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A Structural Equation Model of Academic Literacy and Critical and Reflective Thinking Dispositions*

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ABSTRACT

Academic literacy requires metacognitive skills, such as reading and understanding academic texts, analyzing, making inferences, problem solving, and the ability to create text in academic language. These processes are thought to be effective on both critical and reflective thinking. The purpose of this research is to determine the relationship between pre-service teachers' academic literacy skills and their reflective and critical thinking dispositions. The research employs a relational model, one of the quantitative research methods. The research sample, determined by the cluster sampling method, consists of 975 students studying in Turkish teaching departments of universities in seven different regions of Turkey during the 2019-2020 academic year. While the latent variables of academic disposition and use of knowledge explained 10% of reflective thinking according to the study, this rate increased to 12% when critical thinking was added to the predictor in the first model. Academic literacy of teacher candidates as measured by latent variables of academic disposition and use of knowledge explains 12% of their critical thinking in second model. However, when reflective thinking is added to this equation, it was observed that the rate of prediction increased to 14%. Thus, both models tested were confirmed to be accurate.

Keywords: Academic literacy, critical thinking, reflective thinking

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1. INTRODUCTION

Academic literacy has emerged as a concept based on the understanding of multiple and diverse literacy according to different situations and fields (Ahmed, 2011; Gee, 2013; Güneş, 2019) in terms of culture, language and time period (Hagood, 2000; Sheridan-Thomas, 2006; Street, 1997; UNESCO, 2004). It requires metacognitive skills that include reading and understanding the academic text, analyzing the text in terms of its superficial and deep structure, making inferences, and problem solving as well as creating an academic text in a language that frames the content knowledge in a particular discipline (Canlı, 2024; Clark et al., 2002; Cliff & Hanslo, 2010; Eğmir, Beycan & Dede, 2020; Jordaan & Moonsamy, 2015; Junqueira, 2016; Liendo & Palmira Massi, 2017; Weideman, 2003). As such, academic literacy not only involves epistemological foundations such as receiving, understanding, transforming and creating information, but also depends on functional use of literacy skills (Lea, 2004; Lea & Street, 1998; Tardy, 2005; Wingate, 2015), including listening and speaking in addition to reading and writing (Neeley, 2001; Richards & Pilcher, 2018). There are four basic elements of academic literacy depending on the personality and experiences of the individual: scientific discourse which covers expertise, meaning making and understanding the nature of knowledge; participation in the process which includes learning and research skills within the scope of scientific subject area, and finally technical competencies based on functional use of language skills (Dunham, 2012; Huang & Archer, 2017; Lea & Street, 2006). To these three, Ivanič (2004) adds the element of creativity, which focuses on mental processes and creative action, and social practice, which includes writing and the process of using language in a purposeful way (Lillis, 2003). It has been argued that critical (Du Plessis, 2016; Gunn et al., 2011; Kelly & Brower, 2017; Larson, 2014; McWilliams & Allan, 2014; Takano, 2013) and reflective thinking (Arancibia Aguilera, 2014; Henderson & Hirst, 2007; Jonsmoen & Greek, 2017) play an important role in the process of applying these basic elements. In addition, it is hypothesized that the processes required by academic literacy are effective on the elements of critical and reflective thinking. This is because academic literacy, which is defined as the

* Ethical approval for this research was obtained from the Fırat University Social and Human Sciences Research Ethics Committee on 15 November 2018.

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construction of knowledge (Dowse & Van Rensburg, 2015), requires the processing of knowledge with critical and reflective processes.

Critical thinking is an intellectual process which involves meta-cognitive skills (Paul, 2005) such as forming hypotheses and questions by breaking down a situation, a problem or information into simpler components in a logical and systematic way (Feldman, 2009; Hoy, 2010; Irving & Williams,1995). The next step is to present these components for careful scrutiny and create meaning to reach the best possible result, attention, classification (Cottrell, 2005), questioning, problem solving (Bangert-Drowns & Bankert, 1990; Mihriay , 2020) as well as reasoning (Angraini & Wahyuni, 2021). From this perspective, critical thinking requires observing, collecting information, evaluating the quality of information (Nicoll, 1993), determining the necessary methods to evaluate information (Nardi, 2017), being aware of one's own prejudices, not allowing one's thoughts to be manipulated (Brunette & Whitaker, 2019), being open to experience, exhibiting an inquisitive attitude, and avoiding judgment until all basic data have been evaluated (King, 1968; Paul, 2005). Reflective thinking, on the other hand, includes problem-solving skills (Korthagen, 1985; Durak, 2020), logical reasoning, creative mental processes, and critical analysis and judgment, which require the active evaluation of facts, concepts and ideas (Kish et al., 1997; Lombard & Grosser, 2008; Oxman & Barell, 1983; Smith, 1958). In essence, the process is cyclical, that is, critical thinking positively affects reflective thinking, and reflective thinking positively affects critical thinking (Aryani et al., 2017; Batur & Özcan, 2020; Hendriana et al., 2019). This is due to the fact that reflective thinking requires forming hypotheses, evaluating and verifying all information, documents and evidence in a logical, active and persistent way, and then reaching the truth by making inferences through signs and indicators (Carey, 1979; Dewey, 1997).

