experience this.’’* (prospective teacher 7)

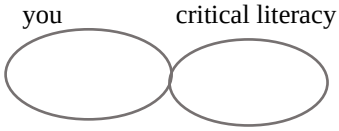
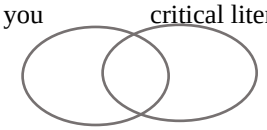
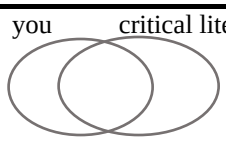
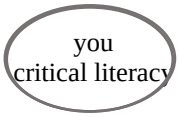
It is observed that the prospective teachers define their critical literacy levels by using negative adjectives before thinking education. The produced adjectives provide information regarding the prospective teachers' thinking actions, ways of thinking and competency levels. Before thinking education, the prospective teachers produce adjectives which emphasize that they are not competent in critical thinking and questioning. Some of these adjectives are *“not thinking”, “not questioning”, “not researching”, “not criticizing”* and *“superficial”.* It is seen that the prospective teachers produce adjectives that describe their critical literacy levels as beginner, weak, inadequate, limited, few, etc. These adjectives mean that they are not competent to be critical literate. In addition, the prospective teachers define their critical literacy levels by using some adjectives such as stereotype, narrow-minded, simple, biased and non-objective. After thinking education, it is observed that they define their critical literacy levels by using positive adjectives. They define critical thinking processes by using some adjectives such as *criticizing, questioning, researching, thinking, examining*, etc. In addition, it is understood from the adjectives used by the prospective teachers that their critical literacy competency perceptions have increased. Some of these adjectives are *adequate, active, skillful, very, strong, advanced,* etc. Also, it is clear that the prospective teachers define their critical literacy as *neutral, deep thinking, different perspectives, objective, realistic* and *detailed.* These adjectives emphasize the depth and neutrality of the prospective teachers related to thinking education.

It is observed that the prospective teachers define their media literacy levels by using negative adjectives that symbolize their thinking actions, thinking types, competency levels and attitudes before thinking education. It is seen that adjectives used show that they do not have thinking skills before thinking education. For instance, *not questioning, not researching, not examining, not thinking,* etc. among these adjectives. It is seen that the prospective teachers produce adjectives that describe their media literacy levels as beginner, weak, inadequate, limited, few, etc. These adjectives mean that they are not competent to be media *literate.* Adjectives produced in this context are *biased, subjective, narrow-minded* and superficial. It is understood from the adjectives produced before thinking education that the importance of media literacy is questioned. These adjectives are *unplanned, aimless, random, unnecessary, careless,* etc. After thinking education, it is clear that some thinking skills such as criticism, scrutiny, inference, comparison, etc. are acquired. The adjectives produced by the prospective teachers are *researching, questioning, criticizing, deducing, comparing, discussing*, etc. It is understood from these adjectives that they develop positive competence

perceptions regarding media literacy after education. The prospective teachers define their media literacy as *objective and in-depth*, which means that media literacy contributes them to be objective and adopt a deep-thinking approach. It is concluded that, after thinking education, adjectives emphasizing the importance of media literacy and the desire to be media literate are produced by the prospective teachers. These are *necessary, important, purposeful, caring, willing to think*, etc.

The qualitative data analysis results related to figures symbolizing the prospective teachers' self-efficacy on critical literacy after thinking education are presented in Table 7.

