


The Opinions of Teacher Candidates about Critical and Analytical Thinking Course*

Bülent Alan, Anadolu University, balan@anadolu.edu.tr,  0000-0001-5057-0915

Keywords

Thinking skills
Teaching thinking skills
Critical thinking
Analytical thinking
Teacher education

Article Info:

Received : 26-01-2022
Accepted : 10-10-2022
Published : 08-12-2022

Abstract

Higher-order thinking skills are of great importance for the welfare and development of a particular society since it depends on the quality of the decisions taken by individuals. Apart from families, teachers play a crucial role in equipping pupils with these skills such as critical, analytical, reflective or creative, but to do this, they should initially possess them, which requires a special training tailored for teaching these skills. This study focused on the effectiveness of "Critical and Analytical Thinking" course (CATC) taught at a bachelor of education program based on teacher candidates' opinions regarding course design, materials, delivery and strengths and weaknesses of the course. CATC was delivered online due to Covid 19 pandemic conditions; however, provided invaluable insights for future implementations regarding its delivery, activity types and evaluation system. The study was conducted as an analytical study by incorporating both quantitative and qualitative methods. The data were collected through Critical and Analytical Thinking Survey and written interview forms developed by the researcher. The participants were 78 teacher candidates who took the course and volunteered to participate in the study. The results revealed that CATC was highly influential on their individual and professional development and not only the theoretical but the practical elements of the course were beneficial for the teacher candidates. Based on the research results, this study concluded with a lesson proposal to be implemented both face-to-face and/or online with similar teacher candidates at education faculties.

DOI: 10.31704/ijocis.2022.015

To cite this article: Alan, B. (2022). The opinions of teacher candidates about critical and analytical thinking course. *International Journal of Curriculum and Instructional Studies*, 12(2), 367-398. doi: 10.31704/ijocis.2022.015

*This manuscript was orally presented in the Ninth International Conference on Curriculum and Instruction: The Effects of the Pandemic on Curriculum in 2021 and was published in the abstract book.

Introduction

In order to respond to the rapidly changing conditions of the world, the knowledge transmission to students and rote-learning are not enough. Students need life-long learning skills to cope with problems they face beyond classroom walls, which requires a special kind of education focusing on how to think better (McGuinness, 1999). Acknowledging this, the field of education witnessed a paradigm shift after 1980s from simply knowledge accumulation of discreet skills to inquiry, reflection, reasoning and various thinking skills (Facione, 1990a) such as analytical thinking, creative thinking, critical thinking, reflective thinking, problem solving and decision-making skills (Aybek, 2007; Dilekli, 2019; Şahin & Tunca, 2013; Yılmaz, 2019). These skills are also called as higher-order thinking skills with the last three levels of Bloom's taxonomy; analysis, synthesis and evaluation (Akkuş-Çakır & Senemoğlu, 2016).

Regarding thinking education, there are three main approaches in the literature (Dilekli, 2019; McGuinness, 1999). The first approach is used for general thinking skills or for "learning to think" which aims at teaching thinking skills independent from discipline, for instance Feuerstein's Instrumental Enrichment (Feuerstein & Jensen, 1980). The content of the approach encompasses issues such as national and international policies, problems at schools or environmental problems (Ennis, 1989). However, it is not globally accepted since it decreases the value of knowledge. The second approach grounds on structuring subject-matter instruction to scaffold thinking (e.g. Cognitive Acceleration through Science Education). It is also criticized because it does not allow knowledge transfer among disciplines. The third and widely acclaimed approach is infusing thinking across curriculum, which has been developed as an alternative to knowledge transfer problem. It entails designing course content in a way to teach thinking (e.g. Activating Children's Thinking Skills) and by making thinking one of the fundamental learning outcomes (Dilekli, 2019; McGuinness, 1999). The thinking skills scrutinized in this study are critical thinking (CT) and analytical thinking (AT).

Critical Thinking

The word "critical" was derived from Greek words "criticos" (judgement, evaluation) and "criterion" (standard) and was borrowed by other languages. Etymologically, "critical" literally means objective evaluation and judgement. Essentially, CT refers to rational and evidence-based evaluation (Paul & Elder, 2020). Although it is difficult to come up with an accepted definition of CT since defining it with memorization is against the nature and spirit of this particular type of thinking (Facione, 2011), there are various definitions in the literature sharing certain similar features. CT can be defined as the perception of truth through reasoning and inquisitive perspective, the competency of differentiating arguments, recognizing biases and logical fallacies, and reflective thinking on what to believe and reject (Aybek, 2007; Ennis, 1989; Facione, 2011; Norich, 2014; Şahin & Tunca, 2013; Yazçayır, 2015; Yılmaz, 2019). CT is an individual disposition and skill used with reflective skepticism in performing any activity and therefore is used in other higher-order thinking skills, as well.

Along with knowing what it means, it is also important to know the skills and dispositions needed for CT (Aybek, 2007). In his seminal article, Facione (1990a) revealed that CT requires the use of both skills and dispositions. The experts participated in his two-year-long study agreed on six core skills needed for CT. Table 1 shows these skills with the revised version of sub-skills (Facione, 2011).

Table 1. *Core Critical Thinking Skills and Sub-skills*

| <i>Skill</i> | <i>Sub-skills</i> |
|-----------------|---|
| Interpretation | categorize, decode significance, clarify meaning |
| Analysis | examine ideas, identify arguments, identify reasons and claims |
| Inference | query evidence, conjecture alternatives, draw logically valid or justified conclusion |
| Evaluation | assess credibility of claims, assess quality of arguments that were made using inductive or deductive reasoning |
| Explanation | state results, justify procedures, present arguments |
| Self-regulation | self-monitor, self-correction |

Source: Facione, P. A. (2011). Critical thinking: What it is and why it counts. *Insight Assessment*, 2007(1), 1-23.

As Table 1 shows, CT encompasses the skills of interpretation, analysis, inference, evaluation, explanation and self-regulation with their various sub-skills. Facione (2011) also lists the dispositions of a critical thinker as inquisitive, judicious, truth-seeking, confident in reasoning, open-minded, analytical and systematic. In a similar fashion, Cottrell (2017) asserts CT is a complex and considerate thinking process involving a variety of skills and dispositions. CT requires the use of cognitive processes such as attention, classification, selection, and evaluation.

People who make good decisions are the contributors yet not burdens to the society for its future generations and welfare. However, Paul and Elder (2020) hold that many people do not have the necessary thinking skills for a quality life. They assert that CT skills do not develop in a short time-period or with basic activities. People develop as a critical thinker over time and it requires deliberate commitment. Hence, Paul and Elder (2020) list the development of CT skills at six stages; 1- unreflective thinker, 2- challenged thinker, 3- beginning thinker, 4- practicing thinker, 5- advanced thinker, 6- master thinker. The first four of these stages are development stages whereas the fifth and sixth stages are advanced thinkers' stages in which they develop thanks to their applications and prudent thinking is part of their everyday practice. Paul and Elder (2020) claim that most people live as unreflective thinkers throughout their lives, which suggests the idea of teaching these skills at early ages as possible.

As a matter of fact, the word "critical" is an adjective and it modifies thinking, which is another reason why it should be directed to a specific subject-matter (McPeck, 2016). However, due to the lack of a common definition of the concept (critical), it seems to be a fuzzy term in education, too. Many courses or applications on CT vary from Latin, logic, mind games, to solving puzzles and they all claim to enhance CT (McPeck, 2016), but it can be achieved via systematic programs. Some experimental and quasi-experimental research studies on teaching CT showed that these kind of thinking trainings developed students' (De Bono, 1985; Facione, 1990b) and teacher candidates' (Akkuş-Çakır & Senemoğlu, 2016; Aybek, 2007; Cantürk-Günhan & Başer, 2009; Çinici & Ergin, 2019; McGuinness, 1999; Tok & Sevinç, 2010) thinking skills like critical, analytical and creative thinking. The fact that CT can be taught indicates that it can be achieved through exercises or problem-solving activities (McPeck, 2016). Nevertheless, doing exercises or repetition solely is not enough, so these exercises should be tailored to the aims of courses and be linked with course contents.

Analytical Thinking

The second higher-order thinking type covered in this study is AT. The word “analysis” is borrowed from ancient Greek and it means decomposing or breaking up something into its smallest parts. It requires the ability to work with these smallest parts and to recombine them to make one’s decisions. AT is the ability of this systematical structuring of the components of a whole (Behn & Vaupel, 1976). Bloom’s renewed taxonomy defines ‘analyzing’ as breaking-down a material into its components and understanding of how these components are in relation with the whole (Anderson et al., 2014). For instance, decomposing a sentence into its parts of speech such as subject, verb or object, finding out the facts and opinions in a text, analyzing the components of a substance, identifying the best alternative among others in problem-solving are some examples to AT (Yılmaz, 2019).

The roots of AT dates back to the studies of Aristo, in which the foundations of reasoning were examined (Akkuş-Çakır & Senemoğlu, 2016). AT also places an important role in Descartes’ philosophy (Akkuş-Çakır & Senemoğlu, 2016; Özdemir, 2020), which holds that solving a problem requires to separate it into its smallest components through sequencing. Behn and Vaupel (1976) advocate that developing AT skills help people to make logical decisions while solving problems in fairly short time and with limited information and it turns into a habit over time. Hence, AT is typically associated with problem-solving skills since it is used as a method in solving problems (Özdemir, 2020; Weisberg, 2015).

The literature on AT shows that it is composed of certain skills just like CT. Akkuş-Çınar and Senemoğlu (2016) list AT skills as identifying connections between the components of a whole by analyzing a situation, finding out the biasness and assumptions, evaluating and expressing validity and reliability of justifications clearly. Dilekli (2019) holds that AT is composed of five skills. They are comparison, classification, part-whole relation, sequencing, and making cause-effect relation skills. Anderson et al. (2014) on the other hand, assert that learning AT on its own right is important, but it can be considered as the extension of understanding, or the starting point of evaluating and creating levels of cognitive processes. They also add that AT includes differentiating, organizing and appraising skills.

This research study focuses on an elective course called “Critical and Analytical Thinking Course” (CATC) offered at a state university. Overall, the study aims at revealing the opinions of teacher candidates regarding CATC’s content, delivery and activities carried out.