1.1. Statement of the Problem

Reflective thinking activities, implemented through cooperative learning, have been found to have a substantial positive influence on students' critical thinking abilities (Erdogan, 2019). Additionally, the development of a curriculum that emphasizes critical thinking has been shown to have a positive impact on 5th-grade students' reflective thinking skills in terms of understanding and significance (Eğmir & Ocak, 2018). A study conducted by Aşkın Tekkol and Bozdemir (2018) found a correlation between reflexive thinking inclinations and critical thinking capabilities. The relationships among metacognitive writing strategies, critical thinking skills, and academic writing were examined using structural equation modeling (Teng & Yue, 2023). Another study by A. Göğüş, N. G. Göggüş, and Bahadır (2019) revealed that those with medium-level abilities in critical thinking and reflective thinking are more effective at problem-solving. The effects of employing a pedagogical method centered around critical thinking on both academic literacy (Hammer and Green, 2011) and academic writing proficiency (Borglin, 2012; Borglin & Fagerström, 2012; Ebadi & Rahimi, 2018; Loo, 2020; Pujiono, 2020; Tahir, Dollah & Radiyani, 2020) have been examined. Furthermore, it is believed that academic writing has an impact on the development of critical thinking skills. (Hamied & Emilia, 2020; Islamiyah & Al Fajri, 2020; McKinley, 2013; Suwono et al., 2023; Tohamba, 2021). Statistically significant relationships have been found between academic literacy and critical thinking (Ayyıldız Çolak, 2022; Tekin, Aslan & Yağız, 2016; Türkben & Satılmış, 2022).The correlation between students' critical thinking abilities and their proficiency in academic language (Grosser and Nel, 2013; Wilson, 2016), as well as their competence in academic writing (Rahmat et al., 2020), has been established. The utilization of reflective thinking by PhD students has been shown to positively influence their academic writing skills (Pham et al., 2020). Nevertheless, there has been a lack of study conducted to establish the correlation between academic literacy and the inclination to engage in critical and reflective thinking.

This study planned to test two alternative models. The first model (Model A) is based on the theoretical framework that suggests that academic literacy influences reflective thinking dispositions through critical thinking (Hammer & Green, 2011; Yaacob et al., 2021). The second model (Model B) was developed based on research suggesting that reflective thinking fosters critical thinking skills by increasing an individual's level of mindfulness (Ramdani et al., 2019; Liao & Wang, 2019). Comparatively testing this two-pronged theoretical assumption aims to fill the gap in the literature and provide a more in-depth explanation of the relationship between academic literacy and cognitive thinking skills.

The aim is to examine the correlation between the academic literacy skills of candidate teachers and their reflective and critical thinking tendencies. This will be done by adopting a comprehensive approach and employing an alternative model method known as the structural equality model.

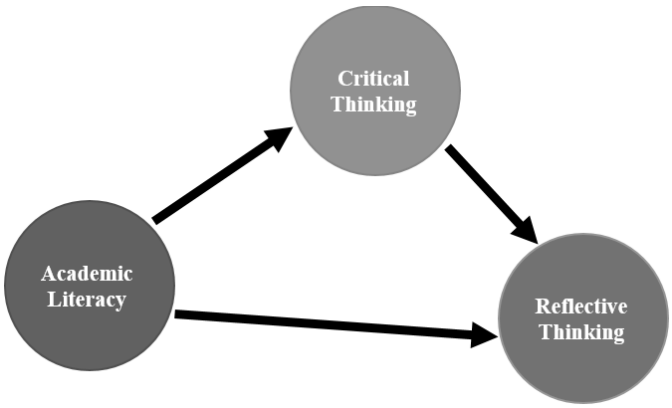

Figure 1. Alternative model A

Academic literacy and critical thinking certainly appear to have an impact on reflective thinking. However, it is also argued in the literature that critical thinking influences the development of reflective thinking skills (Al Hashim, 2019; Yaacob et al., 2021). Therefore, in the first model to be tested, academic literacy was treated as the exogenous variable, critical thinking as the mediator variable and reflective thinking disposition as the endogeny variable.