Table 7. *Qualitative Data Analysis Results of Figures: Symbolizing the Prospective Teachers' Self-efficacy on Critical Literacy*

Theme		Codes	Frequency (f)
Figure A (f=1)		Not needing	1
Figure B (f=8)		Need for different experiences	4
		First experience	2
		Need for specialization	1
		Not being knowledgeable enough	1
		Habits	1
Figure C (f=9)		Being critical	2
		Concept knowledge	1
		Being able to solve problem	1
		Evidence search	1
Figure D (f=20)		Obtaining critical literate identity	10
		Learning how to read critically	7
		Content knowledge	2
		Getting experience	2
		Reinforcement of Information	1
		Gaining self-confidence	1
		Independence from prejudices	1
		Having a positive attitude	1

When Table 7 is analyzed, most of the prospective teachers (f =20) stated that the figure that symbolizes their critical literacy level is "D" after the course. Figure 'D' emphasizes the intersection of the participants' competencies and critical literacy. It is understood that the participants who chooses this figure consider themselves completely competent in terms of critical thinking. The reasons for choosing this figure include *"obtaining critical literate identity"* (f = 10); *"learning how to read critically''* (f=7); "*content knowledge*" (f=2); *"getting experience"* (f=2); *"reinforcement of information"* (f=1); "*gaining self-confidence"* (f=1); *"independence from prejudices"* (f=1) and '*'having a positive attitude"* (f=1).

Secondly, the participants (f=9) choose the figure 'C' that symbolizes their critical literacy level. Figure 'C' symbolizes the intersection of the participants' competencies and critical literacy. It is understood that the participants who chooses this figure consider themselves competent in terms of critical thinking. The reasons for choosing this figure include "*being critical"* (f=4); *"concept knowledge"* (f =1); *"being able to solve problem"* (f =1) and *''evidence search''* (f=1).

The participants (f=8) choose figure 'B' that symbolizes their partial critical literacy. Figure 'B' symbolizes the partial intersection of the participants' competencies and critical literacy. The reasons for choosing this figure include *''need for different experiences''* (f=4); *"first e*xperience'' (f=2); ''need for specialization'' (f=1); ''not being knowledgeable enough'' (f=1) and *''habits''* (f=1). Below are some responses from different participants.

> *''While figure A symbolizes me before the course, figure C symbolizes me better after the course. Now, I question what I read by getting rid of prejudices.'' (prospective teacher 16)*

> *''Figure B symbolizes me, because I'm just learning and experiencing critical literacy. I believe I will improve myself in time.''* (prospective teacher 27)

> *''Figure B is suitable for me, because I think that I am a critical thinker thanks to the activities in thinking education course. However, there are still situations where we are affected by our environment. We cannot be sufficiently a critical literate because of our upbringing.''* (prospective teacher 24)

> *''Figure D symbolizes me. Critical literacy has became a part of my life after this course. I can be a critical literate in every area of my life with the concepts I have learned.'' (*prospective teacher 21)

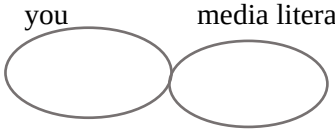
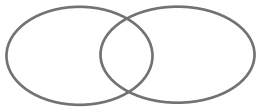
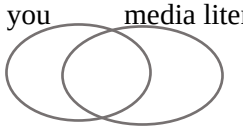
> *''Figure D symbolizes me. I was interested in this subject and tried to improve myself in the past. I have gained necessary systematic information on this subject thanks to this course and I have learned critical thinking to the full. This skill is reinforced by different activities during the course.''* (prospective teacher 5)

> *''Figure C symbolizes me. I think that I have learned to be a critical literate after this course. Now, I examine what I read in more detail. I care about making inferences by accessing different sources.''* (prospective teacher 7)

> *''Figure D has become a phenomenon that constitutes my critical thinking self after taking the course.''* (prospective teacher 3)

The qualitative data analysis results related to figures symbolizing the prospective teachers' self-efficacy on media literacy after thinking education are presented in Table 8.