CATC

In the literature, there are two major approaches with regard to teaching CT, which are known as subject-based teaching and skills-based teaching (Aybek, 2007). Subject-based approach is similar to the third approach mentioned above concerning teaching thinking skills and it entails teaching CT by infusing it to the all aspects of curriculum. According to Facione (1990a), teachers should be role models for how to use content to develop CT and make use of every case in order for students to justify their reasons, provide evidence for their arguments and should design collaborative activities in which students are able to freely discuss and express themselves. Content and Language Integrated Learning in English Language Teaching (Uribe-Encisco, Encisco, & Daza, 2017) and The Foundation for Critical Thinking Model (Crenshaw, Hale, & Harper, 2011) based on questioning and Socratic method used in Western Civilization classes are examples to infusing content with CT skills. Whereas in skills-based

teaching, CT is taught through separate courses tailored for it, for instance De Bono's (1985) CORT thinking program. De Bono (1987) asserts that focusing on content diverts attention from thinking instruments used, so it is best to teach thinking skills as a set of tools that could be transferred to different areas. In her experimental study, Aybek (2007) compared the effectiveness of these two approaches. Even though both approaches developed students' CT skills, the skills-based approach was found to be more effective.

AT teaching is usually associated with problem solving activities of ambiguous situations and dilemmas (Behn & Vaupel, 1976; Özdemir, 2020; Robbins, 2011). Behn and Vaupel (1976) developed a university course in which students were expected to solve everyday problems of 'busy decision makers' as part of course requirement. Students analyzed the assigned problems through systematic judgement and guessing methods while solving dilemmas. Students followed a five-step process consisting of *think, decompose, simplify, specify and rethink*. Robbins' (2011) "Fluent Thinking Skills" is another example program designed to develop AT. The course is grounded on a set of questioning activities towards the material to be studied. Students are expected to formulate their own questions and answers before and after reading the text in detail. The final activity focuses on the discrepancy between before and after reading and to resolve the discrepancy. The difficulty of the materials to be examined vary from charts, graphs, statistics, to real world problems as students develop their skills. Akkuş-Çınar and Senemoğlu (2016) revealed that teacher candidates' AT skills developed based on creative drama activities and other extra-curricular social activities.

CATC was first taught in 2019-2020 at the state university where the researcher is employed. Therefore, there was a need for scientific data concerning the views of teacher candidates towards CATC, whether CATC achieved its aims and to what extent the methods, techniques, resources, content and evaluation system were effective. The results of this study could shed light on the future design and implementation of the course. CATC was developed by the researcher in accordance with "Critical and Analytical Thinking" course involved in the programs proposed by Turkish Higher Education Council for education faculties (<https://www.yok.gov.tr/kurumsal/idari-birimler/egitim-ogretim-dairesi/yeni-ogretmen-yetistirme-lisans-programlari>). The content of the "Critical and Analytical Thinking" course in bachelor of education programs is as follows:

Basic Concepts and Definitions; brain as a thinking organ, thinking types and classification of thinking; unintentional thinking and its characteristics; intentional thinking and its characteristics; methods for intentional thinking; critical and analytical thinking; fundamental features and criteria of critical and analytical thinking, stages of critical and analytical thinking; factors preventing critical and analytical thinking; scope of critical and analytical thinking; critical and analytical reading; critical and analytical listening; critical and analytical writing.

CATC was a two-hour-course delivered online for one semester (14 weeks). It aimed at helping teacher candidates become inquisitive, questioner, critical, analytical, creative and reflective thinkers, critics, respected to individual differences and different ideas, sensitive to national and international issues and conforming to code of ethics within the scope of the content presented above. The methods mainly utilized in the course are question and answer, discussions, Socratic method, problem-solving activities, reflective writings, collaborative teamwork and designing and applying lesson activities based on CT and AT skills. The course content

covering the issues mentioned in the previous paragraph was prepared by the researcher who was also the instructor of CATC.

The course was conducted through the learning management system of the university. The teacher candidates were supposed to study for the course material (lesson notes, readings, videos, documentaries etc.) provided by the instructor before the lesson and they were required to participate in weekly discussions. In order for discussions not to diverge from the purpose and subject, the lecturer informed the teacher candidates about the netiquette and how to treat in the discussion platform at the beginning of the semester and the teacher candidates shared their opinions accordingly in a mutual love and respect environment. Every week, the teacher candidates regularly expressed their written opinions on the assigned discussion topic, read their colleagues' views and commented on them. The lecturer also read these discussions every week and gave feedback to their posts. Similar to flipped learning model, the teacher candidates were required to do the necessary preparation so that the lesson time was allocated for more meaningful activities to elaborate on content, their questions and comments rather than direct instruction.

The teacher candidates were evaluated by a mid-term and final examination. However, the questions were not simply multiple-choice questions but rather critical and reflective analysis of the open-ended questions within the scope of course content. Besides, the weekly discussions were also included into the evaluation system and constituted 20% of the mid-term and final examinations. In the second half of the semester (after mid-term exam), the teacher candidates were asked to prepare their own CT and AT skills activities based on the model activities presented and demonstrated by the researcher (for similar activities, see Dilekli 2019; Özdemir, 2020, and/or visit <https://www.oecd.org/pisa/test/>). Prior to application, the teacher candidates were asked to review the curricula of their programs on the website of Ministry of Education and to prepare a lesson activity that they would associate with thinking skills. These activities were presented in the lessons in a way similar to micro-teaching. The teacher candidates who presented their activities got feedback and they were criticized by their colleagues since giving and taking criticism and how to respond to it were among the major subjects of the course. Upon revisions of the activities based on the feedback obtained, the teacher candidates reloaded them to the system and they were evaluated as part of the final exam. These activities were also shared with all teacher candidates taking the course and they had a valuable opportunity which enabled them to have wide repertoire of activities they could use in teaching certain subjects in their own disciplines when they start teaching. This application also gave them a chance to see how various topics can be handled and taught by different people with different points of views and dispositions.

As it is mentioned above, CT can be taught through content or skills-based. CATC was designed adopting an eclectic approach of the two CT approaches. It is skills-based because CT skills such as checking the credibility of data and justification of an argument or AT skills like comparison and identifying the part-whole relation were taught explicitly. However, the teacher candidates designed and applied their own activities in their own disciplines associating them with particular subjects, which made CATC also content-based.

In order for students to develop their CT and AT skills, primarily teachers and teacher candidates should be equipped with these skills and be able to plan and arrange their teaching practices accordingly (Aybek, 2007; Dutoğlu & Tuncel, 2008; Ekinci & Aybek, 2010). In CATC,

teacher candidates were taught theoretical knowledge about thinking, thinking types, brain and its structure and nature as a thinking organ, criticism, how to give criticism and the importance of being open to it as part of critical and reflective thinker and teacher, intellectual identity and features, Socratic thinking, critical reading and writing along with practical studies on how to teach CT and AT skills to students and they were also asked to develop their own CT and AT activities.

International examinations like PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) measure students' literacy level in various disciplines (<http://pisa.meb.gov.tr/>). Literacy concept entails using the knowledge gained at a certain discipline in solving everyday problems in a way to support social change and development (Yılmaz, 2019). So, these examinations are good examples to review students' academic situations since they place great emphasis on AT (Özdemir, 2020). These examinations test students' creativity, reasoning, CT and AT skills and students are evaluated out of these skills, but 2018 PISA results indicate that Turkish students have poor higher-order thinking skills (<http://pisa.meb.gov.tr/>), which suggests that they need courses or trainings tailored for these skills. CT is a foundational thinking skill enabling a nation to lead more quality life, to make innovative and creative approaches real, thereby, allowing future generations to live in better conditions (Akyel, 2018; Paul & Elder, 2020). Hence, teaching teacher candidates these skills and designing and evaluating courses like CATC are important.

CATC also aims at helping teacher candidates to be able to prepare activities supporting their prospective students to become not only knowers but also thinkers, questioners, critics and the ones who are able to apply what they know through activities conducted throughout the semester. In other words, teacher candidates are supposed to train their own students to use thinking skills at analysis, synthesis and evaluation levels. This would be a milestone to solve rote-learning, which is one of the biggest problems of Turkish education system, eventually enabling students to interpret and apply what they know (Işık, 2015) and will inevitably pave the way not only for individual but also social and economic development. However, to be informed of whether CATC is a course that had such an impact on teacher candidates, it should be examined, which was the driving force to conduct this research study.

This study aims at interpreting teacher candidates' opinions concerning CATC carried out online due to Covid-19 pandemic situations in 2020-2021 spring term at an education faculty of a state university located in central Anatolian region. Along with this broad objective, the other questions posed for this study are as follows:

- 1- What are the overall opinions of teacher candidates concerning the impact of CATC on their thinking skills?
- 2- What are the opinions of teacher candidates concerning whether the activities they conducted on critical and analytical thinking skills were beneficial or not?
- 3- What are the strong and weak aspects of CATC based on the opinions of the teacher candidates?
- 4- What should be the characteristics of a CATC to be implemented at education faculties?

Method

This study grounds on analytical study. Research studies which cannot be classified as qualitative or quantitative are defined as analytical studies (McMillan, 2004). Analytical studies are a kind of research method in which documents, papers, records and other media are examined through cases, opinions, concepts and work of art (Ersoy, 2015). Analytical studies involve qualitative and quantitative research features and are classified as historical analysis, judicial analysis, conceptual analysis and mixed-method research studies (McMillan, 2004). This research study also deployed both quantitative and qualitative data but differs from mixed-method research since mixed-method research holds five major objectives which are triangulation, complementarity, initiation, development and expansion (Greene, Caracelli, & Graham, 1989), some of which are beyond the scope of this study since its primary focus was revealing teacher candidates' opinions regarding the course they took. In order to conduct this study, the researcher obtained Ethics Committee Approval dated 07.06.2021, numbered 69559.

Participants

At the beginning of 2020-2021 spring term, 176 teacher candidates enrolled at CATC from five different departments. Convenient sampling was employed in the study, which is based on collecting data until reaching the sampling size needed from the participants available (Patton, 2014). The Critical and Analytical Thinking Survey (CATS) and Critical and Analytical Thinking Written Interview Form (CATWIF) developed by the researcher were sent to all teacher candidates enrolled at CATS along with the consent form via the internet as surveys can be applied in various ways (Erkuş, 2021). 78 teacher candidates who volunteered to participate in the study responded to CATS. 62 of the participants were sophomore, 19 were junior and 4 were senior teacher candidates. The departments and numbers of the participants responding to CATS are presented in Table 2.

Table 2. *The Departments and Numbers of the Participants Responding to CATS*

| <i>Department</i> | <i>n</i> |
|--|----------|
| German Language Teaching | 1 |
| Computer and Instructional Technology Education (CITE) | 4 |
| Primary School Mathematics Teaching | 42 |
| Preschool Teaching | 17 |
| Primary School Teaching | 14 |
| Total | 78 |

As shown in Table 2, the participants of the study consisted of the teacher candidates from five different departments. Most of the participants (n:42) were from Primary School Mathematics Teaching since CATC was opened as two classrooms in this department and they were the most crowded groups. The reason why there were very few participants from German Teaching and CITE was the fact that teacher candidates from these departments took the course as additional placement. CATWIF was responded by eight teacher candidates and sent back to the researcher. The departments of the participants responding to CATWIF are presented in Table 3.