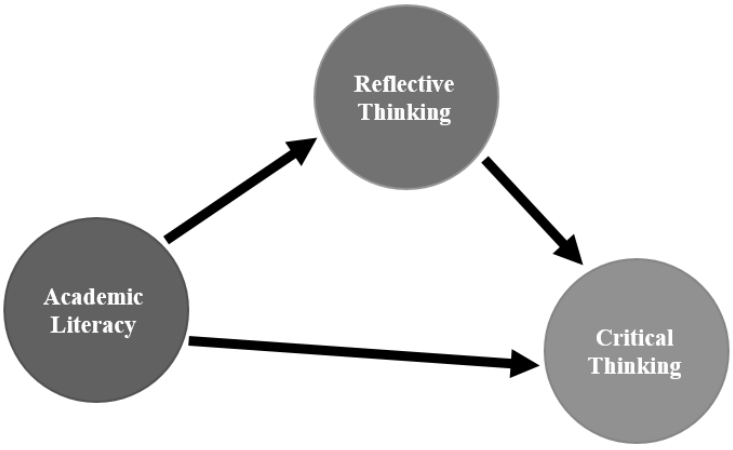

Figure 2. Alternative model B

In addition to the views that were instrumental in creating the first model, it is also stated that reflective thinking improves critical thinking (Deringöl, 2019; Ramdani et al., 2019; Liao & Wang, 2019). From this point of view, in the second model to be tested, reflective thinking is treated as mediator variable and critical thinking disposition as the endogeny variable.

1.2. Purpose of the Study

The aim of the research is to analyze the correlations among academic literacy, critical thinking, and reflective thinking using an alternative model technique. In this context, the aim is to identify direct and indirect relationships between these variables. The study employs Structural Equation Modeling (SEM), which allows for the testing of complex variable relationships and mediation effects within a comprehensive analytical framework. Furthermore, the structural equation modeling approach used in this study also aims to contribute to the field from a methodological perspective by demonstrating the utility of SEM in exploring multi-layered cognitive constructs in educational research.

1.3. Problem of the Study

What is the correlation between the academic literacy of candidate teachers and their levels of critical thinking and reflective thinking?

1.3.1. Sub-problems of the study

To what degree does the level of academic literacy among teacher candidates predict their inclination towards critical thinking?

To what degree does the level of academic literacy among candidate teachers predict their inclination towards reflective thinking?

To what degree does the academic literacy of teacher candidates predict their inclination to engage in reflective thinking using the critical disposition mediator variable?

To what degree does the level of academic literacy in candidate teachers predict their inclination towards critical thinking compared to the reflective disposition mediator variable?

2. METHODOLOGY

The research employed a quantitative research methodology. Quantitative research is a method in which the researcher investigates an issue that necessitates the examination of variables. It entails gathering measurable data from participants and employing statistics and graphs to examine the data within the context of specific, focused inquiries. (Clark & Creswell, 2015). The study was conducted using the correlational research approach. This pattern, known as multivariate analysis, examines the correlation between many factors and identifies which variables have a stronger influence on the others (Creshwel, 2012; Sönmez and Alacapınar, 2019). However, in a relational research paradigm conducted on a single group, the independent variable must be either sequential or continuous. (Gliner, Morgan, and Leech, 2017). To elucidate the intricate associations among variables in these patterns, it is advisable to employ structural equation models, hierarchical linear models, and logistic regression approaches for a more comprehensive analysis. (Creswell, 2018). In this research, Structural Equation Modeling (SEM) was specifically employed due to its capacity to simultaneously estimate multiple interrelated relationships among both latent and observed variables, assess mediation effects, and account for measurement error. Considering the multidimensional structure of the constructs examined such as academic literacy, critical thinking, and reflective thinking, SEM offers a theoretically grounded and statistically robust framework to test complex hypothetical models (Kline, 2016; Schumacker and Lomax, 2016).

2.1. Participants

Departments of Turkish teaching at universities in Turkey during the 2019-2020 academic year made up the sample for this research. One university with a Turkish language teaching department from each of Turkey's seven geographical regions was selected through stratified sampling and cluster sampling, both of which are probabilistic sampling designs. In stratified sampling, the universe is divided into sub-layers by the researcher and a sample, in which each subgroup can be represented, is created. (Creswell, 2012). Cluster sampling ensures that the sample is formed by choosing a group in such cases where individuals cannot be selected one by one (Özen & Gül, 2007). The research was carried out with undergraduate teacher candidates at each stage of their education at the selected universities through a probabilistic method.

Table 1.
Sample of the Research

Demographic characteristics		***n***	***%***
Grade	1_{th} grade	224	22.97
	2_{th} grade	238	24.41
	3_{th} grade	264	27.08
	4_{th} grade	249	25.54
Gender	Female Student	663	68.00
	Male Student	312	32.00
Total		**975**	**100**

Research was conducted on a total of 975 1st, 2nd, 3rd and 4th grade students studying in the Turkish Education Departments of _____ Universities in the 2019-2020 academic year. The number of participants necessary for SEM analysis does not have a precise numerical value. Barrett (2007) states that a minimum of 200 samples is required for SEM. Nevertheless, Schreiber et al. (2006) suggest utilizing 10 samples for each parameter. The study encompassed a total of 11 parameters, comprising 5 variances, 6 regression coefficients, and one covariance. Out of the 975 samples, the parameter was computed for sample number 88.63. Thus, it was concluded that the sample size was sufficient.