Table 8. *Qualitative data Analysis Results of Figures: Symbolizing the Prospective Teachers' self-efficacy on Media Literacy After Thinking Education*

Theme		Codes	Frequency (f)
Figure A (f=1)		Not needing	1
Figure B (f=3)		Need for specialization	1
		Need for experience	1
		Carefully review media messages	1
Figure C (f=13)		Questioning	5
		Discovering the bias of the media	3
		Being curious	1
		Media literacy awareness	3
Figure D (f=17)		Obtaining media literacy identity	6
		Gaining self-confidence	1
		Researching for media resources	3
		Questioning	3
		Observing different perspectives	1
		Following media	1
		Having experiences	1
		Need	1
		Noticing media meassages	1
		Being critical	1
		Continuous interaction with the media	1

According to Table 8, it is seen that the prospective teachers express their media literacy levels with figure ''C'' (f=13) and figure ''D'' (f =17) after the course. Figure ''D'' emphasizes the complete intersection of the participants' competencies and media literacy. Figure ''C'' symbolizes this intersection to a great extent. In this context, it can be thought that media literacy competency perceptions of the participants who choose figure 'C' and 'D' are high. The reasons for choosing figure ''D'' include *''obtaining media literacy identity''* (f=6); '*'researching for media* resources'' (f=3); *''questioning''* (f=3); '*'gaining self-confidence''* (f=1); '*'observing different perspectives''* (f=1); '*'following media''* (f=1); '*'having experiences''* (f=1); *''need''* (f=1); '*'noticing media messages''* (f=1); '*'being critical''* (f=1) and *''continuous interaction with the media''* (f=1). The reasons for choosing figure ''C'' include *''questioning''* (f=5); '*'discovering the bias of the media''* (f=3); '*'media literacy awareness''* (f=3) and '*'being curious''* (f=1). The participants (f=?) choose figure 'B' that symbolizes their partial critical literacy. Figure 'B' emphasizes the partial intersection of the participants' competencies and media literacy. The reasons for choosing figure ''B'' include *''need for specialization''* (f=1); '*'need for experience''* (f=1) and *''carefully review media messages''* (f=1). In this regard, the opinions of the participants are reflected by the following comments:

> *''Figure B symbolizes me. I try to examine the news in media by accessing information sources from now on.'' (prospective teacher 26)*

> *''I choose Figure D. I can notice the implicit media messages.'' (prospective teacher 30)*

''Figure B symbolizes me. I cannot see myself fully enough. However, my perspective has changed positively compared to before I took the course.'' (prospective teacher 7)

''Figure D symbolizes me. I review media from a questioning perspective. I access different sources before believing in news.'' (prospective teacher 10)

''Figure D symbolizes me. I evaluate news in media in a critical approach.'' (prospective teacher 35)

''Figure C symbolizes me. I think I am a better media literate than before.'' (prospective teacher 25)

''Figure D symbolizes me. I read a lot of news and try to follow media. I do not accept every new information without questioning. Thanks to this course, I actually discover how this questioning process works. I also learn to think within the framework of logic components and standards.'' (prospective teacher 21)

Critical and media literacy self-evaluation results of the prospective teachers after media message reading and evaluation activity are presented in Table 9.

Table 9. *Critical and Media Literacy Self Evaluation Results After Media Message Reading and Evaluation Activity*

Themes		**Codes**	**Frequency (f)**
Competency Perception on Media and Critical Literacy	Very competent or competent (18)	Following different media sources	7
		Learning how to question media messages	7
		Discovering the bias of media messages	5
		Making inferences	3
		Evaluating as regards logic components	3
		Being objective	2
		Getting rid of prejudices	1
		Being curious	1
		Being researcher	1
	Partially competent (6)	Influence of belief / value / ideologies	2
		Media bias	2
		Lack of knowledge	1
		Striking media messages	1
	Not competent (6)	Biased media mesaages	2
		Not following media	1
		Ideological commitment	1
		Education system as an obstacle	1
		Lack of knowledge/not researching	1

