

The Effect of Information Literacy on Teachers' Critical Thinking Disposition

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Abstract

The concepts of information literacy and critical thinking are two important concepts of today's information and technology age closely related to each other and sometimes used interchangeably. The purpose of the current study is to explore the relationship between the secondary school teachers' critical thinking disposition and information literacy. The study was conducted in line with relational survey model. The study group of the research is comprised of 626 secondary school teachers working in 22 secondary schools located in the Şehzadeler province of the city of Manisa in Turkey. The scales were administered to all the teachers in the study group. However, the total number of teachers sampled resulted in 473 (75.56%) usable survey protocols. In the collection of the research data, Turkish adaptation of California Critical Thinking Disposition Inventory (CCTDI-T) and Information Literacy Scale were used. The findings of the study revealed that the teachers' critical thinking disposition and their information literacy levels are "low". Besides, it was found that there is a significant, positive and bilateral relationship between the teachers' critical thinking disposition and information literacy. Moreover, the regression analysis results indicate that the dimensions of information literacy level explain 15% of critical thinking.

Keywords: critical thinking, information literacy, teachers' critical thinking, teachers' information literacy, relationship critical thinking and information literacy

1. Introduction

Critical thinking and information literacy are two interrelated concepts. For the future of a society, it is of great importance for individuals to have information literacy and critical thinking skills; therefore, all societies invest efforts to impart these skills to their citizens through education. With increasing level of information literacy of teachers, their critical thinking levels are believed to be increasing; therefore, this is considered as important for future generations to be trained properly. In this regard, the main purpose of the current study is to determine the effect of the secondary school teachers' literacy levels on their critical thinking.

1.1 Critical Thinking and Information Literacy

When the literature is reviewed, it is seen there are many different definitions of critical thinking. Gündoğdu (2009) pointed out that in the western literature, critical thinking has been defined by many authors but each definition is made under the influence of the discipline in which the author is engaged; thus, different aspects come to the fore in different definitions. Paul and Elder (2006) define critical thinking as "a method of thinking through which the individual directs, disciplines, monitors and justifies himself/herself". As cited by Aybek (2007) from Paul (1991, p. 125), critical thinking is "reaching results on the basis of observations and information". As cited by Moore (2010) from Brown and Keeley (2000), critical thinking is "responding to what we have heard and read by means of systematic evaluation". Critical thinking "is an active and organized process aiming to understand ourselves and what is happening around by being aware of our own thinking process, considering others' thinking processes and practicing what we have learned" (Cüceloğlu, 1994). On the basis of the given definitions, Alkın-Şahin, Tunca and Ulubey (2014) proposed a comprehensive definition of critical

thinking as “reasoned, sensible and reflective way of thinking including cognitive processes such as decision making and problem solving as well as affective attributes such as doubting, seeking for causes or evidence, being open-minded to have access to reliable and valid information”. By evaluating these definitions, it could be asserted that critical thinking is a higher level thinking skill built on the other skills which are gained easily. In this sense, it entails having basic thinking and understanding skills before approaching a context critically. In cases where such basic skills are absent, critical thinking cannot exist. However, the existence of such skills is not enough for the occurrence of critical thinking; they need to be brought together in a correct combination. Just as the whole is more than the sum of parts; critical thinking is more than the sum of the basic skills required for it. Critical thinking is a way of thinking in which these skills are brought together in an appropriate and consistent manner (Gelder, 2005, p. 2, cited in Gündoğdu, 2009). In this regard, the extent to which individuals are information literate is of great importance.