2.2. Data Collection Tools

2.2.1. Academic Literacy Scale

Cronbach's Alpha reliability coefficients of the 23-item three-factor scale developed by Demir and Deniz (2020) for pre-service teachers were as follows: .84 for academic disposition, .78 for research process, .76 for use of knowledge, and .87 for the overall scale. The construct reliability of the factors was .81 for writing process, .80 for avoidance, and .68 for writing pleasure. The scale was validated by confirmatory factor analysis (X^2=457.55, sd=226, RMSEA=.045, SRMR=.053, NFI=.91, NNFI=.95, CFI=.95, GFI=.92, AGFI=.91) and the internal consistency coefficient of the scale was noted to be .72.

2.2.2. Critical Thinking Disposition Scale

Cronbach's Alpha reliability coefficients of the three-dimensional, 11-item, five-point Likert-type scale developed by Akın et al., (2015) were as follows: .75 for critical openness, .68 for reflective skepticism, and .78 for the overall scale. The construct reliability of the factors were .92 for writing process, .93 for avoidance, and .72 for writing pleasure. The scale was validated by

confirmatory factor analysis (x2=53.24, df= 40, RMSEA=.040, NFI=.90, NNFI=.96, GFI=.96, AGFI=.93, CFI=.97, IFI=.97, SRMR= .046).

2.2.3. Reflective Thinking Level Scale

It was determined that the reliability values, test-retest and internal consistency values of the five-point Likert type scale with 16 items and four factors developed by Başol and Evin-Gencel (2013) were above 70 for the overall scale. The scale was validated by confirmatory factor analysis (χ^2/df=4.48; GFI=.93; AGFI=.90; NNFI=92; CFI=.93; RMSEA=.07).

2.3. Data Collection and Analysis

Necessary permissions were obtained from the Fırat University Social and Human Sciences Scientific Research and Publication Ethics Committee and the Ministry of National Education for data collection. The voluntary nature of participation was emphasized during the collection of data. According to the multiple normality analysis performed, the kurtosis and skewness values were found to be between ±1(Tabachnick & Fidell, 2015). In addition, it can be said that the mean, median, peak value, kurtosis, skewness values are normal according to p-p, q-q, stem-leaf, box and line graphs (Tabachnick & Fidell, 2015). Accordingly, Cronbach's Alpha coefficients were found to be over 70%. Correlation analysis was performed and the level of correlation between endogeny and exogenous variables was calculated. According to Davis (1971), interpretation of the correlation coefficient (r) is as follows: between .01-.09 there is a negligible relationship; between .10-.29 is a low correlation; between .30-.49 the relationship is average; .50-.69 demonstrates a strong relationship; and .70 or above means a very strong relationship. According to Cohen (1988), if the multiple regression coefficient (R2) is less than .0196, then the effect is small; if .1300≥R2≥.0196 then it is medium; if higher than .2600, then the effect is large (S. Özsoy & G. Özsoy, 2013). The correlation analysis shows that there are strong, medium, and low levels of significant relationships between the variables, indicating that structural path analysis can be performed. As a result of the structural path analysis, the compatibility of the tested models was determined using the chi-square (X2), the ratio of chi-square to standard deviation, RMSA, standardized RMR, NFI, NNFI, CFI, GFI and adjusted goodness-of-fit index (AGFI) (Çokluk et al., 2012).

3. FINDINGS

Under this heading, the findings obtained as a result of the analyses are tabulated and interpreted:

Table 2.
Multiple Linear Correlation Results

Scales	**1.**	**1.1.**	**1.2**	**1.3.**	**2**	**3.**
1. ACADEMIC LITERACY		.70**	.72**	.81**	.51**	.29**
1.1. Academic Disposition			.37**	.33**	.58**	.36**
1.2. Research Process				.33**	.39**	.30**
1.3. Use of Knowledge					.25**	.06
2. CRITICAL THINKING						.49**
3. REFLECTIVE THINKING						
M	3.74	4.17	3.64	3.41	4.04	3.68
Std. deviation	.34	.39	.40	.57	.41	.40
Skewness	.20	-.15	.01	.08	-.13	.09
Kurtosis	-.14	-.41	-.21	-.19	-.41	-.17
Cronbach's α	.70	.71	.73	..70	.73	.71

*p<.05, **p<.01

As a result of the multiple linear correlation analysis, a strong positive and significant relationship was found between academic literacy and critical thinking (r=.51, p<.01). Likewise, a strong positive correlation was found between academic disposition and critical thinking (r=.58, p<.01). Positive moderate correlations were found between academic disposition and reflective thinking (r=.36, p<.01) research process and critical thinking (r=.39, p<.01), research process and reflective thinking (r=.30, p<.01). A moderately significant positive correlation was found between critical thinking and reflective thinking (r=.49, p<.01). A low level of positive correlation was found between academic literacy and reflective thinking (r=.28, p<.01). Similarly, a low-level positive correlation was found between the use of knowledge and critical thinking. However, a negligible relationship was found between the use of knowledge and reflective thinking.