When Table 9 is examined, it is clear that the participants generally find themselves competent in terms of critical and media literacy in the process of examining and analyzing media messages. Indicators of their competences are defined by the codes under the theme very competent or competent which include "*following different media sources''* (f=7); *''learning how to question media messages''* (f=7); *''discovering the bias of media messages''* (f=5); '*'making inferences''* (f=3); *''evaluating as regards logic components''* (f=3); ''being objective'' (f=2); '*'getting rid of prejudices''* (f=1); '*'being curious''* (f=1) and *''being researcher''* (f=1). The participants consider themselves partially competent in terms of critical and media literacy because of some factors such as '*'influence of belief/value/ ideologies''* (f=2); '*'media bias''* (f=2); '*'lack of knowledge''* (f=1) and '*'striking media messages''* (f=1) which are the codes expressed under the theme partially competent. In addition, the reasons why they do not consider themselves competent are explained by the

codes under the theme not competent which are *"biased media messages*" (f=2); *"not following media"* (f=1); "*ideological commitment*" (f=1); "*education system as an obstacle"* (f=1) and "*lack of knowledge/not researching*" (f =1). Direct quotations of the participants are as follows:

> *''…While watching or listening to media, I try to question events from different perspectives as much as possible.''(prospective teacher 33)*

> *''I follow written and visual media. I access and evaluate different sources to understand the accuracy of information.'' (prospective teacher 19)*

Qualitative data analysis results on the effect of ad analysis on media and critical literacy are presented in Table 10.

Table 10. *Qualitative Data Analysis Results on The Effect of Ad Analysis on Media and Critical Literacy*

	Themes	Codes	Frequency (f)
Positive Effect	Critical Literacy	Questioning	15
		Critical thinking	10
		Reviewing ads with different perspectives	2
		Researcher identity	1
		Understanding hidden message of advertisements	5
		Questioning the purpose of the advertising elements	1
		Accessing information sources	1
		Incident, situation, etc. analysis with logic components	1
	Media Literacy	Understanding hidden message of advertisements	10
		Questioning messages of advertisements	9
		Being a media literate	8
		Change in ads perception	5
		Paying attention to ads messages	5
		Having experience in ads analysis	4
		Analyzing ads regarding criteria	4
		Exploring the purpose of advertising elements	2
		Reviewing ads with different perspectives	2

The qualitative analysis results in Table 10 show that the participants' ad analysis experiences positively affect their critical and media literacy. The positive contribution of ad analysis to critical literacy of the participants is explained by some codes. These codes show the participants' competences in terms of critical literacy after ad analysis. The most frequently expressed codes under the theme critical literacy include '*'questioning''* (f=15); *''critical thinking''* (f=10); '*'understanding hidden message of advertisements''* (f=5) and '' reviewing ads with different perspectives'' (f=2). Other codes are as follows; '*'researcher identity'* (f=1); '*'questioning the purpose of the advertising elements''* (f=1); '*'accessing information sources''* (f=1) and '*'incident, situation, etc. analysis with logic components''* (f=1). The codes under the theme media literacy showing positive contribution of ad analysis to the media literacy of the participants include *''understanding hidden message of advertisements''* (f=10); '*'questioning messages of advertisements''*(f=9); '*'being a media literate*" (f=8); '*'change in ads perception''* (f=5); '*'paying attention to ads messages''* (f=5); *''having experience in ads analysis''* (f=4); '*'analyzing ads regarding criteria''* (f=4); '*'exploring the purpose of advertising elements''* (f=2) and '*'reviewing ads with different perspectives"* (f=2). The following excerpts are related to these themes and codes.

> *''From now on, I can evaluate the ads from a critical perspective. I am aware of the fact that each ad has a purpose and includes hidden messages for this purpose. I realize that*

the use of the features such as color, light etc. is related to the purpose of ad.''(prospective teacher 18)

''Advertising is the most important message tool for the promotion of a product. Experiencing ad analysis has had a positive impact on media and critical literacy. I have gained different perspectives. I realize that I need to review information more critically and have knowledge about subject thanks to ad analysis. Thus, I have become a real researcher.'' (prospective teacher 2)

''Ads that have not caught my attention interest me now. I think my media literacy has improved as I make ad analysis.'' (prospective teacher 27)

''I have gained the ability to think consciously and I often practice what I have learned during thinking education course.'' (prospective teacher 16)

''I have started thinking more comprehensively and systematically. I am more conscious while thinking.'' (prospective teacher 25)

''After education, I evaluate by using different thoughts and resources and taking into account different points of view within the criteria such as accuracy, consistency, etc..'' (prospective teacher 22)

Qualitative data analysis results on evaluation of thinking education regarding logic elements are presented in Table 11.