Table 3. *The Departments of the Participants Responding to CATWIF*

| <i>Interviewee</i> | <i>Department</i> |
|--------------------|-------------------------------------|
| 1 | Primary School Mathematics Teaching |
| 2 | Primary School Teaching |
| 3 | Primary School Teaching |
| 4 | Primary School Mathematics Teaching |
| 5 | Preschool Teaching |
| 6 | Primary School Mathematics Teaching |
| 7 | Preschool Teaching |
| 8 | Primary School Mathematics Teaching |

Data Collection Tools, Data Collection Process and Analysis

CATS, which was the first data collection tool of the study, consisted of three parts. The first part included the consent form and the second part asked demographic questions. In the third part, there were 30 survey items as five-point Likert type (1- strongly disagree; 5- strongly agree) regarding CATC and its implementation. There was also an open-ended item at the end of the survey to further elaborate the participants' views. The writing process of the survey items was conducted as follows: Firstly, the basic headings to be evaluated by the participants were determined. These are the opinions of teacher candidates towards course content, materials and weekly discussions, the skills they gained from the course and the opinions of teacher candidates towards practical activities they conducted. Secondly, the survey items were written according to the applications carried out and the subjects covered within the course over a semester. After the writing process of the survey items, they were sent to the three experts in the field of educational sciences for their evaluation to check whether these items were appropriate in terms of content, objective and clarity. Upon the review of the experts, the necessary revisions were made on the items and they were sent to the participants at the end of the semester via internet just after they were graded so that their opinions were not to be biased since the researcher was also the instructor of the course. The second data collection tool was CATWIF and it consisted of eight semi-structured interview questions. The survey items and written interview questions were prepared congruent with the course objectives, content and activities and piloted before they were applied.

The qualitative survey items were analyzed via descriptive statistics. The open-ended item at the end of CATC and the written interviews were analyzed based on thematic analysis. By allowing researchers to interpret the rich and detailed data, thematic analysis as a research tool is used for identifying, analyzing, and reporting themes within the data (Braun & Clarke, 2006). In light with qualitative research, the researcher adopted an approach holding a six-step-process that Braun and Clarke (2006) propose to conduct a rigorous and sound thematic analysis. Table 4 below shows the phases followed and the procedures conducted within the context of the study:

Table 4: *Phases of Thematic Analysis*

| <i>Phase</i> | <i>Description of the process</i> |
|--------------------------------------|--|
| 1. Familiarizing yourself with data: | The recursive reading of the data set comprising of survey responses and written interviews to identify what they convey and to seek for possible patterns for a wholistic interpretation. |
| 2. Generating initial codes: | Coding to immerse into content. |
| 3. Searching for themes: | Sorting out the potential themes. |
| 4. Reviewing themes: | Reviewing the themes for the cohesion both for within and across themes. |
| 5. Defining and naming themes: | Fine-tuning of the themes and by defining and giving them names in light with data set. |
| 6. Producing the report: | Write-up of the analysis by presenting vivid examples and extracts of each emerging theme from the data set. |

Although data analysis is not a mechanical and linear process (Braun & Clarke, 2006; Glesne, 2016) in which the researcher needs to cycle back and forth, it is also a simultaneous process involving iterative phases (Creswell, 2014). The six-step-process presented above was followed to ensure a theoretically and methodologically meticulous analysis. In the first phase, because the interviews were in the written form, they were already transcribed by nature. According to Bird (2005), transcription is the essence of the interpretation of the data to be analyzed in qualitative methodology, so the initial phase was the recursive reading of the data set to immerse into it to become familiar with the content. Next, the researcher proceeded with the second phase to generate initial codes. Then in the third phase, the codes were collated and they were listed under potential themes. The fourth phase involved reviewing process of the themes. The researcher reviewed whether all the extracted codes formed a coherent theme and checked the "validity of the individual themes" so that they were in line with the data set and formed a thematic map (Braun & Clarke, 2006). After getting the clear picture of the data set, the researcher defined and named the themes to convey what they actually meant. This process was ended when the researcher was able to describe the content of each theme with several sentences, which is a test Braun and Clarke advocate to check whether themes can be defined clearly. After determining all the themes, the final phase in the thematic analysis was the writing procedure of the report.

For the validity and rigor of the analysis report, the researcher followed the guidelines proposed by Braun and Clarke (2006). First of all, there are sufficient extracts with picturesque examples from the data set to show the "prevalence" of each theme. Hence the latent or semantic meanings and interpretations can be demonstrated to reader. What is more, the extracts are the correct example of the issues discussed. Besides, the researcher paid attention to go beyond surface level of analysis and demonstrated and argued on the underlying reasons, experiences, feelings or cases related to particular themes.

In qualitative studies, the rigor of the study is sustained through peer review, triangulation, negative case studies analysis, audit trail and computer software to ensure trustworthiness (Johnson, Adkins, & Chauvin, 2020). This study also deployed a peer review process to cross-check and critique the codes and themes and presented the negative comments and extracts of the participants in the report writing. Furthermore, the themes obtained from multiple data collection tools enhance the credibility and conformability, which is the case in this study

because the data were collected through quantitative survey responds, open-ended question in the survey and written interview forms for further conformation or refutation.

Results

The research findings were obtained from CATS and CATWIF and therefore, they were examined in two categories as data from CATS and CATWIF and presented in the order of research questions.

The Findings Obtained from the CATS

71 out of 78 (%90) teacher candidates responding to CATS were regular students who attended the online courses throughout the semester, which makes the research findings more valuable for the researcher. Under the following headings, CATS items related with each other are presented.

The Overall Opinions of Teacher Candidates towards CATC

Certain items in CATS were to find out the overall opinion of teacher candidates (research question 1) who took CATC. The overall opinions of the teacher candidates are presented in Table 5.

Table 5. *The Overall Opinions of Teacher Candidates Towards CATC.*

| <i>Survey Items</i> | <i>%</i> |
|---|----------|
| I think this course has met my expectations at the beginning of the semester. | 98.7 |
| I like the way the course has been taught in general. | 97.5 |
| I will recommend this course to my other colleagues. | 98.7 |
| I think this is a must-take course by teacher candidates. | 100 |
| I think this must be an obligatory course in all departments. | 94.9 |

As shown in Table 5, 98.7% (n:77) of the teacher candidates believed that their expectations from the CATC were met. This finding indicated that the information written in the course description and the briefing by the researcher (lecturer) at beginning of the semester given to the teacher candidates matched with the activities carried out and materials and content presented throughout the semester. So, the pre-semester expectations of the teacher candidates from the course were met by the end of the semester. The responses of the teacher candidates to the open-ended item *"Please write anything that you want to add"* in the CATS also supported this finding:

This course is a great opportunity to provide someone with different point of views and thinking types that no other people can do...I am so happy that I took this course. (Participant 3)

It was the most valuable course of the semester for me. (Participant 19)

I am so pleased that I took the CATC. It was more helpful and improving than I had expected. To me, the course was delivered in the best way that it could be through distance education. (Participant 70)

Another survey item on the general opinions of the teacher candidates was about the delivery of the CATC. 97.5% (n:76) of the teacher candidates stated that they liked the way the

course was taught. Only two of the 78 teacher candidates did remain undecided. This finding also supported the finding mentioned in the previous paragraph stating that the expectations of the teacher candidates were met. Besides, the teacher candidates responded to the survey item "I will recommend this course to my colleagues" positively (98.7%; n:77) and only one teacher candidate did remain undecided. These findings revealed that the teacher candidates were satisfied with CATC and their expectations from the course were met on the whole. The responses given to the open-ended item in the CATS also supported these findings:

This was one or two of the courses I have enthusiastically attended throughout the semester. (Participant 50)

Your course was the only course I looked forward to attend. I would definitely take this course again if I was given another chance. (Participant 71)

The teacher candidates were asked questions whether this elective course (CATC) was necessary for them at education faculty and whether it should be an elective or required course. As seen in Table 5, all teacher candidates (100%; n:100) believed that the CATC had to be taken by all teacher candidates. 94.9% (n:74) of the teacher candidates believed that the CATC needs to be a required course in all departments of education faculties. While two teacher candidates disagreed with this idea, two teacher candidates remained undecided. The responses of teacher candidates to the open-ended survey item were also in line with this finding:

I believe this course is of great importance and is very influential for prospective teachers. (Participant 21)

It was a very productive course. I definitely think that it must be taken by all teachers. (Participant 22)

I fortunately took this course. I think all teacher candidates should take this course. (Participant 43)

I am in the opinion that all teacher candidates at education faculties should take this course...everybody should gain these thinking skills. (Participant 74)

The Opinions of Teacher Candidates towards Course Content, Materials and Weekly Discussions

CATS included items concerning how teacher candidates evaluated the course content, materials (lesson presentations, documents, resources, videos, podcasts etc.) provided to them and what they thought about the weekly discussions conducted online. The opinions of teacher candidates are presented in Table 6.

Table 6. *The Opinions of Teacher Candidates towards Course Content, Materials and Weekly Discussions*

| <i>Survey Items</i> | <i>%</i> |
|--|----------|
| I think the course content is rich and sufficient. | 89.7 |
| I think the course content and the subjects covered have contributed to my professional development. | 100 |
| I think the course content and the subjects covered have enriched my world knowledge. | 97.4 |
| I think the materials presented in the course have been sufficient. | 91 |
| I think the written and visual materials have been intriguing. | 93.6 |
| I think the weekly discussions conducted throughout the semester have been beneficial. | 94.9 |
| I think the weekly discussions have developed my written expression skills. | 92.3 |

As shown in Table 6, the teacher candidates (%89.7; n:68) thought that the course content provided to them were rich and sufficient. Only 10 of the 78 teacher candidates remained undecided about this and none of them expressed negative opinions. All teacher candidates (100%; n:78) believed that CATC supported and contributed to their professional development. The teacher candidates believed that the course content and the subjects covered enriched their world knowledge (97.4%; n:76), the materials provided to them were sufficient (91%; n:71) and these materials were intriguing (93.6%; n:73). The written responses of the teacher candidates to the CATC also supported these findings:

I believe this course has been influential in our both professional and everyday lives. Many thanks to our teacher. (Participant 27)

...It's been one of the most entertaining and beneficial courses for me because the content consisted of the subjects I find intriguing and you delivered the course in an entertaining fashion with the help of the resources and the videos you prepared before the lessons (Participant 71)

In CATC, the students were required to participate in weekly discussions on the subject studied, expressed their written opinions and exchanged ideas on the online platform. The lecturer read the discussions and gave feedback to teacher candidates' posts. This application was found to be quite beneficial by the teacher candidates (%94.9; n:74). While two teacher candidates remained undecided, two teacher candidates thought that these discussions were not beneficial. Besides, the teacher candidates believed that they developed their written expression skills through this application (%92.3; n:72). The written feedbacks of the teacher candidates supported this finding:

The course was conducted quite well from beginning to the end and we had continuous in-class discussions and exchanged views. It has been very influential on us. (Participant 55)

Weekly discussions were so beneficial even though I didn't attend all of them. But, I enjoyed a lot the ones I attended because in my opinion, the discussions topics were appropriate and meaningful. (Participant 70)

The Skills Teacher Candidates Gained from CATC

As part of research question 1, some items in CATC were concerning the skills that were gained by teacher candidates through the course. The teacher candidates stated that they gained certain skills thanks to this course and they added that they would apply these skills in both professional and everyday lives. The achievements teacher candidates thought they earned from the course are presented in Table 7.