Table 3.
Model Fit Extents for Model A

Fit Extents	Value	Fit
X^2	.00	Perfect Fit
X^2/sd=1188	.00	Perfect Fit
RMSEA	.00	Perfect Fit
Standardized RMR	.00	Perfect Fit
NFI	1.00	Perfect Fit
NNFI	1.00	Perfect Fit
CFI	1.00	Perfect Fit
GFI	1.00	Perfect Fit
AGFI	1.00	Perfect Fit

It is generally preferred that the chi-square value of the model be close to zero. Indeed, the chi-square value of the applied model was zero (X2 =.00). The fact that the X2/sd ratio is less than 2 at the value of .00 indicates that the model has a perfect fit (Tabachnick & Fidell, 2001). The RMSA and Standardized RMR values below .05 and at .00 indicate that the model has a perfect fit. NFI, NNFI, CFI, GFI and AGFI values of 1.00 indicate a perfect fit. Based on the findings, it can be stated that the model has a good fit. Performing structural regression and path analysis with large samples causes the p value to be significant (Çokluk et al., 2012).

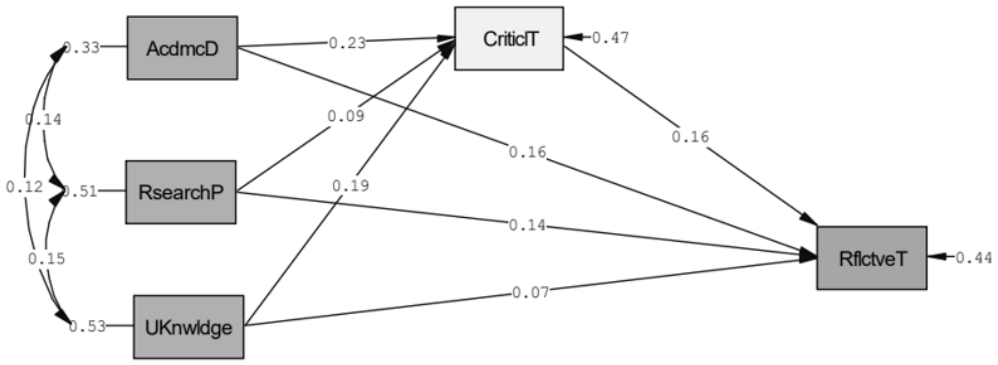

Figure 3. Path analysis for Model A

Academic disposition significantly predicted critical thinking (β=.23) and reflective thinking (β=.16), while critical thinking significantly predicted reflective thinking (β=.16). The indirect effect of academic disposition on reflective thinking (β=.04) is significant. The research process significantly predicted critical thinking (β=.09) and reflective thinking (β=.14). The indirect effect of academic disposition on reflective thinking (β=.01) is not significant. The research process significantly predicted critical thinking (β=.19) and reflective thinking (β=.07). The indirect effect of academic disposition on reflective thinking (β=.03) is significant.

Table 4.
Equations Between Extrinsic Latent Variables for Model A

Structural Equations	R^2
CritclT = 0.23*AcdmcD + 0.094*RsearchP + 0.19*UKnwldge	.12
RflctveT = 0.16*CritclT + 0.16*AcdmcD + 0.14*RsearchP + 0.067*UKnwldge	.12
Reduced Form Equations	**R^2**
CritclT = 0.23*AcdmcD + 0.094*RsearchP + 0.19*UKnwldge	.12
RflctveT = 0.20*AcdmcD + 0.16*RsearchP + 0.097*UKnwldge	.10

Academic literacy of teacher candidates, measured by latent variables of academic disposition and knowledge use, explains 12% of their critical thinking. While the latent variables of academic disposition and use of knowledge explained 10% of reflective thinking, this rate increased to 12% when critical thinking was added to the predictor.

Table 5.
Model Fit Extents for Model B

Fit Extents	Value	Fit
X^2	.00	p>.05
X^2/sd=1188	.00	Perfect Fit
RMSEA	.00	Perfect Fit
Standardized RMR	.00	Perfect Fit
NFI	1.00	Perfect Fit
NNFI	1.00	Perfect Fit
CFI	1.00	Perfect Fit
GFI	1.00	Perfect Fit
AGFI	1.00	Perfect Fit

The chi-square value of the model is desirably zero (X2 =.00). The fact that the X2/sd ratio is less than 2 at the value of .00 indicates that the model has a perfect fit (Tabachnick & Fidell, 2001). The RMSA and Standardized RMR values below .05 and at .00 indicate that the model has a perfect fit. NFI, NNFI, CFI, GFI and AGFI values of 1.00 indicate a perfect fit. Based on the findings, it can be stated that the model has a good fit.