Table 11. *Qualitative Data Analysis Results on Evaluation of Thinking Education Regarding Logic Elements*

Logic Elements	Themes	Codes	Frequency (f)
Views on the purpose of thinking education	Awareness	Awareness of thinking ways	5
		Understanding what thinking means	4
		Needing to think	3
		Awareness of learning ability of critical thinking	2
	Skill	Gaining critical thinking skill	13
		Questioning the knowledge	2
		Focusing on research	2
		Thinking skills with logic components	2
		Caring for different perspectives	2
	Personal Development	Providing personal development in thinking skills	4
Assumptions about Thinking Education		Developing a positive attitude towards the course	6
		Learning to think	4
		Acquiring thinking skills	2
		Providing personel development	1
		Learning environment encouraging thinking	1
		Getting different perspectives	1
		Self evaluation on thinking skills	1
		Transfering thinking skills to life	1
Process and Results	Learning and Teaching Process	Question and answer	4
		Brainstorming	4
		Six thinking hats	1
		Snowball technique	1
		Concept map	1
		Technology assisted instruction	1
		Case study	1
	Results	Encouraging critical thinking	8
		Encouraging to question	4
		Observing different perspectives	4
		Associating	1

	Making a synthesis	1
	Evaluation	1
	Making inference based on research	1
	Transfering critical thinking to life	1
	Analyzing with logic components	1
	Understanding what thinking means	1
Possible Perspectives on thinking education	Being necessary	4
	Being useful	4
	Development of thinking skills	3
	Being effective	2
	Transferability to life	1
	Personel Development	1
	Being unnecessary	1
Inferences	Positive attitude towards thinking education	7
	Acquiring critical thinking skills	6
	Acquiring creative thinking skills	3
	Awareness of what thinking is and how it happens	3
	Experiencing thinking	2
	Acquiring reflective thinking skills	1
	Transferring thinking skills to life	1

According to Table 11, it is evident that the participants evaluate the thinking education course within the logic components which are views on the purpose of thinking education, assumptions about thinking education, process and results, possible perspectives on thinking education and inferences. Views on the purpose of thinking education is defined by the themes which are awareness, skill and personal development. ‘*’’Awareness of thinking ways*’’ (f=5); ‘*’’understanding what thinking means’’* (f=4); ‘*’’needing to think’’* (f=3); ‘*’’awareness of learning ability of critical thinking’’* (f=2) are the codes defined under the theme awareness. The most frequently expressed code under the theme skill is ‘*’’gaining critical thinking skill’’* (f=13) “*Providing personal development in thinking skills’’* (f=4) as the only code under the theme personal development. The most frequently expressed codes related to assumptions about thinking education are *’’developing a positive attitude towards the course’’* (f=6); ‘*’’learning to think’’* (f=4) and ‘*’’acquiring thinking skills’’* (f=2). Process and results is defined by the themes which are learning and teaching process and results. *’’Question and answer’’* (f=4) and ‘*’’brainstorming*’’(f=4) are the most frequently expressed codes under the theme learning and teaching process. *’’Encouraging critical thinking’’* (f=8); *’’encouraging to question’’* (f=4) and ‘*’’observing different perspectives*’’ (f=4) are the most frequently expressed codes under the theme results. The most frequently expressed codes related to possible perspectives on thinking education are *’’being necessary’’* (f=4); ‘*’’being useful’’* (f*=4) and ’’development of thinking skills’’ (f=3).* ‘’Positive attitude towards thinking education’’ (f=7) and ‘*’’acquiring critical thinking skills’’* (f=6) are the most frequently expressed codes related to inferences. Direct quotations from the participants on these themes and codes are given below.