Table 7. *The Achievements of Teacher Candidates from CATC*

| <i>Achievement</i> | <i>%</i> |
|--|----------|
| I think the course has developed my critical thinking skill. | %100 |
| I think the course has developed my analytical thinking skill. | %98.7 |
| I think the course has developed my critical reading skill. | %94.9 |
| I think the course has developed my critical writing skill. | %88.5 |
| I think the course has developed my reflective thinking skill. | %91.1 |
| I think the course has developed my creative thinking skill. | %84.6 |
| I think the course has helped me to know myself better as an individual. | %94.9 |
| I think this course have contributed to the comprehension of democratic values better. | %94.8 |

Table 7 (Cont.)

| | |
|--|-------|
| I think the course have enabled me to recognize the propaganda / hidden messages in written and visual media. | %84.6 |
| I think the course have helped me understand how to criticize better. | %100 |
| I think I have grasped what to do to establish a criticism culture in my future classes thanks to this course. | %100 |

The teacher candidates did not respond to any items listed in Table 7 as undecided or negatively. All of 78 teacher candidates (100%) thought that they developed their CT skills, learned how to criticize and what to do to establish a criticism culture in classrooms thanks to this course. Their responses to the open-ended survey item also supported their views because one of the primary subjects they focused in their responses was criticism and criticism culture. Some quotations regarding this topic are shown below:

Actually, one of the conclusions we draw from this course is that criticism is always deemed as negative criticism in our society and most importantly, we have learned the beauties that positive criticism can contribute to our lives by breaking the prejudices. (Participant 28)

I found opportunities to question and know myself thanks to this course. I think I have learned self-criticizing. I have developed awareness in my life. (Participant 31)

I have started to look at myself and around in critical approach thanks to this course. (Participant 71)

As can be seen in Table 7, the teacher candidates also believed that they gained knowledge and developed skills towards AT (98.7%; n:77), critical reading (94.9%; n:74), reflective thinking (91.1; n:71), creative thinking (84.6%; n:66), recognizing the propaganda in media (84.6%; n:66), knowing oneself better (94.9%; n:74) and understanding democratic values (94.8%; n:74).

The Opinions of Teacher Candidates towards Practical Activities on CT and AT Skills

As for the second research question, some items in CATS were to determine the opinions of the teacher candidates regarding practical applications. In CATS, the teacher candidates worked on concrete examples concerning CT and AT skills in their prospective classrooms in the second half of the semester. Two weeks of the semester were allocated for in-class teaching activities and presentations they prepared in order to teach CT and AT skills associating them with the learning outcomes they selected in their own disciplines. Similar to micro-teaching, the teacher candidates made online presentations (lesson activities) at certain weeks and received feedback from their colleagues and the lecturer. Then they revised their activities and submitted them to the lecturer. Table 8 shows teacher candidates' opinions concerning these practical applications.

Table 8. Teacher Candidates' Opinions on Practical Activities.

| Survey Items | % |
|--|------|
| I think in-class practical activities we carried out to teach critical and analytical thinking skills are beneficial for our professional development. | 100 |
| I know how to gain critical and analytical thinking skills to students in my own discipline thanks to this course. | 94.9 |
| I believe teaching critical and analytical thinking skills in my own discipline is easy. | 62.8 |

Table 8 shows that all teacher candidates believed that in-class practical activities carried out in CATC were highly beneficial for their professional development (100%; n:78). The teacher candidates' written responses also supported this finding:

The focus on self-evaluation in the activities conducted in the CATC enabled us to know ourselves, recognized our requirements and helped us to develop. (Participant 25)

We were given opportunity for application in the course and this was the greatest part. ...Our presentations in the lessons made the course (content) more permanent and I believe they contributed a lot to our professional lives. (Participant 70)

...the activities we designed and our methods we used in the preparation phases will inspire me when I start teaching. (Participant 71)

Regarding practical activities, one of the CATS items the teacher candidates were asked was whether they knew how to teach CT and AT skills to students by the end of the course. This survey item was responded positively by 94.9% (74) of the teacher candidates. While three teacher candidates remained undecided, one teacher candidate disagreed. Even though the teacher candidates stated that they knew how to teach CT and AT skills to students, they believed it was not easy to do so in the classroom. The fact that more than half of the teacher candidates responded positively (62.8%; n:49) to this item, this rate was not as high as the rate of other positive responses. This was the lowest positive survey item of all because 27 teacher candidates remained undecided and two teacher candidates disagreed with this item. In other words, teacher candidates thought that teaching CT and AT skills was relatively easy, but they did not express it strongly.

The Findings Obtained from the Qualitative Data Analysis

The qualitative data (written interviews and open-ended survey question) were analyzed for two purposes. Firstly, they were examined for further elaboration of the first and second research questions and to answer the third and fourth research questions; "what are the strong and weak aspects of CATC and what are the characteristics of a CATC to be implemented at education faculties?" respectively. The thematic analysis of the written interviews conducted with eight volunteered teacher candidates revealed five themes. Figure 1 shows these themes.

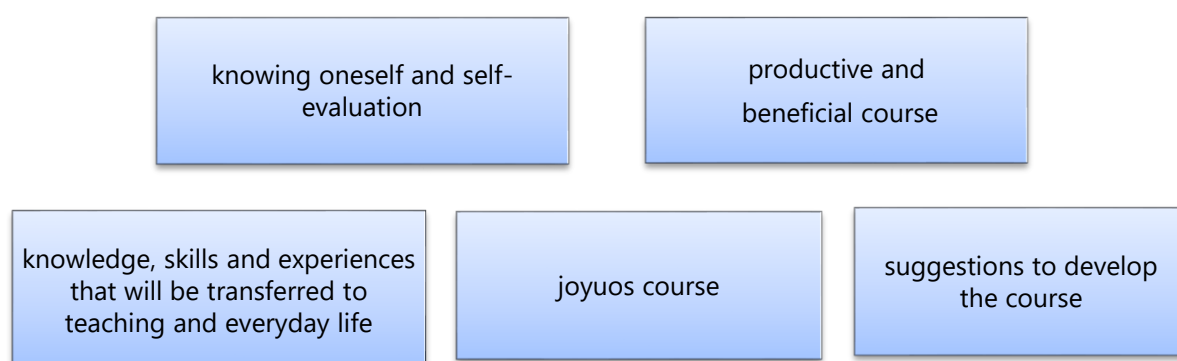


Figure 1. Themes Emerged as a Result of Written Interviews

As seen in Figure 1; the themes emerged from the interviews were “knowing oneself and self-evaluation”, “productive and beneficial course”, “knowledge, skills and experiences that will be transferred to teaching and everyday life”, “joyous course”, and “suggestions to develop the course”. These themes are further explicated below through direct quotations showing teacher candidates’ views.

Knowing Oneself and Self-Evaluation

The first theme was “knowing oneself and self-evaluation”. This theme also supported the responses of the teacher candidates to the CATS item “I think the course has helped me to know myself better as an individual” (94.9%). The teacher candidates thought that CATC provided them with some intellectual opportunities that they might not find in any other courses. By means of this course, the teacher candidates thought that they commenced to recognize and make sense of their own mindset, point of views, and the factors influencing on them. The teacher candidates stated that they began to think on these kinds of issues in-depth and began to self-evaluate and self-critique themselves. This mental transformation of teacher candidates was the indicator of the intellectual development, as well. The quotations presented below show how teacher candidates knew and understood themselves better:

I initially found self-exploration opportunities in this course. I understood my CT level in which I am by evaluating myself. I found opportunities for self-evaluation. (Interviewee 1)

The course enabled me to learn about the perspectives I always wanted to look through...It's a very beneficial course to develop oneself and to recognize different points of views. (Interviewee 2)

The course content and the subjects covered in lessons were helpful to think from different perspectives. (Interviewee 3)

The key that this course gave to me to explore myself, my life, and the human environment was “thinking”. I realized that I hadn't thought until I took this course, like a cold and strong wind hit my face. I had accepted everything I was told as truth. (Interviewee 7)

Apart from the findings obtained from the written interviews, a great proportion of the responses of teacher candidates to the open-ended survey item showed and supported the mental transformation they went through and the new perspectives they gained. The following quotations show teacher candidates’ views on this mental transformation:

This course enables us to overview the ideas we have and hence we cross the limits of thought. At the same time, it is a course leading us to ask questions like “Who am I in this system that we cannot figure out in collectivism? Are all the thoughts and traditions approved by society valid and true?” (Participant 3)

I can say that CATC took me from one place and replaced to a totally different place. (Participant 47)

I gained a lot of awareness for my future career that I couldn't think of before and this is so precious. (Participant 50)

Regarding knowing oneself and self-evaluation theme, the last finding resulted from the written interviews was about at what stage of CT development processes (Paul & Elder, 2020) that teacher candidates believed they were. So, one of the questions the teacher candidates were asked was “At what stage of CT do you evaluate yourself?” 1- unreflective thinker, 2- challenged thinker, 3- beginning thinker, 4- practicing thinker, 5- advanced thinker, 6- master

thinker (Paul & Elder, 2020). Seven of eight teacher candidates evaluated themselves as “practicing thinker”, and one teacher candidate evaluated herself as “beginning teacher” by the end of the course and semester. The fact that the teacher candidates deemed themselves at the “practicing thinker”, which is the last stage of CT development, suggested that the teacher candidates developed at CT and reached the last stage before “advanced thinker” and “master thinker”.