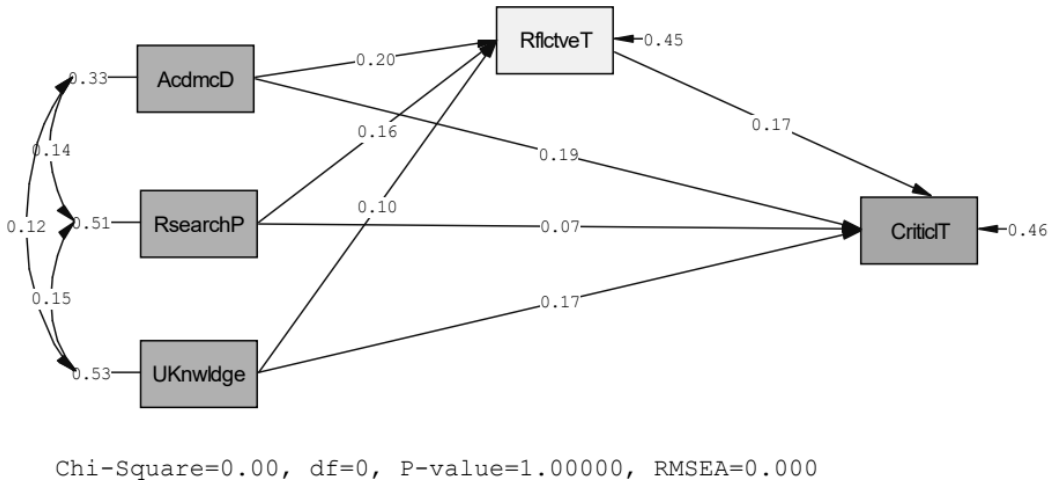

Figure 4. Path analysis for Model B

Academic disposition significantly predicted critical thinking (β=.23) and reflective thinking (β=.16), while critical thinking significantly predicted reflective thinking (β=.16). The indirect effect of academic disposition on reflective thinking (β=.04/smal) is significant with medium effect. The research process significantly predicted critical thinking (β=.09/smal) and reflective thinking (β=.14). The indirect effect of academic disposition on reflective thinking (β=.01) significant with negligible effect size. The research process significantly predicted critical thinking (β=.19/medium) and reflective thinking (β=.07/small). The indirect effect of academic disposition on reflective thinking (β=.03) is significant with small effect.

Table 6.
Equations Between Extrinsic Latent Variables for Model B

Structural Equations	R^2
CritclT = 0.17* RflctveT + 0.19* AcdmcD + 0.068* RsearchP + 0.17*UKnwldge,	.14
RflctveT = 0.20*AcdmcD + 0.16*RsearchP + 0.097*UKnwldge	.10
Reduced Form Equations	**R^2**
CritclT = 0.23*AcdmcD + 0.094*RsearchP + 0.19*UKnwldge	.12
RflctveT = 0.20*AcdmcD + 0.16*RsearchP + 0.097*UKnwldge	.10

The latent variables of academic disposition and use of knowledge explain 10% of reflective thinking. Academic literacy of teacher candidates, as measured by latent variables of academic disposition and use of knowledge, explains 12% of their critical thinking. However, when reflective thinking is added to this equation, it was observed that the rate of prediction increased to 14%.

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

A moderate positive correlation was found between academic disposition, which is a sub-dimension of academic literacy, and reflective thinking. However, a negligible relationship was found between the use of knowledge and reflective thinking. In addition, a moderate positive correlation was found between the research process and reflective thinking because organizing information and activating it during new experiences and research leads to new discoveries. Reflective thinking facilitates and helps manage these skills successfully. This indicates that reflective thinking supports the functional application of academic

processes, especially during research and problem-solving. Latent variables, academic disposition and use of knowledge predicted reflective thinking at low level significance. With the addition of critical thinking to the established equation, the rate of prediction increased. The effect of critical thinking, which enables the logical and systematic analysis and selection of information, helped explain this. This shows that critical thinking reinforces the reflective process by adding a logical structure to how knowledge is processed. It is believed that individuals with high academic literacy tendencies also have high reflective thinking skills based on the ability to organize their views, thoughts and knowledge from previous experiences and apply them going forward. This is a natural fit, considering that the processes involved in academic literacy are directly related to these skills. Therefore, reflective thinking can be seen as both a product and a facilitator of academic literacy**.** The finding that academic reflective writing skills of university students develop as a result of the development of their reflective thinking skills supports this inference (Bowman, 2021). This emphasizes the importance of reflection in strengthening academic writing competence. It was also found that Turkish language literature teacher candidates developed positive attitudes towards academic writing after reflective teaching practices (Aydın, 2017). Such practices appear to enhance engagement and motivation in academic writing tasks. There is also evidence to support the claim that the academic performance of university students who have good reflective writing skills supersedes that of their peers (Tsingos-Lucas et al., 2017).