The concept of information literacy was first introduced by Zurkowski in 1974. Zurkowski described information literate individuals as those “who are trained in the application of information resources to their work” (cited in Kurbanoglu, 2010). As cited by Gandhe (2011) from Doly (1992), “Information Literacy is a kind of ability to recognize a need for information, identify and locate appropriate information sources, know how to gain access to the information contained in those sources, evaluate the quality of information obtained, recognize the information, and use the information effectively”. According to Williams and Wavell (2006), information literacy is a term used to explain the ability of finding information needed to satisfy objectives and needs and of using it effectively. According to Thompson (2003), this is the capacity of individuals, communities and nations to find, define, evaluate and organize information to find solutions to their problems. On the basis of the given definitions of information literacy, Gandhe (2011) stated that this concept is comprised of a set of abilities to identify the exact need of information and the correct source of required information, access the required information from selected source, evaluate the accessed information and apply the evaluated information.

In the literature, it could be encountered several definitions of literacy. Snively (1997) expresses that there are thirty four different concepts of literacy such as geography literacy, agriculture literacy, economy literacy, history literacy, ancient history literacy, politics literacy, citizenship literacy, law literacy, science literacy, culture literacy, workplace literacy, media literacy, technology literacy, consumer literacy, world literacy, library literacy, and critical literacy, so on. According to Breivik (1991) and Hancock (1993), while different literacy types that affect the individual’s learning are evaluated within their own disciplines, information literacy has a content that ensures the understanding of all literary types (cited in Aldemir, 2003). With some of its features, information literacy differs from other concepts of literacy. Information literacy affects and supports all the others types of literacy. That is, with the assistance of information literacy skills, it becomes possible for an individual to develop his/her other literacy skills (competency levels). Another feature distinguishing information literacy from other types of literacy is its not being restricted to a certain discipline or subject area. Though somehow it is true for all types of literacy, it can be particularly argued for some literacy types that they are a part of information literacy and even a pre-requisite for it (Kurbanoglu, 2010, p. 740). Though it is a relatively new concept, the information literacy is quite important for teacher competencies; however, it has not been well researched in our country, it is somehow misunderstood and erroneously used and as a result it has lost its importance. Even the library literacy that is the most basic skill in having access to information has been turned into a complex concept encompassing multi-faceted information literacy (Adigüzel, 2011).

As the concepts of information literacy and critical thinking show similarity to each other, these two concepts are usually confused. Allen (2008) also stated that some ambiguity is experienced in explaining these two concepts and they are used as synonym to each other. According to American Library Association’s *Presidential Committee on Information Literacy*, information literacy is “feeling that there is a need for information, finding this needed information, evaluating this obtained information and using it effectively”. Critical thinking, on the other hand, is an intellectual and cognitive process requiring conducting analysis, synthesis, evaluation and application so as to come up with a judgment, a result or an answer. While information literacy is finding, organizing and using the needed information, critical thinking is the ability of using the information obtained through good information literacy in such a way as to find a solution to a problem. Critical thinking is thinking, criticizing and finding alternative solutions not haphazardly, but on the basis of sound information. Therefore, it does not seem to be possible to think critically without information literacy.

1.2 Problem Statement

In today's world where information and technology is changing so rapidly, all societies try to educate their citizens as individuals who are inquisitive, questioning, critical and participatory, can think critically, and communicate effectively and have the capacity and knowledge to solve problems. Qian (2007) also points out that education plays an important role in the advancement of a society and therefore, a good education prepares an individual for adulthood and life, and brings welfare and success to a nation.

As teachers are directly responsible for the education of individuals, the most important role is shouldered by them for the education of individuals. In order to educate critically thinking and information literate individuals, teachers themselves have to be critically thinking and information literate individuals. Ekinci (2009) argues that it is not easy for teachers educated by means of the rote-learning approach to adopt and implement the changes taking place in curriculums and programs. Similarly, Thompson, Martin, Richards and Bransonet (2003), Alaxendar, Commander, Greenberg and Ward (2010), and Schreglmann (2011) draw attention to think critically in the individual's and society's life and emphasize the role of teachers as people teaching how to think.