A Productive and Beneficial Course

The teacher candidates who took the CATC stated that this course both developed their professional and world knowledge and skills, at the same time it became influential on the decisions they took in their everyday lives. The quotations below show that the CATC was a productive and beneficial course for the teacher candidates:

The course has been quite effective and productive. (Interviewee 1)

It's a very beneficial course for self-development and to recognize different point of views. (Interviewee 2)

Even though it was delivered on-line, I wondered how it would be if it had been delivered face-to-face in classroom... I can say that the course made the best of what its name suggests. (Interviewee 3)

I think CATC is a very important and necessary course for teacher candidates. It was a highly beneficial experience. (Interviewee 4)

...I wish I could be able to take it again in summer school because I can enhance the knowledge I have gained in one semester in a longer period. (Interviewee 7)

...I think this course must be taken not only by my colleagues but also everyone who takes education. (Interviewee 8)

As the quotations above show, the teacher candidates believed that CATC was a very beneficial course on their thinking skills. This view of teacher candidates was also supported by the findings obtained from CATS. The results of CATS revealed that CATC contributed to the teacher candidates at various fields ranging from CT and AT, creative thinking, reflective thinking, criticizing to internalizing democratic values. What is more, three teacher candidates asserted that CATC was a course that could contribute to social change and development. These teacher candidates believed that by equipping students with these skills, they would support to train generations who could think better and take more effective decisions, and hence, they could support social development. The following quotations reflect this view:

I believe that every individual should take this course... With gaining the skills required by the era, social development of our country will be supported and this will bring prosperity to our people. This prosperity will give pave for a future in which they can work comfortably. (Interviewee 5)

To take this course for us as teachers is of great importance in a time in which the knowledge changes rapidly and there is a lot of false and manipulated information. (Interviewee 7)

Advancement of a country by making thinking effective will also bring social peace and happiness and therefore, I think everybody should take this course. (Interviewee 8)

While explaining the contributions of CATC to herself, participant 7 shared a dialog she had with one of her colleagues who was a teacher candidate taking a course with the same name. Participant 7 expressed her views as “...as my friend says, CATC is not selected as it is deemed

as waste of time. She immediately asked for the course notes as soon as I explained our course content and what we learned". According to this anecdote, CATC was accepted as unnecessary and unimportant in that university. However, the acquisitions of participant 7 and her sharing them with a colleague from a different university suggested the extent the lesson was found to be beneficial and at the same time, how it affected a teacher candidate who did not take this course. Besides, as the findings obtained from CATS indicated, the teacher candidates believed that CATC was a necessary course and it must be taken by all teacher candidates at all departments.

The Knowledge, Skills and Experiences to be Transferred to Teaching Profession and Everyday Life

The teacher candidates thought that along with overall contribution of CATC, it also equipped them with the practical knowledge and skills they would apply in their future career. This view of teacher candidates had two dimensions. The first was related to how to teach CT and AT skills in lessons, and explaining this with concrete application examples. The teacher candidates stated that they learned how to teach CT and AT with other higher-order thinking skills by associating them with course subjects and learning outcomes in their own disciplines. They also added that they were going to apply these skills in their classrooms. The following quotations below show teacher candidates' views regarding these two dimensions:

I will closely examine and transfer the skills we covered in our presentations into my lessons. (Interviewee 2)

...I aim at making my students use CT and AT skills in a collaborative learning environment in the activities I will prepare. (Interviewee 3)

We learned how to carry out activities including CT and AT and we designed our own activities. I'm planning to use these activities in my teaching life. (Interviewee 4)

With the help of the example activities we were provided in the lesson, I will conduct activities that will contribute to cognitive, social and affective development of my students through thinking and reasoning. (Interviewee 5)

I'd like to apply the example activities we carried out in lessons (the activities that we prepared for CT and AT) directly in my professional life. Not only did your instruction I consider important, but also preparing activities in line with our own discussion and instruction. (Interviewee 6)

I learned about the activities, games, exercises etc., and I quickly adopted them in my life. (Interviewee 7)

...I'd like to practice CT and AT inspiring from the activities we conducted at the end of the semester. Especially, practicing about the importance of thinking skill will be a wise approach both for me and for my students. (Interviewee 8)

The quotations above suggest that the CT and AT activities the lecturer provided to the teacher candidates and the activities the teacher candidates prepared supported their professional development. The teacher candidates stated that they adapted these applications carried out in lessons and they would apply them in their classrooms in their future careers. The teacher candidates' views regarding these practical applications also supported the findings obtained from CATS. All of the teacher candidates (100%) responding to CATS thought that in-class practical applications and example activities carried out in lessons contributed to

their professional development. Similarly, all teacher candidates interviewed expressed views concerning these practical applications.

Another subject that the teacher candidates would transfer and apply into their professional and everyday lives is to establish the culture of criticism and train self-confident students. The views of teacher candidates regarding this topic are presented below:

I think that the culture of criticism should definitely be infused into students. Students should listen to others' opinions and respect them. For this reason, I'd like to create discussion platforms in which my students will be able to express themselves freely and listen to each other with due regard. (Interviewee 1)

Being respectful to opinions, teaching criticism is not something negative, treating kind and concerned, creating various learning fields will pave the way for the changes in education system. At least in my own way, I believe the students I will train will take this as a model and this butterfly effect will go on. (Interviewee 3)

In order to infuse the criticism culture into students, I will educate them in a way that will allow them to express themselves freely and respect each other's differences. (Interviewee 5)

A critical classroom setting. A classroom setting in which everybody can comfortably share their ideas with due regard and others think over these ideas without insulting and humiliating anyone. I hope I will succeed. (Interviewee 7)

... In terms of taking a country to an advanced and civilized level, I believe this course holds a very important duty. (Interviewee 8)

The quotations above show that the teacher candidates developed skills or awareness in expressing themselves with self-confidence critically in a democratic environment and tolerating criticism which can be accepted as the prerequisites of critical thinking. The teacher candidates would like to apply what they learned from CATC in their classrooms in order to establish criticism culture and democratic values in society. This sub-theme also supported the findings obtained from CATS. The teacher candidates responding CATS thought that among the acquisitions from CATC were how to do criticism (100%) and what to do to establish criticism culture and to understand democratic values better (94.8%).

A Joyous Course

Another theme emerged from the analysis of the interviews was that CATC was deemed as "a joyous course". Apart from supporting their individual and professional development and being a necessary course, the teacher candidates stated that attending the course and the delivery of it by the lecturer were joyful and they spent entertaining time in lessons. The following quotations below show their opinions regarding this particular theme:

It was very joyous. The course was highly joyous. (Participant 2)

I can say that the course that gave me the most pleasure has been CATC since I started university. (Interviewee 3)

It was so entertaining for me that I never got bored in the lessons. The fact that it was a thought-provoking course was the reason that made me love the "Course" more. (Interviewee 4)

...It can be said that the course is motivating and intriguing since it is associated with real life and past experiences. I am content with the course while taking online, but in face-to-face education I

believe it might be more productive with the active participation of students. Nevertheless, it is overall a necessary, instructive and joyous course. (Interviewee 5)

It was the course that I liked most among others in this semester... its delivery and instruction were fluent and fun. (Interviewee 6)

As I always said, I really liked this course a lot. (Interviewee 7)

The responses of the teacher candidates to the open-ended survey item also supported the views of the participants interviewed. A significant amount of the responses to the open-ended survey item was related to the joyous nature of the course. The following quotations taken from CATS below reflect the views of teacher candidates that they enjoyed the lesson:

I liked the course a lot. Luckily, I took it. (Participant 47)

Beside my personal development on CT and AT, I absolutely enjoyed listening to and attending the course. (Participant 50)

It was one of the very few courses that I was biased against, but I was sorry that it ended at the end of the semester. (Participant 21)

...It's been one of the most entertaining and beneficial courses for me... (Participant 71)

Suggestions to Develop the Course

The final theme emerged from the analysis of the written interviews carried out with the teacher candidates were concerning "suggestions to develop the course" as part of the last research question exploring the characteristics of a CATC to be implemented at education faculties. The teacher candidates were asked questions regarding the issues that they did not like and that needed to be developed or changed related to CATC. As stated earlier, although the teacher candidates liked the content, delivery and the materials on the whole, they also made some suggestions to develop the course. The teacher candidates' suggestions fell under three headings. The first was "the criticism (review) of a movie or book/novel"; the second was "extending the practical applications to a longer period"; and the third was "participation in the course and interaction".

The teacher candidates were provided with some videos, documentaries or podcasts related to course subject and they were asked to reflect their views about these materials in the discussion platform. Beside these applications, two teacher candidates proposed to choose certain movies or books that would support higher-order thinking and help them gain critical point of views at the beginning of the semester and to include these movies and books that would be critiqued into the instruction and evaluation system of the course. The teacher candidates thought that the critical reflection of these movies and books as individual or group discussion could be beneficial for their higher-order thinking skills. The views of teacher candidates regarding this topic are presented below:

As a suggestion, maybe at the beginning of the semester, a book might be selected for everyone. At the end of the semester, students can be asked to discuss about the book as whole class, and also, they were asked to write a critical review. (Interviewee 6)

I would occasionally expect to find some movies and novel recommendations apart from the podcasts and videos in the discussion platform. (Interviewee 6)

To me, some movie recommendations supporting CT and developing AT with course materials can be presented to students, and novels in the same way. (Interviewee 7)

To me, critical movie watching can be added (to the course). One of the box office and thought-provoking movies like Matrix or Fight Club can be selected and an application targeting to gain critical point of view...can be conducted. (Interviewee 7)

Another suggestion made by the teacher candidates was regarding the practical applications conducted in lessons. As stated in the findings above, the teacher candidates deemed the practical activities on how to teach CT and AT in the classroom quite beneficial for their professional development and proposed to do these activities throughout the semester, namely in a longer period. The teacher candidates carried out the practical activities targeting to develop CT and AT mainly as group-work presentations and online in two weeks specified in the syllabus. Although the teacher candidates liked this application, they thought doing presentations in a different format would be more effective. The views of the teacher candidates regarding this application are presented below:

It's not disappointment, but I think the only thing I can say it would be better is not to squeeze all the presentations into one single week...In this way, problems like focusing can be minimized. (Interviewee 1)

When the pandemic conditions end or we turn back to schools, every week student presentations on a different topic including various skills can be conducted in face-to-face lessons. The presentations made by different student groups every week might make lessons more enjoyable. (Interviewee 3)

...Because the lesson time is limited and courses are delivered online, the practical applications conducted can be said to be sufficient. In addition, increasing the number of these practical studies might be better. (Interviewee 8)

My only criticism might be this: The time period we conducted our activities seemed to be short. Instead of watching all presentations in one week, I think extending them to at least two weeks might be a better way to be able to watch them productively. (Participant 50)