There was a strong positive relationship between academic disposition and critical thinking, which is a sub-dimension of academic literacy, in addition to a moderate positive relationship between the research process and critical thinking. Low positive correlations were found between the use of knowledge, another sub-dimension of academic literacy, and critical thinking. Pre-service teachers' academic disposition and use of knowledge explain their critical thinking at a low level. However, with the addition of reflective thinking to the equation, the effect of the prediction increases to a moderate level. This reinforces the view that reflective thinking acts as a complementary factor in critical thinking development**.** It is undeniable that reflective thinking skills are also effective in the stages of selecting, processing and organizing the information thinking through the filter of logic and questioning, which are part of critical thinking. In addition, critical thinking based on inquiry and analysis brings new ideas and discoveries. Hence, both reflective and critical thinking processes are essential for higher-order learning and knowledge production. All of this helps to explain why such skills are at a higher level in individuals with an academic literacy disposition. Graduate students are able to learn more easily and successfully apply the given critical thinking techniques and improve their academic literacy skills during academic literacy education (Islamiyah & Al Fajri, 2020). This finding highlights the value of incorporating critical thinking skills training into academic literacy programs. A statistically significant strong relationship was found between pre-service teachers' academic writing skills and their critical thinking disposition (Bayat, 2014). This supports the notion that critical thinking directly contributes to the organization and clarity of academic texts. Similarly, a low-level positive correlation was found between the knowledge use sub-dimension of academic literacy and critical thinking. It has been found that the activities carried out during academic literacy education contribute to the critical thinking skills of teacher candidates (Hamied & Emilia, 2020). This underlines the importance of designing academic literacy instruction that targets analytical skill development. In support of this, a statistically significant medium-sized positive relationship was found between teacher candidates' academic literacy and their critical thinking dispositions. (Türkben & Satılmış, 2022; Ayyıldız Çolak, 2022). Similarly, it has been determined that as the science literacy of science teacher candidates increases, their critical thinking tendencies also increase statistically (Tekin, Aslan, & Yağız, 2016). It was concluded that critical thinking skills should be developed in order for students to write coherently and consistently. (McKinley, 2013). Another finding was that critical thinking education appeared to increase the writing performance and critical thinking disposition of university students (Taghinezhad et al., 2018), and support their academic writing skills (Borglin, 2012; Borglin & Fagerström, 2012; Ebadi & Rahimi 2018; Loo, 2020; Pujiono, 2020; Tahir et al., 2020). This reveals the dual benefit of thinking-focused instruction in fostering both reasoning and writing. However, it has been determined that critical thinking-based activities support scientific literacy (Suwono et al., 2023). Academic writing is also said to improve critical thinking (Hamied & Emilia, 2020; Tohamba, 2021). In the structural equation modeling conducted between metacognitive writing strategies, critical thinking skills and academic writing, positive relationships were found between the variables (Teng & Yue, 2023). Another noteworthy relationship exists between students' critical thinking skills and academic language proficiency (Grosser & Nel, 2013; Wilson, 2016), and academic writing skills (Rahmat et al. 2020). In a study conducted on doctoral students, it was determined that practices based on reflective thinking affect academic writing skills positively (Pham et al., 2020). This supports the view that reflection-based approaches are especially valuable in advanced academic contexts.

A significant, positive and moderate relationship was found between critical thinking and reflective thinking. Both models determined that the prediction rates increase when reflective thinking or critical thinking are added to the equation. Positive and significant relationships were found between pre-service teachers' reflective thinking skills and critical thinking skills (Tekkol & Bozdemir, 2018; A. Göğüş, N. G. Göğüş & Bahadır, 2019; Eğmir & Ocak, 2020; Erdoğan, 2020). Pre-service teachers' critical thinking skills predict reflective thinking skills at a moderate level (Erdoğan, 2020). Based on the results, university students' critical thinking skills act as a significant predictor of their reflective thinking skills, and reflective thinking skills can also be a significant predictor of their critical thinking skills (Ghanizadeh, 2017).

Based on the conclusion that academic literacy predicts critical and reflective thinking skills, activities that develop different thinking skills should be implemented in practices for the development of students' academic literacy skills. In this context, task-based and inquiry-oriented approaches gain importance**.** Similar studies can be conducted on different thinking skills or metacognitive skills that will be affected by academic literacy. In order to improve academic literacy, problems in the field can

be identified through action or situational research. And existing methods can also definitely be improved. Such efforts would contribute directly to producing more autonomous, critical, and reflective learners.

Research and Publication Ethics Statement

This research received ethical approval from the Fırat University Social and Human Sciences Research Ethics Committee at its 12th meeting held on 15 November 2018 (Decision No: 4) and documented under Approval No: 295117, dated 21 November 2018.

Contribution Rates of Authors to the Article

First author, who designed the research and carried out the analysis, wrote methods, findings and suggestions. Second author, who conducted the data collection process, wrote the introduction and discussion.

Statement of Interest

Authors there's no financial/personal interest or belief that could affect their objectivity. The authors saw the final version of the article and approved to submit it to the journal.

5. REFERENCES

Ahmed, M. (2011). Defining and measuring literacy: Facing the reality. *International Review of Education, 57*(1), 179–195. https://doi.org/10.1007/s11159-011-9188-x

Akın, A., Hamedoğlu, M. A., Arslan, S., Akın, U., Çelik, U., Kaya, Ç., & Arslan, N. (2015). The adaptation and validation of the Turkish version of the critical thinking disposition scale (CTDS). *The International Journal of Educational Researchers, 6*(1), 31–35.