> *’’…Thinking education is a necessary and useful course…’’(prospective teacher 1)*

> *’’This course has contributed to my personal development. Also, it has made me gain a different point of view.’’ (prospective teacher 6)*

> *’’My purpose of taking the course is the same with the purpose of the thinking education course. The aim of the course is to raise individuals who think critically and create awareness. My aim is to gain different perspectives and develop myself intellectually.’’ (prospective teacher 8)*

''Thinking education leads one to think deeply and in detail. I believe in the importance of thinking education.'' (prospective teacher 9)

''Thinking education has contributed to the development of my thinking skills. It helps me to think purposefully and to make in depth analysis by questioning.'' (prospective teacher 16)

''Experiencing critical thinking constantly and making evaluations based on our experiences have contributed to our ability to gain critical thinking. I think that thinking from different perspectives broadens our horizons.'' (prospective teacher 17)

4. Conclusion and Discussion

What is concluded in the research is expressed below and the findings are discussed in the context of the literature. It can be inferred from the findings on media literacy that the prospective teachers' post-test media literacy scores have increased after thinking education. While the difference between the pre and post-test scores in such factors as having knowledge and judging and getting an implicit message is observed, the increase in their post-test scores in analyzing and giving reactions isn't meaningful. These findings indicates the efficacy on thinking education on the prospective teachers' media literacy. This indicates the success in thinking education, the goals of which are to train the prospective teachers in analyzing, interpreting and evaluating media messages and texts. The prospective teachers, having participated in thinking education are equipped with such media literacy skills. Media literate prospective teachers also think critically. Feuerstein (1999) finds out that primary school students, having trained in terms of media literacy, became capable of thinking critically on TV series and newspaper advertisements. Indah (2016) reveals the difference between trained learners on media literacy and those, lack of media literacy training in terms of the use of higher order of critical thinking. The similar inference are made by Kubey (2002) stating students will have higher order critical thinking skills such as critical interpretation, analysis and evaluation in case they have been trained on media literacy. As identified by Ruggiero (2015), the students become aware of how to apply their critical thinking skills upon watching or reading media messages and texts as a result of specific exercises. The importance of media literacy in support of critical thinking is expressed by Feuerstein (1999) in such a statement "Media literacy aims to develop metacognitive reflective strategies by means of study and critical responses towards the content of the media and its messages." Moreover, it is aimed to "develop students' habits of inquiry and skills of expression they need to be critical thinkers, effective communicators and active citizens in today's world" (Facione, 1990). Therefore, being trained in analyzing, interpreting and evaluating media messages and texts is a way for the prospective teachers to be both media literate and critical thinker.

In addition to media literacy, increase in post-test mean scores in both critical reading and critical writing has been observed. The prospective teachers, having been trained to not only read but also write media messages and texts critically, become critical literate is concluded. The basic strategies for the integration of media literacy and critical thinking into curriculum, offered by Scheibe and Rogow (2008) are implemented through thinking education. As a result, thinking education has achieved the goal of training the prospective teachers with critical literacy and media literacy skills.

From the prospective teachers' points of view, learning outcomes of thinking education are stated as realizing the bias of media messages and implicit meaning of media messages, having positive attitudes towards thinking education, judging based on facts and information, having positive attitudes towards searching for information, questioning media messages and having critical thinking skills. These findings show that the prospective teachers have gained

not only reading and writing critically but also affective features after thinking education. Because the prospective teachers are enabled to be equipped with these skills through having chance to interpret the media messages and texts in terms of the parts of thoughts such as point of view, assumption, inference, conclusion, etc. and such logic standards as clarity, accuracy, precision, etc. According to Paul and Elder (2002), a clear understanding of the parts of thinking, applying the logic standards for thinking to those parts, above all thinking with regard to these factors will improve critical thinking skills and the quality of human life will be significantly improved.