The final suggestion of teacher candidates was about "participation in the course and interaction". Acknowledging that participation in the course could not be as high as in face-to-face education since it was delivered online in distance education conditions, they thought active and vocal participation rate of students in the course should have been enhanced in a way. They also wanted to interact more with the lecturer. The teacher candidates' views regarding this topic are as follows:

I would ask for more time to have conversation with the lecturer. I would like to discuss the results of test that I did individually. One lesson could be devoted for such an application. (Interviewee 2)

There must be more student participation... because of the conditions at home, I was unable to participate in the lessons vocally. I participated in the course in written ways, but I think I was unable to express myself exactly. It seems to me that the best way of doing it is to deliver the lesson face-to-face and this is not in your power. (Interviewee 4)

...because my colleagues hesitated to participate in the lesson vocally (in distance education), or they were unable to do it, I didn't participate vocally, either. Ideas could have been conveyed easily through more vocal participation. (Interviewee 5)

One teacher candidate acknowledged that the subjects covered and discussed in the lessons were important and necessary. However, she also thought some current and sensitive social issues that were not discussed in other courses and platforms could have been covered in-

depth because of the nature of CATC. The opinions of the teacher candidate regarding this issue are presented below:

The issues we discussed in our last lessons were very important. Even if we don't want to see, we have some realities in our country, such as gender discrimination, racism, sexual orientation racism and inequality of opportunity... I believe these issues should be addressed. (Interviewee 4)

Finally, the teacher candidates were asked questions concerning the evaluation system of CATC. All of the teacher candidates interviewed (100%) deemed the evaluation of the course as a logical and fair system. The following quotations below show the views of teacher candidates concerning the evaluation system of CATC:

To me, the evaluations carried out were appropriate to assess the learning outcomes...We put our critical and analytical knowledge into practice while engaging with our tasks and activities. It was very effective in my opinion. (Interviewee 1)

The method was quite good. Maybe, we might have sometimes given personal examples from our daily lives. (Interviewee 2)

... and the evaluation process provided us with permanent learning. (Interviewee 3)

Asking for designing CT and AT activities for the evaluation of this course was a wise decision.... If we hadn't designed those activities, I might not have realized that utilizing CT and AT was not that difficult. (Interviewee 4)

I approve the evaluation of this course. Both the pandemic conditions and the primary philosophy of the course indicate that the learning outcomes of this course cannot be achieved through an ordinary examination. (Interviewee 5)

For the evaluation of the course, we designed activities for the final exam and we answered open-ended questions for the mid-term exam. To me, the final exam was terrific. (Interviewee 6)

To me, the method (for evaluation) was quite successful. Everything was prepared meticulously such as the materials, course content and evaluation. (Interviewee 7)

Discussion, Conclusion and Implications

This research study aimed at revealing the opinions of teacher candidates regarding CATC conducted at a state university. The study showed that the teacher candidates were highly pleased with it. By the end of the semester, the teacher candidates thought that CATC supported their individual and professional development and enabled them to look at the world from different perspectives. Even though it takes time to develop thinking skills, the teacher candidates believed that CATC developed their CT and AT skills after completion of it. In addition, the study yielded similar findings compared to the studies focusing on courses or implementations to develop thinking skills of teacher candidates and showed that these skills can be taught and developed (Akkuş-Çakır & Senemoğlu, 2016; Aybek, 2007; Cantürk-Günhan & Başer, 2009; Tok & Sevinç, 2010). The teacher candidates stated that beside professional and personal acquisitions, CATC was in the first place of the courses that they enjoyed at the time when the study was conducted. The teacher candidates also asserted that this elective course must be a required course to be taken by all teacher candidates at education faculties. This is also similar to what Aybek (2007) had already revealed about education faculty students regarding CT teaching.

The overall findings mentioned above can be deemed as the indicator of the success of the course by achieving its learning outcomes. One of the most significant findings of the course is the view of teacher candidates that CATC can support social development. This finding solely implies that the course fulfills a pivotal mission. The teacher candidates believed that they first and foremost should possess these higher-order thinking skills. By being role models, the teacher candidates held that they could contribute to the education of a generation who would be able to use thinking skills in every field of life and hence could support social development.

The findings also revealed that CT and AT skills of the teacher candidates developed and they learned how to teach these skills by associating them with learning outcomes in their own disciplines. In collaborative group works, the teacher candidates designed lesson activities towards teaching these thinking skills in their disciplines in line with a certain course subject and learning outcomes. They deemed these practical studies rather beneficial for their professional development. This finding also corresponds with the approach holding that thinking skills should be associated with course subjects in a particular discipline and thinking skills should be diffused to whole curriculum (Dilekli, 2019; Ennis, 1989).

In CATC, discussions were carried out with teacher candidates concerning questions asked in international examinations and the logic behind these questions. The teacher candidates explained why Turkish students were unsuccessful in answering questions requiring higher-order thinking skills with specific examples from their own experiences and asserted that rote-learning-based education system did not allow them to put knowledge into practice. The results suggest that the primary reason why the teacher candidates believed CATC supported their both individual and professional development is the nature of the course incorporating theory and practice. The teacher candidates deemed the feedback and comments from their instructor and colleagues valuable for their personal development. The teacher candidates were provided with feedback towards their opinions at weekly discussions and also towards the CT and AT activities they carried out and they did self-reflection and self-evaluation in accordance with these comments and feedback. This kind of a collaborative teacher education in which candidates reflect on their experiences, learn from each other and integrate theory and practice is line with what Korthagen (2005, 2017) calls as "realistic teacher education" based on reflection.

CATC was delivered to teacher candidates online due to Covid-19 pandemic conditions. The infrastructure of the system on which the course was carried out was successful. However, some teacher candidates had technical problems specifically in vocal participation in the lessons, or they sometimes avoided turning their microphones on due to inappropriate home conditions. This led to limited active student participation. CATC by nature was developed based on free discussions and expressing ideas in a democratic environment though. This limitation was attempted to be eliminated through posting written messages reflecting teacher candidates' ideas, yet it slowed down the natural pace of the course and this was expressed by the teacher candidates in the written interviews. The weekly discussions on the other hand helped overcome this limitation and allowed instructor-student and student-student interaction. As it was pointed out in the findings, the teacher candidates were satisfied with this application and they appreciated obtaining weekly feedback and pleased to be informed of the ideas of their colleagues. Every week, the teacher candidates were provided with certain videos, documentaries, discussion programs or other related links to be read and watched till the next

lesson. However, along with these materials, the teacher candidates proposed to integrate books and movies supporting CT by associating with examinations.

Course Proposal: Finally, as a result of the findings obtained from this study, an exemplary CATC, which is very similar to the applied program (except week 1 and week 14) since the teacher candidates were overall satisfied with it, is proposed for future implementations too. However, there are some changes in the evaluation of the course that were not applied in the course implemented because of the reasons explained below. Although the content might alter, a CATC based on fundamental course subjects, applications and evaluations is supposed to enhance individual and professional development of teacher candidates who share similar features at other education faculties. The syllabus of the proposed CATC is presented in Table 9.

Table 9. *The Syllabus of CATC*

| Week | Subject |
|------|---|
| 1 | <i>Course Description and Introduction</i> <i>The list of movies and books supporting CT</i> |
| 2 | <i>What is thinking?</i> The Building Stones of Thinking; Features of Good Thinkers; Factors Hindering Healthy Thinking |
| 3 | <i>Brain as a Thinking Organ</i> The Structure of Brain; The Features of Right and Left Brain; Holistic Development of Brain |
| 4 | <i>Thinking Types</i> Analytical, Critical, Reflective and Creative Thinking |
| 5 | <i>What is Criticism?</i> The Concept of Criticism; Modern, Modernity, Modernism; CT and the Identity of Intellectual; The Fundamental Intellectual Features |
| 6 | <i>CT</i> CT Dispositions; The Place of CT in Curriculum; The Attributions Gained Through CT |
| 7 | <i>The Activities Regarding to Gain CT Skills</i> Checking the Credibility of Data; Skills for Explaining Reasons; Prediction Skill; Generalizing Skill |
| 8 | <i>CT Skills Presentations</i> (Teacher Candidates) |
| 9 | <i>CT and Asking Effective Questions</i> Socratic Thinking; In-class Discussion Method |
| 10 | <i>AT</i> International Examinations and AT |
| 11 | <i>The Activities Regarding to Gain AT Skills</i> Comparison Skill; Classification Skill; Part and Whole Relation; Sequencing Skill |
| 12 | <i>AT Skills Presentations</i> (Teacher Candidates) |
| 13 | <i>Critical Reading and Writing</i> Analyzing the Text; Academic Reading and Writing |
| 14 | <i>Prejudice and Propaganda in Media</i> |

As is seen above, CATC complies with the content of the "Critical and Analytical Thinking" course proposed by the Council of Higher Education explained in the introduction under the CATC sub-title. As the subjects in syllabus suggest, teacher candidates are expected to acquire theoretical knowledge base regarding thinking, quality thinking, and higher-order thinking skills within the period until midterm. After midterm, a practical approach based on the use of knowledge is embraced. To this end, the lecturer provides teacher candidates with examples on how to use these skills and guides them. At the same time, the lecturer shares his/her expectations and criteria concerning the practical activities they will prepare and present in the following weeks.

Just as in the applied program, before teacher candidates conduct their activities, they are directed to review the curricula of their programs on the website of Ministry of Education to become aware of the learning outcomes and they prepare a lesson activity related with critical and analytical thinking skills. That teacher candidates prepare lesson activities as individual or group work in the form of micro-teaching and gain teaching experience transforms the activities into a more meaningful and instructive experience for them. CT cannot be reduced to logic or logical thinking. CT definitely includes logic, but it also covers the criterion and pragmatic dimensions (McPeck, 2016). The criterion and pragmatic dimensions have nothing to do with seeking for fallacy and these two dimensions require to be knowledgeable at a certain field. For instance, if a teacher conducts a critical activity on history, then that teacher needs to have history knowledge, too (McPeck, 2016). For this reason, the teacher candidates are supposed to relate CT and AT with their own disciplines. The research findings also revealed that this application was deemed beneficial by the teacher candidates. In addition, the teacher candidates emphasized that this kind of an application was useful for collaborative learning. They enjoyed preparing such activities and they realized how to teach the very same topic from different point of views.

One of the most favorite aspects of CATC was online discussions. It was initially an obligation, but will continue in face-to-face education upon suggestions of teacher candidates and a kind of blended learning model will be implemented. The online discussion platform allowed the teacher candidates to engage in meaningful interaction with the lecturer and other colleagues. In addition, the teacher candidates believed that they advanced their critical writing skills. Discussions helped ensure the comprehension of subjects and they allowed the teacher candidates to express their opinions in a free and comfortable setting of the course. This application also allowed the teacher candidates to enrich the course not only with their opinions but also with the resources they found and uploaded into the system for their colleagues and this made them the contributors of the course and content, as well.