Developments in information technologies have important impacts on education and considerably change teaching methods, programs, learning areas, and roles of teachers and students. Therefore, the most important problem to overcome to ensure efficiency in education in the 21st century is to inculcate competencies needed to be information literate in our teachers and make them able to use instructional technologies in their teaching (Wen & Shih, 2006). In a report issued by American Library Association [ALA] (2002), it is stated that there are rapid changes in technology and sources of information are proliferating; therefore, the importance of making individuals information literate is rapidly increasing.

In this regard, information literacy and critical thinking are related to each other and if one of them is missing, then the other one cannot exist. In order to be able to create information literate and critically thinking generation, we need to educate the teachers as equipped with the relevant qualifications. Similarly, information literacy is important for students to ask better questions, think critically and learn as less biased individuals so that they can enhance their knowledge (American Library Association [ALA], 2002). As cited by Adıgüzel (2011) from Henderson and Scheffler (2003), in many countries particularly in America and England, teacher training institutions invest great efforts to equip their pre-service teachers with information and skills needed by many different literacy domains. These literacy domains are; information literacy, technology literacy, computer and systems literacy, media literacy and library literacy. All of these literacy domains are of great importance in terms of teacher qualifications needed by today's modern societies, but information literacy is of a special importance because being information literate means knowing the ways of having access to information, making sense of it and using it.

Starting from the elementary education, teachers give some information to students but they do not inform them about what this information can be used for, where and how this information can be used and why it is so. However, for information production to occur, it is necessary to question the reliability and validity of the existing information. To this end, teachers should teach students how to interpret and criticize information. However, for teachers to be able to do this first, they should have sufficient information and skills, and therefore, they should be provided with good training through pre-service education and in-service training programs (Aybek, 2006). As stated in the concept of information literacy by Pinto, Cordon and Diaz (2010), information literacy skills should be used and improved to collect accurate information for the solution of a problem. Hence, information literacy skills should be improved for critical thinking to occur thoroughly.

Possession of information literacy skills by teachers might yield important benefits from three different perspectives. First, teachers' professional development; the second one is making the individual powerful by training him/her in such a way as to meet the requirements of the society and the age and the third one is making contribution to the development of the society by training individuals needed by the society (Kocak Usluel, 2006). The pre-requisite for teachers to educate their students as individuals who can critically think and make use of information and, who are creative and observer is their having these skills (Akkoyunlu & Kurbanoglu, 2002). This age is an information age and what information age means is continuous change. Keeping up with these changes entails the possession of higher level skills such as critical thinking. In order to be an individual who can think critically, being information literate is a must. The main responsibility should be taken by schools accordingly by teachers to train such individuals.

Grosser and Lombard (2008) stress that one of the best place to gain critical thinking skill to students is the classroom, and the person occupying the best position to construct settings where critical thinking processes can

be most effectively presented to students is the teacher. Similarly, according to Ennis (1991), in the gaining of critical thinking skills to students, the most important factor is the teacher.

When the research focusing on critical thinking skills is examined, it is seen that teachers are not aware of the content of this concept and not enough importance is attached to this issue in the programs of teacher training institutions and in-service training activities (Şengül & Üstündağ, 2009). The studies conducted in Turkey on this subject seems to be limited to critical thinking levels of pre-service teachers or students and investigates the issue at institutional level (Aybek, 2006; Seferoğlu & Akbıyık, 2006; Gündoğdu, 2009; Güven & Kürüm, 2006). The researches looking at teachers' critical thinking levels; on the other hand, mostly focus on investigating critical thinking levels in relation to some variables (Korkmaz, 2008; Şengül & Üstündağ, 2009).

Similarly, the research on information literacy seems to have been conducted at institutional level, mostly in the field of librarianship and limited to determining the levels of information literacy of pre-service teachers (Aldemir, 2003; Gürdal, 2000; Kocak Usluel, 2006; Kurbanoglu, 2010; Önal & Çetin, 2014; Polat & Odabaş, 2008). The research conducted on teachers (Akkoyunlu & Kurbanoglu, 2004) is quite limited, as well. Only one study directly related to the subject of the current study (Karadeniz Bayrak, 2014) was encountered and this was conducted with the participation of pre-service teachers.