The effects of thinking education on the prospective teachers' critical literacy are expressed as questioning everytime, being a researcher, doubting the accuracy of the information, examining any text from different perspectives, using different sources of information, transferring critical thinking skills into daily life, gaining critical literacy awareness, understanding the importance of critical literacy. Moreover, thinking on media messages critically, analyzing media messages in detail and noticing the implicit media messages are the other views focusing on the positive effect of thinking education on the prospective teachers' reading media messages and text critically. In addition to its' positive effect on their critical literacy, another positive effect is stated to be on the prospective teachers' media literacy. These positive effects are explained as gaining critical thinking skills, questioning media messages, noticing the implicit media messages, examining media messages from different perspective, having awareness of being a media literate, discovering bias of media messages, reading media messages objectively, evaluating media messages using different sources of information, being a researcher, having theoretical knowledge about media messages analysis. The occurrence of the positive effects of thinking education on the prospective teachers' both critical literacy and media literacy indicates that how to think critically has been experienced in thinking education at the classroom and these experiences make them equipped with critical thinking skills. According to many researchers (Indah, 2006; Scheibe and Rogow, 2008; Worsnop, 2004) media literacy also includes critical thinking, required to be critical literate. Critical thinking is an indispensable way to critical literacy and media literacy. Therefore, it is expected that the effects of thinking education on the prospective teachers' literacies are similar in terms of critical thinking skills.

It is observed that before thinking education the prospective teachers define their critical literacy levels by using negative adjectives, pointing out their thinking action, ways of thinking and their competency in thinking critically. In general produced adjectives before thinking education symbolize the prospective teachers' incompetency in critical thinking and questioning. In contrast, at the end of the thinking education the adjectives point out the prospective teachers' awareness of how to read and write critically and their competency in critical literacy. In addition, adjectives generated to delineate the prospective teachers' media literacy before thinking education have negative meanings, including incompetency, negative attitudes and unawareness of the act of thinking. Furthermore, the adjectives produced after thinking education show that some thinking skills such as criticism, scrutiny, inference, comparison, etc. are acquired after thinking education. Moreover, adjectives emphasizing the importance of media literacy and the desire to be media literate are produced by the prospective teachers having been trained in media literacy. As opposed to the beginning of thinking education when the prospective teachers are incompetent in thinking on media messages critically, they gain media literacy skills and become aware of the ways and actions of media literacy. To sum up, it can be stated that the prospective teachers' awareness to both critical and media literacy and their competencies in these field have increased through thinking education.

The prospective teachers' mostly choice in Figure D, symbolizing the complete intersection of the prospective teachers' competencies and critical literacy indicates their high level of critical literacy after thinking education. The reasons for their high critical literacy are stated as obtaining critical literate identity, learning how to read critically, getting experience, reinforcement of information, gaining self-confidence, independence from prejudices and having a positive attitude. Similarly, that the prospective teachers have mostly chosen Figure C and D, symbolizing their high level of competency in media literacy proves the efficacy of thinking education. The reasons for their high level of competency in media literacy are stated as obtaining media literacy identity, researching for media resources, questioning media messages, gaining self-confidence, observing different perspectives, following media, having experiences in interpreting media messages, being critical, having continuous interaction with the media, discovering the bias of the media, being curious and aware of media literacy. As a result, the prospective teachers has acquired such skills as analyzing, interpreting and evaluating media messages and media texts through thinking education. Moreover, in addition to media literacy skills, they feel confidence in analyzing and criticizing media messages.