Evaluation: The evaluation and examination system of CATC provide various opportunities for the lecturer and teacher candidates because of the properties it presents. Classic examinations will not be appropriate for the purposes of this course. First of all, weekly discussions are an essential part of evaluation. Within this application, the number of participations of teacher candidates in discussions is taken into consideration and this constitutes a certain percent of midterm and final exam. Preferably, the participations of teacher candidates can be added to evaluation based on quality, quantity, or other criteria the lecturer will determine. This could encourage teacher candidates to participate in lesson and express their opinions from a critical point of view.

In CATC, the teacher candidates were asked open-ended questions regarding course subjects in the midterm examination. The components of the final examination were CT and AT activities presented in the lessons and weekly discussions. The teacher candidates obtained feedback concerning their lesson activities from the lecturer and their colleagues and they had another opportunity to revise their activities before submitting to the lecturer for final evaluation. The same procedure will be implemented in the following years depending on the positive views of the teacher candidates participating in the study.

Because the course was conducted online, it prevented to realize some applications that had been planned earlier. During distance education, other courses were delivered online too

and this led other lecturers to implement homework assignments, which increased teacher candidates' workload significantly. In the following implementations of the course though, the primary application in either face-to-face or distance education will be reflective journals and portfolios. Teacher candidates will keep reflective journals from the very beginning of the semester. The structure of journals can vary, but Ruggiero's (2019) suggestion will be implemented in this proposed model. Teacher candidates are supposed to reflect their observations and opinions. Teacher candidates will write their first impressions, opinions and questions in their minds regarding the subject on the left-hand-side of the journal page. After a certain time period (for instance, the time-span till midterm and final examination), they will write their new ideas on the same subject, changed opinions and the answers they have found to the questions they have already asked on the right-hand-side of the journal. Hence, they will have recorded the mental transformation they have experienced from the beginning of the semester till the end.

Another application will be the book or movie review with a critical examination. In this study, the teacher candidates stated that they wanted to carry out such an application. For this reason, teacher candidates will review several books or movies that will be determined at the beginning of the semester and report them by providing justification and evidence in accordance with the criteria to be determined. Finally, teacher candidates will conduct an activity concerning media literacy. To do this, studying the subjects of media literacy and propaganda in media at the beginning of the semester would be more meaningful. The teacher candidates will examine a certain topic (preferably about education) in different media organs and advertisements every week and they will try to identify the elements of manipulation.

It is believed that research results might be of importance in training teacher candidates with intended thinking skills and in future course design. This research study shows that all these applications mentioned above develop thinking skills of teacher candidates. The other applications proposed within this model can be implemented and be enriched through face-to-face, online, blended or flipped learning settings keeping the creativity, dispositions and technical and physical conditions the lecturer possesses. Beside this, other academic studies to be conducted with different teacher candidates at different education faculties and findings to be obtained will contribute to teacher candidates' thinking skills development and provide teacher trainers with new perspectives on teaching critical and analytical thinking. All these studies will eventually pave the way for an education equipping teacher candidates with higher-order thinking skills and this will inevitably contribute to the economic and social development of a particular society with individuals who can deploy these skills in every field of life.

References

- Akkuş-Çakır, N., & Senemoğlu, N. (2016). Analytical thinking skills in higher education. *Kastamonu Education Journal*, 24(3), 1487-1502.
- Akyel, S. A. (2018). Sunuş. In D. B. Yenici, (Ed.), *Eleştirel düşün. öğren, sorgula, öğret* (pp. 6-7). İstanbul: Yeditepe Üniversitesi Yayınevi.
- Anderson, L. W, Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Rath, J., & Wittrock, M. C. (2014). *Öğrenme öğretim ve değerlendirme ile ilgili bir sınıflama. Bloom'un eğitimin hedefleri ile ilgili sınıflamasının güncellenmiş biçimi* (D. A. Özçelik, Trans.). Ankara: Pegem Akademi. (Original work published 2001)
- Aybek, B. (2007). Konu ve beceri temelli eleştirel düşünme öğretiminin öğretmen adaylarının eleştirel düşünme eğilimi ve düzeyine etkisi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 16(2), 43-60.
- Behn, R. D., & Vaupel, J. W. (1976). Teaching analytical thinking. *Policy Analysis*, 663-692.
- Bird, C. M. (2005). How I stopped dreading and learned to love transcription. *Qualitative Inquiry*, 11(2), 226-248.
- Braun, V., & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Cantürk-Günhan, B., & Başer, N. (2009). Impact of problem-based learning on students' critical thinking skills. *Journal of Turkish Educational Sciences*, 7(2), 451-482.
- Crenshaw, P., Hale, E., & Harper, S. L. (2011). Producing intellectual labor in the classroom: The utilization of a critical thinking model to help students take command of their thinking. *Journal of College Teaching & Learning*, 8(7), 13-26.
- Cottrell, S. (2017). *Critical thinking skills: Effective analysis, argument and reflection*. Macmillan International Higher Education.
- Creswell, J. W. (2014). *Educational research: Planning, conducting, and evaluating quantitative research*. Upper Saddle River, NJ: Pearson.
- Çinici, A., & Ergin, B. (2019). The effects of discussion and decision-making based activities concerning GMOs on critical thinking dispositions of teacher candidates. *Necatibey Faculty of Education Electronic Journal of Science & Mathematics Education*, 13(2), 735-758.
- De Bono, E. (1985). The CoRT thinking program. In J. W. Segal., S. F. Chipman., & R. Glaser (Eds.), *Thinking and learning skills 1* (pp. 363-378). London: Routledge.
- De Bono, E. (1987). Direct teaching of thinking as a skill. In M. Heiman., & J. Slomianko (Eds.), *Thinking skills instruction: Concepts and techniques. Building students' thinking skills series*, (pp. 217-229). National Education Association. <https://files.eric.ed.gov/fulltext/ED306559.pdf>
- Dilekli, Y. (2019). *Etkinliklerle düşünme öğretimi*. Ankara: Pegem Akademi.
- Dutoğlu, G., & Tuncel, M. (2008). The relationship between candidate teachers' critical thinking tendencies and their emotional intelligence levels. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 8(1), 11-32.
- Ekinci, Ö., & Aybek, B. (2010). Analysis of the empathy and the critical thinking disposition of the teacher candidates. *Elementary Education Online*, 9(2), 816-827.

- Ersoy, A. (2015). Doktora öğrencilerinin ilk nitel araştırma deneyimlerinin günlükler aracılığıyla incelenmesi. *Pegem Eğitim ve Öğretim Dergisi*, 5(5), 549-568.
- Ennis, R. H. (1989). Critical thinking and subject specificity: Clarification and needed research. *Educational Researcher*, 18(3), 4-10.
- Erkuş, A. (2021). *Davranış bilimleri için bilimsel araştırma süreci*. Ankara: Seçkin Yayıncılık.
- Facione, P. A. (1990a). *Critical thinking: A Statement of expert consensus for purposes of educational assessment and Instruction. Research findings and recommendations*. <https://files.eric.ed.gov/fulltext/ED315423.pdf>
- Facione, P. (1990b). *The California critical thinking skills test: Forms A and B*. Millbrae: California Academic Press. <https://files.eric.ed.gov/fulltext/ED327549.pdf>
- Facione, P. A. (2011). Critical thinking: What it is and why it counts. *Insight Assessment*, 2007(1), 1-23.
- Feuerstein, R., & Jensen, M. R. (1980). Instrumental enrichment: Theoretical basis, goals, and instruments. *The Educational Forum*, 44(4), 401-423.
- Glesne, C. (2016). *Becoming qualitative researchers: An introduction*. Upper Saddle River, NJ: Pearson.
- Greene, J. Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255-274.
- Işık, Ö. (2015). Eleştirel düşünme. Öğrenmenin nörofizyolojisi. In M. Arslan, (Ed.), *Öğretimde yeni yaklaşımlar* (pp. 160-178). Ankara: Anı Yayıncılık.
- Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education*, 84(1), 138-146
- Korthagen, F. (2005). Practice, theory, and person in lifelong professional learning. In Beijaard, D., Meijer, C.P., Morine-Dersheimer, G., & Tillema, G. (Eds.), *Teacher professional development in changing conditions* (pp. 79-94). Dordrecht, The Netherlands: Springer.
- Korthagen, F. (2017). Inconvenient truths about teacher learning: Towards professional development 3.0. *Teachers and Teaching*, 23(4), 387-405.
- McGuinness, C. (1999). *From thinking skills to thinking classrooms: A review and evaluation of approaches for developing pupils' thinking*. Department for Education and Employment.
- McMillan, J. H. (2004). *Educational research: Fundamentals for the consumer* (4th Ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- McPeck, J. E. (2016). *Critical thinking and education*. London: Routledge.
- Özdemir, O. (2020). Türkçe eğitiminde geliştirilmesi gereken bir üst düzey düşünme becerisi: Analitik düşünme. *Ana Dili Eğitimi Dergisi*, 8(3), 950-971.
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Thousand Oaks, CA: Sage Publications.
- Paul, R., & Elder, L. (2020). *Kritik düşünce: Yaşamınızın ve öğrenmenizin sorumluluğunu üstlenmek için araçlar*. (E. Aslan & G. Sart, Trans. Ed.). Ankara: Nobel Yayıncılık. (Original work published 2001)
- Robbins, J. K. (2011). Problem solving, reasoning, and analytical thinking in a classroom environment. *The Behavior Analyst Today*, 12(1), 41.
- Ruggiero, V. R. (2019). *Eleştirel düşünme için bir rehber*. (Ç. Dedeoğlu, Trans.). İstanbul: Alfa Araştırma. (Original work published 2004)

- Şahin, S. A. & Tunca, N. (2013). Düşünme becerileri ve düşünmeyi destekleyen sınıf ortamı/öğretmen davranışları. In G. Ekici & M. Güven (Eds.), *Öğrenme-öğretme yaklaşımları ve uygulama örnekleri* (pp. 392-426). Ankara: Pegem Akademi.
- Tok, E., & Sevinç, M. (2010). The effects of thinking skills education on the critical thinking and problem-solving skills of pre-school teacher candidates. *Pamukkale University Journal of Education*, (27), 67-82.
- Uribe-Enciso, O. L., Enciso, D. S. U., & Daza, M. D. P. V. (2017). Critical thinking and its importance in education: Some reflections. *Rastros Rostros*, 19(34), 78-88.
- Weisberg, R. W. (2015). Toward an integrated theory of insight in problem solving. *Thinking & Reasoning*, 21(1), 5-39.
- Yazçayır, N. (2015). Düşünme temelli öğrenme modelleri. In Y. Budak (Ed.), *Öğretim ilke ve yöntemleri* (pp. 192-254). Ankara: Pegem Akademi.
- Yılmaz, K. (2019). *Eleştirel ve analitik düşünme*. Ankara: Pegem Akademi.