As can be seen clearly, information literacy and critical thinking are so intertwined that it seems to be impossible to think of one of them in the absence of the other. Moreover, both of them are important individual and social requirements of this age. Educational institutions are responsible for the education of individuals and accordingly that of the society. As the people who provide cooperation opportunities in educational institutions are teachers, teachers must have these two skills. Therefore, this study is of importance for the determination of teachers' information literacy levels and critical thinking tendencies, the effect of being information literate on critical thinking tendencies and to make some suggestions in this regard. Moreover, when the related literature was examined, it was not encountered many studies directly addressing the relationship between critical thinking and information literacy, which is supposed to make the current research important in terms of making contribution to the literature and teacher training process in Turkey.

2. Purpose of the Study

The purpose of the current study is to reveal the relationship between secondary school teachers' critical thinking disposition and information literacy levels. To this end, answers to the following questions were sought.

- 1) What are the teachers' critical thinking disposition and information literacy levels?
- 2) Is there a relationship between the teachers' critical thinking disposition and information literacy levels?
- 3) Do the teachers' information literacy levels significantly predict their critical thinking disposition?

3. Method

3.1 Research Model

The current study employed the relational survey model. The relational survey model aims to determine the existence or the degree of the co-variance between two or more variables (Karasar, 2006).

3.2 Study Group

The study group of the current research is comprised of 626 secondary school teachers working in 22 secondary schools located in the Şehzadeler province of the city of Manisa in Turkey. All the teachers in the study group were administered scales, and 529 scales (84.50%) were returned. A total of 56 scales including erroneous or missing information were discarded from the study; thus, totally 473 (75.56%) were evaluated. Of the 473 participants, 243 (51.4%) are females and 230 (48.6%) are males. Sixty seven of the teachers have professional experience of 1-5 years, 111 have professional experience of 6-10 years, 92 have professional experience of 11-15 years, 102 have professional experience of 16-20 years and 101 have professional experience of 21 years or more. Of the participants, 431 have university degree and 42 have post-graduate degrees.

3.3 Data Collection Tools

In the collection of the data, two different data collection tools were used. One of them is California Critical Thinking Disposition Inventory (CCTDI) and the other one is Information Literacy Scale. Information about these tools is given below.

The original California Critical Thinking Disposition Inventory was developed by Facione, P., Facione, N., and Giancarlo (1992) in English and it was adapted to Turkish by Kökdemir (2003). The original CCTDI is comprised of seven dimensions and 51 items. However, the Turkish adaptation of CCTDI consists of 51

Likert-type items which determine the critical thinking disposition of teachers in six dimensions. These are *open-mindedness* which is expressed as one's tolerance to different approaches and sensitiveness to their own mistakes, *analyticity* which is stated as being careful for potential problems and as the disposition of reasoning and using objective evidence, *inquisitiveness* which is one's disposition of knowledge acquisition and learning new things without any profit expectancy, *self-confidence* which refers to the confidence one have for his own reasoning processes, *truth-seeking* which is the disposition of evaluating the alternatives or different thoughts, and *systematicity* which points out the disposition of researching in a planned, organized and attentive way (cited in Kökdemir, 2003). Items in the inventory are scored from "1-I strongly disagree" to "6-I strongly agree". The inventory, in overall, explains a 36.13% of total variance with a Cronbach's Alpha of 0.88. A total score below 240 ($X=4.70$) from the overall CCTDI shows that the critical thinking disposition is "low", whereas a total score above 300 ($X=5.88$) shows a "high" critical thinking disposition. This study retested the reliability of the data collection tool, and found a Cronbach's Alpha coefficient of 0.91 for the overall scale, 0.82 for analyticity, 0.89 for open mindedness, 0.88 for inquisitiveness, 0.84 for self-confidence, 0.70 for truth seeking and 0.80 for systematicity.