It is concluded that the prospective teachers generally find themselves competent in critical and media literacy after media message reading and evaluation activity. Following different media sources, learning how to question media messages, discovering the bias of media messages, making inferences, evaluating messages as regards logic components, being objective and curious, getting rid of prejudices, searching for facts and information are the prospective teachers' behaviors, leading to their self confidence in critical and media literacy. In addition, ad analysis activity contributes the prospective teachers' literacies. The prospective teachers are experienced in questioning, thinking critically, capturing hidden message of advertisements, reviewing ads with different perspectives, accessing information sources and analyzing ads with logic components through ad analysis activity.

The results of their evaluation of thinking education within the logic components such as views on the purpose of thinking education, assumptions about thinking education, process and results, possible perspectives on thinking education and inferences also prove the efficacy of thinking education on their critical and media literacies. From the prospective teachers' points of view, the purposes of thinking education are listed as being aware of thinking ways, understanding what thinking means, being aware of learnability of critical thinking, gaining critical thinking skills, developing personally in thinking skills. Upon reviewing their views on the purposes of thinking education, it can be concluded that thinking education has reached the goals of making the prospective teachers develop their critical thinking skills. According to the prospective teachers, assumptions about thinking education are developing a positive attitude towards thinking education, learning to think and acquiring thinking skills. This indicates the efficacy of thinking education on the prospective teachers' not only cognitive skills but also their affective features. Considering their evaluation on thinking education in terms of the process and the results, question and answer as well as brainstorming are the instructional techniques used in thinking education to analyze, interpret, criticize and evaluate media messages. When thinking education is evaluated in terms of possible perspectives, it is seen as a necessary training. Moreover, it is inferred by the prospective teachers that they have acquired critical thinking skills and a positive attitude towards thinking education.

Skolverket (2011 cited in Ekvall, 2013) lists the goals of education as equipping the students with such properties as being creative, competent and responsible and developing "their ability to examine facts and relationships critically". That is to say, Skolverket's views on the goals of education and the results of this research point out the necessity to be equiped

with media and critical literacy. Therefore, such courses dealing with media literacy education and critical literacy education can be integrated into teacher education programs independent from any subject or a discipline. Despite such an important educational goals, critical literacy is difficult to be integrated into curriculum (Kunnath and Jackson, 2019). Behrman (2006) explains the reason of the difficulty in integration as lack of instructional methods and strategies. However, Scheibe and Rogow (2008) explain basic ways to integrate media literacy and critical thinking into any curriculum. These can be exemplified as enabling students to think critically about information on media; (2) pointing out the possibility of different interpretation of media messages by people with different points of view; (3) discussing both printed and image or sound based texts on media; (4) enabling students to determine and make comment on the latent elements of media messages (5) being model as a teacher presenting how to think critically on media texts (6) developing an awareness of issues of credibility and perspective, comparing the ways different media present information about a topic, etc. In similar, media literacy and critical literacy can be integrated into a curriculum in teacher education in such a way that the prospective teachers have a chance to practice thinking critically on media messages, interpreting the latent elements of media messages, following the process of thinking critically, modelled by their teachers and searching for information on the topic of media texts, questioning media messages by regarding such standards as clarity, accuracy, precision, relevance, depth, logic, breadth, significance, fairness, comparing the ways different media present information about a topic, discussing the different points of view of various media texts, analyzing media content in terms of misleading information on media texts. Therefore, it can be concluded that integration of media literacy and critical literacy into any curriculum can take place regarding the instructional points stated above. Moreover, Equipped the students with these cognitive skills has become the educational goals from primary education to higher education. Therefore, thinking education or others, named differently but having the goals of training critical and media literate individuals, have become indispensable for all of us and should be integrated into teacher education programs as a separate lesson. Moreover, critical thinking skills, necessary for individuals not only for their daily life but also their working place should be learning outcomes of all lessons in teacher education programs. Subject or discipline specific content should be studied with critical thinking activities simultaneously for each lesson.

5. Conflict of Interest

The author declares that there is no conflict of interest.

6. Ethics Committee Approval

The author confirms that the study does not need ethics committee approval according to the research integrity rules in their country.

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