Öğretmen Adaylarının Eleştirel ve Analitik Düşünme Dersine Yönelik Düşünceleri

Giriş

Eleştirel ve analitik düşünme üst düzey düşünme becerileri arasında yer almaktadır (Akkuş-Çakır & Senemoğlu, 2016). Eleştirel kelimesi eski Yunancada nesnel değerlendirme anlamına gelmektedir (Paul & Elder, 2020) ve esasen mantıklı ve kanıt temelli değerlendirmede bulunmaktadır. Eleştirel düşünce bireylerin daha nitelikli kararlar almasına yardımcı olarak yaşam kalitesini yükseltmektedir. Eleştirel düşünce neye inanılıp inanılmaması ya da neyin yapıp yapılmaması gerektiğine odaklanılan bir yansıtıcı düşünme becerisidir (Ennis, 1989). Eleştirel düşünme öğretimi ile ilgili olarak alanyazında konu temelli ve beceri temelli olmak üzere iki temel yaklaşım bulunmaktadır (Aybek, 2007).

Bir diğer üst düzey düşünme becerisi analitik düşünmedir. Analiz kelimesi Yunanca kökenli bir kelime olup bir şeyi en küçük parçalarına ayırma anlamına gelmektedir. Analitik düşünme ise karar verme ve problem çözme süreçlerinde bu parçaları tekrar bir araya getirebilme becerisidir. Bloom'un yenilenmiş taksonomisi 'analiz'i bir materyali parçalarına ayırma ve bu parçaların bütünle nasıl bir ilişkisi olduğunu belirleyebilme olarak tanımlamaktadır (Anderson et al., 2014). Alanyazında analitik düşünme öğretimi genellikle problem çözme becerileri ile ilişkilendirilmektedir.

Bu çalışma; 2020-2021 akademik yılı bahar döneminde, bir devlet üniversitesindeki eğitim fakültesinde Covid-19 uzaktan eğitim koşullarında çevrim içi yürütülmüş olan "Eleştirel ve Analitik Düşünme" (EAD) dersine yönelik öğretmen adaylarının görüşlerini anlamayı amaçlayan bir çalışmadır. EAD bu kurumda ilk defa verildiği için dersin geliştirilebilmesi adına öğretmen adaylarının görüşlerinin bilimsel bir araştırmayla ortaya konması amaçlanmıştır. Bu genel amaç doğrultusunda cevap aranan diğer sorular ise:

- 1- Öğretmen adaylarının EAD dersinin kendilerinin düşünme becerilerini geliştirip geliştirmediğine ilişkin genel görüşleri nelerdir?
- 2- Öğretmen adaylarının EAD dersinde gerçekleştirdikleri eleştirel ve analitik düşünme etkinliklerinin başarılı olup olmadığına ilişkin görüşleri nelerdir?
- 3- Öğretmen adaylarına göre EAD dersinin güçlü ve zayıf unsurları nelerdir?
- 4- Öğretmen adaylarının düşüncelerine dayalı olarak eğitim fakültelerinde okutulması öngörülen bir EAD dersinin özellikleri nelerdir?

Yöntem

Bu çalışma, analitik araştırma olarak desenlenmiştir. Nicel ve nitel araştırma biçiminde sınıflandırılmayan araştırmalar analitik araştırmalar olarak adlandırılmaktadır (McMillan, 2004). Analitik araştırmalar; araştırma konusu ile ilgili doküman, belge ve kayıtların olaylar, düşünceler ve kavramlar bağlamında incelendiği bir araştırma yöntemidir (Ersoy, 2015). Araştırmanın gerçekleştirilebilmesi için 07.06.2021 tarihli ve 69559 no'lu Etik Kurul izin belgesi alınmıştır.

Katılımcılar

Araştırmanın çalışma grubunu EAD dersine kayıtlı olan toplam 176 öğretmen adayı oluşturmaktadır. Araştırmacı tarafından geliştirilen Eleştirel ve Analitik Düşünme Anketi (EADA) ile Eleştirel ve Analitik Düşünme Yazılı Görüşme Formu (EADGF) dersi alan tüm öğretmen adaylarına internet ortamında gönderilmiştir. Gönüllü olan 78 öğretmen adayı anketi doldurmuş ve araştırmacıya geri göndermiştir.

Veri Toplama Araçları ve Analizi

EADA'da 30 adet beşli Likert tipi anket maddeleri bulunmaktadır. EADGF'de ise sekiz yarı-yapılandırılmış görüşme sorusu bulunmaktadır. EADA'nın analizinde betimsel istatistikten yararlanılmıştır. Araştırmanın nitel verilerini oluşturan yazılı görüşmelerin analizi ise tematik analizle gerçekleştirilmiştir (Braun ve Clarke, 2006). Anketten ve görüşmelerden elde edilen bulgular nitel olarak öğretmen adaylarının açık uçlu anket maddesine verdikleri yanıtlarla desteklenmiş ve böylelikle veri çeşitlemesi sağlanmıştır.

Bulgular

EADA'dan Elde Edilen Bulgular

Öğretmen adayları dersten beklentilerinin karşılandığını ifade etmiştir. Bu bulgu öğretmen adaylarının ders tanıtımında yazan bilgilerle dönem boyunca gerçekleşen uygulamaların ve sunulan içeriğin örtüştüğünü düşündüklerini göstermektedir. Öğretmen adayları ders içeriğinin zengin ve yeterli olduğunu, bunun yanında dersin mesleki gelişimlerini desteklediğini düşünmektedir. Öğretmen adayları eleştirel ve analitik düşünme becerisinin sınıflarda nasıl uygulanabileceğine ve kazandırılabilmesine yönelik örnekler ve etkinlikler üzerinde çalışmıştır ve bu etkinlikleri oldukça faydalı bulmuştur. Öğretmen adayları EAD dersi sayesinde eleştirel ve analitik düşünme becerilerini, eleştirel okuma ve yazma becerilerini, yansıtıcı ve yaratıcı düşünme becerilerini geliştirdiklerini, medyadaki propaganda unsurlarını algılayabildiklerini, kendilerini daha iyi tanıyabildiklerini, sınıflarında eleştiri ve demokrasi kültürünün yerleşmesi için neler yapmaları gerektiğini öğrendiklerini ifade etmiştir.

Nitel Verilerden elde Edilen Bulgular

Yazılı görüşmelerin içerik analizi sonucunda beş temel temaya ulaşılmıştır; 1) kendini tanıma ve öz-değerlendirme, 2) verimli ve faydalı bir ders, 3) keyifli bir ders, 4) öğretmenlik mesleği ve günlük yaşama aktarılacak bilgi, beceri ve deneyimler, 5) dersin geliştirilmesine yönelik öneriler. Bu beş tema EADA'dan elde edilen verilerle benzerlik göstermekle birlikte farklı olan tema dersin geliştirilmesine yönelik önerilerdir. Bunlardan ilki "film veya kitap/roman eleştirisi"dir. Öğretmen adayları dönem başında belirlenecek olan düşündürücü kitap ya da filmlerin eleştirel

bir bakış açısıyla değerlendirilmesini ve dersin değerlendirme sistemine eklenmesini önermiştir. İkincisi, eleştirel ve analitik düşünme becerilerinin sınıf içinde uygulanmasına yönelik "uygulama etkinliklerinin" daha uzun süreye yayılmasıdır. Üçüncü öneri "derse katılım ve etkileşim"dir. Öğretmen adayları dersin uzaktan eğitim yoluyla ve çevrim içi yapılmasından kaynaklı bazı teknik sıkıntılar yaşadıklarını ve bunun öğretmen-öğrenci etkileşimini olumsuz etkilediğini belirtmişlerdir. EADA'daki açık uçlu soruya verilen yanıtlar da bu bulguları desteklemektedir.

Tartışma, Sonuç ve Öneriler

Araştırma bulguları, alanyazında öğretmen adaylarının düşünme becerilerinin geliştirilmesine yönelik çalışmaların bulgularıyla benzerlik taşımakta ve bu becerilerin geliştirilebilir olduğunu göstermektedir (Akkuş-Çakır ve Senemoğlu, 2016; Aybek, 2007; Cantürk-Günhan ve Başer, 2009; Tok ve Sevinç, 2010). Öğretmen adayları EAD dersini önemsemekte ve eğitim fakültelerinde zorunlu bir ders olması gerektiğini düşünmektedir. Bütün bu bulgular dersin başarılı olduğunun göstergesi kabul edilebilir.

Öğretmen adayları EAD dersinin toplumsal kalkınmaya destek olacağına inanmaktadır. Öğretmen adayları öğrencilerinin her alanda üst düzey düşünme becerilerini kullanabilmesini sağlayarak daha iyi düşünebilen bir neslin yetiştirilmesine katkı sağlayabileceklerini düşünmektedir. Araştırmanın bulguları öğretmen adaylarının eleştirel, analitik ve yansıtıcı düşünme, eleştirel okuma ve yazma gibi üst düzey düşünme becerilerini geliştirdiğini ortaya çıkarmıştır. Bunun yanında öğretmen adayları bu becerileri kendi disiplinlerinde ders kazanımları ile ilişkilendirerek nasıl öğretebileceklerini öğrendiklerini ifade etmiş ve dersin kuram ve uygulamayı bütünleştirdiğini belirtmişlerdir.

EAD dersi Covid-19 pandemi ve uzaktan eğitim koşullarında çevrim içi olarak gerçekleştirilmiştir. Bu ise derse sesli katılımı sınırlandırmıştır. Öğretmen adayları ev koşullarında olmalarından dolayı kimi zaman mikrofonlarını açmaktan çekinmiş ve bu durum derslerin bazen yalnızca belli öğrencilerin katılımıyla ya da öğretmen merkezli işlenmesine neden olmuştur.

Araştırmadan elde edilen bulgular doğrultusunda örnek bir EAD dersi önerilmektedir. Önerilen uygulamalar yüz yüze, çevrim içi, harmanlanmış ya da ters-yüz edilmiş öğrenme ortamlarında öğretim elemanın yaratıcılığı, eğilimleri ve sahip olduğu teknik ve fiziki koşullara göre farklı biçimlerde gerçekleştirilebilir. Ayrıca, diğer eğitim fakültelerinde farklı öğretmen adaylarıyla gerçekleştirilecek çalışmalar da bu ders bağlamında öğretmen adaylarının düşünme becerilerinin geliştirilmesine katkı getirecektir.