Information Literacy Scale is the second instrument used to determine the information literacy levels of secondary school teachers. The scale was developed by Adıgüzel (2011) and comprised of 38 Likert-type items. In the analysis conducted to determine the suitability of the first prototype scale to factor analysis, KMO test was found to be 0.794. As a result of the factor analysis conducted, 9 items found to be not working were discarded from the scale and 29 items with factor loading ranging from 0.460 to 0.796 were considered to be working and thus included in the scale. In the second analysis conducted for rotation, KMO value was found to be 0.850. In order to conduct principal components analysis of the factors, rotation was performed and four factors emerged in the scale. These factors were named considering the stages of information literacy. These are *defining information needs* comprising 8 items, *access to information* 11 items; *use of information* 5 items and *ethical and legal settings in use of information* 5 items. Items in this scale are scored from "1-Never" to "5-Always". The higher the score obtained from the scale, the higher the level of information literacy is. The Cronbach's Alpha reliability coefficient of the scale was found to be 0.928 for the overall scale, 0.796 for defining information needs, 0.866 for access to information, 0.851 for use of information, and 0.832 for ethical and legal settings in the use of information. This study retested the reliability of the scale, and found a Cronbach's Alpha coefficient of 0.964 for the overall scale, 0.92 for defining information needs, 0.90 for access to information, 0.86 for use of information, and 0.85 for ethical and legal settings in the use of information.

4. Findings

4.1 Findings Related to the First Sub-Problem

In this section, the results of the analyses are presented in tables and then explained. The first sub-problem of the study aims to determine the critical thinking disposition and information literacy levels of teachers. In this regard, the participants' opinions about critical thinking (in Table 1) and information literacy (in Table 2) are presented.

Table 1. Arithmetic means and standard deviations related to critical thinking disposition

Dimensions	N	\bar{X}	S
Open Mindedness	473	2.5895	.98904
Analyticity	473	3.7590	.72362
Inquisitiveness	473	3.5891	.75582
Self-confidence	473	3.3727	.72111
Truth seeking	473	2.9456	.78507
Systematicity	473	2.8182	.79015
Total	473	3.2308	.59136

When the teachers' opinions about their critical thinking disposition are examined, it is seen that the highest agreement is on "Inquisitiveness" ($\bar{X}=3.5891$) and "Analyticity" ($\bar{X}=3.7590$) dimensions and they are followed by "Self-confidence" ($\bar{X}=3.3727$), "Truth Seeking" ($\bar{X}=2.9456$), "Systematicity" ($\bar{X}=2.8182$) and "Open Mindedness" ($\bar{X}=2.5895$) dimensions. In general, the teachers' opinions about critical thinking disposition are at

the low level ($\bar{X}=3.2308$). In light of these findings, it can be argued that the teachers' highest critical thinking disposition are at analyticity and inquisitiveness dimensions and the lowest critical thinking disposition are at open mindedness dimension and in general they have low level of critical thinking tendencies.

Table 2. Arithmetic means and standard deviations related to information literacy

Dimensions	N	\bar{X}	S
Defining information needs	473	1.9968	.68402
Access to information	473	2.0190	.71973
Use of information	473	2.0245	.68796
Ethical and legal settings in use of information	473	1.9207	.78185
Total	473	1.9837	.64882

When the teachers' opinions about their information literacy levels are examined, it is seen that they expressed low opinions about the sub-dimensions of "Defining needs for information" ($\bar{X}=1.9968$), "Access to information" ($\bar{X}=2.0190$), "Use of information" ($\bar{X}=2.0245$), "Ethical and legal settings in use of information" ($\bar{X}=1.9207$) and about the whole scale ($\bar{X}=1.9837$). These findings show that the teachers' information literacy levels are low.

4.2 Findings Related to the Second Sub-Problem

The second sub-problem of the research aims to designate the relationship between the teachers' critical thinking disposition and information literacy levels. In this regard, Table 3 shows the relationship between critical thinking disposition and information literacy levels of teachers.

Table 3. Correlation showing the relationship between critical thinking disposition and information literacy

Dimensions	Open-mindedness	Analyticity	Inquisitiveness	Self-confidence	Truth-seeking	Systematicity	Critical thinking total
Access to Information	.121**	.220**	.202**	.170**	.119**	.102*	
	.008	.000	.000	.000	.009	.027	
Defining Information Needs	.137**	.191**	.172**	.138**	.136**	.116*	
	.003	.000	.000	.003	.003	.012	
Use of Information	.169**	.216**	.182**	.127**	.164**	.183**	
	.000	.000	.000	.006	.000	.000	
Ethical and Legal Settings in Use of Information	.227**	.212**	.137**	.076	.199**	.241**	
	.000	.000	.003	.097	.000	.000	
Information literacy							.229**
Total							.006

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

According to two-tailed correlation analysis, it is seen that there is significant, positive and bidirectional correlation between the access to information, defining information needs, use of information and ethical and legal settings in use of information dimensions of information literacy and open-mindedness, analyticity, inquisitiveness, self-confidence, truth seeking and systematicity dimensions of critical thinking. There is an insignificant and positive correlation only between the ethical dimension of information literacy and

self-confidence dimension of critical thinking. In total, there is a significant, positive and bi-directional correlation between information literacy and critical thinking ($r=.229$). Thus, it can be argued that with increasing level of information literacy, critical thinking level increases and with decreasing level of information literacy, critical thinking level also decreases.

4.3 Findings Related to the Third Sub-Problem

The third sub-problem of the study aims to determine whether the teachers' information literacy levels significantly predict their critical thinking disposition. In this regard, Table 4 shows multiple linear regression analysis about information literacy predicting critical thinking.

Table 4. Multiple linear regression analysis about information literacy predicting critical thinking

Modal	Beta (β)	t	F	R ²	P
Defining information needs	.119	1.10			
Access to information	.253	2.40			
Use of information	.136	1.37	4.79	.153	.002
Ethical and legal settings in use of information	.200	2.54			

Dependent Variable: Critical Thinking.

The results of the multiple linear regression analysis revealed that defining (information needs, access to information, use of information and ethical and legal settings) in use of information dimensions of information literacy significantly predict (open-mindedness, analyticity, inquisitiveness, self-confidence, truth seeking and systematicity) dimensions of critical thinking ($p=.002$). In general regression analysis the dimensions of information literacy level explain 15% of critical thinking. In other words, critical thinking disposition can be explained depending on 15% information literacy adequacy. The dimensions of information literacy describe critical thinking significant ($P<.05$) in general. Among the dimensions of information literacy work significantly upon Access to information ($\beta=.25$), Ethical and legal settings in use of information ($\beta=.20$), Use of information ($\beta=.13$), Defining information needs ($\beta=.11$) respectively.

5. Discussion

In the current study aiming to explore the relationship between the secondary school teachers' critical thinking disposition and information literacy levels, the first sub-problem was determined as "What are the secondary school teachers' critical thinking disposition and information literacy levels?". When the teachers' critical thinking disposition were examined, it was found that the teachers' critical thinking disposition are the highest at "analyticity" and "inquisitiveness" dimensions and the lowest at "open mindedness" dimension. However, the teachers' critical thinking dispositions are at the low level in general. When the teachers' opinions about their information literacy levels were evaluated, it was found that their information literacy levels are low both at the sub-dimensions of "defining information needs", "access to information", "use of information", "ethical and legal settings in use of information" and in the general total. Parallel to the findings of the current study, Şengül and Üstündağ (2009) also found that the teachers' critical thinking tendencies are low and they do not include activities to develop critical thinking in their classrooms. Similarly, in a study conducted by Çiçek Sağlam and Büyükuysal (2013) on the pre-service classroom teachers and Turkish language teachers, the participants' critical thinking levels were found to be low. Besides, Senar (2014) also found that the pre-school teachers' critical thinking dispositions are low and problem solving skills are medium. As a result of their study conducted with the participation of elementary and secondary school teachers, Akkoyunlu and Kurbanoglu (2002) concluded that the teachers are not adequately information literate. As can be seen from the literature, both critical thinking disposition and information literacy levels are low in general and this might be due to the inadequacy of the existing curriculums. In a study conducted by Aldemir (2004) on pre-service teachers' information literacy levels, it was reported that the curriculum does not provide opportunities for pre-service teachers to develop their information literacy levels. Williams and Wavell (2006), as a result of their study on information literacy, verified that information literacy is important for life-long learning but it is not possible to support the development of information literacy in students by means of the existing curriculums. Aرسال (2015) investigated the effect of micro-teaching method on pre-school teachers' critical thinking disposition and suggested that micro-teaching applications should be used to enhance critical thinking disposition. Similarly,

Wen and Shih (2006) emphasized that the teacher's attitudes are of great importance in terms of developing teachers' information literacy and their technology use in their instruction.

In order to find an answer to the second sub-problem of the current study, it was investigated whether there is a significant correlation between the teachers' critical thinking dispositions and information literacy levels. The findings revealed that there is a significant, positive bilateral correlation between the teachers' critical thinking dispositions and information literacy levels. And according to this correlation, with increasing level of information literacy, critical thinking dispositions also increase and with decreasing level of information literacy, critical thinking dispositions decrease. When the relevant literature is examined, it is seen that many studies (Aybek, 2006; Akkoyunlu & Kurbanoglu, 2002; ALA, 2002; Ennis, 1991; Grosser & Lombard, 2008) point out that information literacy level is a pre-requisite for critical thinking. In a similar manner, the findings of the current study revealed that the teachers' information literacy levels are low and critical thinking dispositions are medium. Similarly, Bryan (2014); in his study investigating the relationship between critical thinking and information literacy, reported that there is a significant correlation between information literacy efficacy standards and elements of critical thinking and this finding concurs with the finding of the current study.

In relation to the third sub-problem of the study, it was investigated whether information literacy level is a significant predictor of critical thinking tendency. According to the findings of the study, critical thinking disposition can be explained on 15% information literacy adequacy. This means that information literacy is an important predictor of critical thinking level. Karadaniz Bayrak (2014) also conducted a study with the participation of pre-service teachers and found that critical thinking is a significant predictor of information literacy. "Critical thinking scores" that are in the position of independent variable explain the 7% of the variance in "information literacy scores" that are in the position of dependent variable. In this case, the findings of the current study clearly demonstrated the importance of information literacy for thinking critically.

As a conclusion, the concepts of information literacy and critical thinking are closely related to each other and sometimes they are used interchangeably, as well. Also, they are two of the most important concepts of the technology age. The findings of the current study indicated that the teachers' critical thinking disposition and their information literacy levels are low. Besides, the fact that there is a significant, positive and bilateral correlation between the teachers' critical thinking dispositions and information literacy, and information literacy is a significant predictor of critical thinking is an important finding. These findings reveal that being an information literate affects critical thinking dispositions. Gunasekara (2008) also reported that information literacy provides a large platform for the individual to learn independently; on the other hand, critical thinking has been neglected for a long time. Similarly, Gandhe (2011) pointed to the importance of incorporation of information literacy instruction into the programs of teacher training institutions so that information literate generations could be generated. In light of these findings, it could be asserted that it is necessary to revise teacher training programs so that teachers could be trained as information literate people and their information literacy could be developed, and thus they could teach information literacy to their students.

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