Al Hashim, A. (2019). Critical thinking and reflective practice in the science education practicum in Kuwait. *Utopía y Praxis Latinoamericana: Revista Internacional de Filosofía Iberoamericana y Teoría Social*(6), 85–96.

Angraini, L. M., & Wahyuni, A. (2021). The effect of concept attainment model on mathematical critical thinking ability. *International Journal of Instruction, 14*(1).

Arancibia Aguilera, M. C. (2014). The design of a rubric to evaluate laboratory reports in astronomy: Academic literacy in the disciplines. *Profile: Issues in Teachers' Professional Development, 16*(1), 153–165. https://doi.org/10.15446/profile.v16n1.37232

Aryani, F., Rais, M., & Wirawan, H. (2017). Reflective learning model in improving student critical thinking skills. *Global Journal of Engineering Education, 19*(1), 19–23.

Aydın, G. (2017). Türk dili ve edebiyatı hizmet öncesi öğretmen eğitiminde yansıtıcı öğretim uygulamalarının akademik yazma becerilerine etkisi. *International Journal of Languages' Education and Teaching, 5*(3), 276–300.

Ayyıldız Çolak, A. (2022). Öğretmen adaylarının akademik okuryazarlık düzeyleri ile eleştirel düşünme eğilimlerinin incelenmesi [Investigation of teacher candidates' academic literacy levels and critical thinking tendencies]. *The Journal of Kesit Academy, 8*(31), 1–24.

Bangert-Drowns, R. L., & Bankert, E. (1990, April). *Meta-analysis of effects of explicit instruction for critical thinking*. Paper presented at the Annual Meeting of the American Educational Research Association, Boston, MA.

Barrett, P. (2007). SEMling: Adjudging model fit. *Personality and Individual Differences 42,(*5), 815-824. https://doi.org/10.1016/j.paid.2006.09.018

Başol, G., & Evin-Gencel, İ. (2013). Reflective Thinking Scale: A validity and reliability study. *Educational Sciences: Theory & Practice, 13*(2), 929–946.

Batur, Z., & Özcan, H. Z. (2020). Eleştirel düşünme üzerine yazılan lisansüstü tezlerinin bibliyometrik analizi [Bibliometric analysis of graduate theses written on critical thinking]. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi, 9*(2), 834–854.

Bayat, N. (2014). The relationship between critical thinking and students' success in academic writing. *Education and Science, 39*(173).

Borglin, G. (2012). Promoting critical thinking and academic writing skills in nurse education. *Nurse Education Today, 32*(5), 611–613. https://doi.org/10.1016/j.nedt.2011.06.009

Borglin, G., & Fagerström, C. (2012). Nursing students' understanding of critical thinking and appraisal and academic writing: A descriptive, qualitative study. *Nurse Education in Practice, 12*(6), 356–360. https://doi.org/10.1016/j.nepr.2012.04.009

Bowman, M. (2021). A framework for scaffolding academic reflective writing in dentistry. *European Journal of Dental Education, 25*(1), 35–49. https://doi.org/10.1111/eje.12575

Brunette, D. M., & Whitaker, E. J. (2019). *Critical thinking: Understanding and evaluating dental research* (3rd ed.). International Quintessence Publishing Group.

Canlı, Z. (2024). *Yansıtıcı düşünme becerisi ile ilgili yapılan lisansüstü tezlerin çeşitli değişkenler açısından incelenmesi* [Examination of graduate theses related to reflective thinking skills in terms of various variables] (Master's thesis). Necmettin Erbakan University, Institute of Educational Sciences, Konya.

Carey, N. G. (1979). *Reflective thinking in teacher education curriculum* (Unpublished doctoral dissertation). The Ohio State University, Ohio.

Clark, K., Bamberg, B., Flachmann, K., Frodesen, J., Harrington, M. K., & Phares, L. (2002). *Academic literacy: A statement of competencies expected of students entering California's public colleges and universities*. Intersegmental Committee of the Academic Senates (ICAS).

Clark, V. L. P., & Creswell, J. W. (2015). *Understanding research: A consumer's guide*. Pearson.

Cliff, A., & Hanslo, M. (2010). The design and use of 'alternate' assessments of academic literacy as selection mechanisms in higher education. *Southern African Linguistics and Applied Language Studies, 27*(3), 265–276. https://doi.org/10.2989/SALALS.2009.27.3.5.939

Cottrell, S. (2005). *Critical thinking skills: Developing effect analysis and argument.* Hampshire: Palgrave Macmillan.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson Education.

Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE.

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2012). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları* [Multivariate statistics for social sciences: SPSS and LISREL applications]. Pegem Akademi.

Demir, S., & Deniz, H. (2020). Akademik okuryazarlık ölçeği'nin geliştirilmesi: Geçerlik ve güvenirlik çalışması. *Kastamonu Eğitim Dergisi, 28*(3), 1366–1379.

Deringöl, Y. (2019). The relationship between reflective thinking skills and academic achievement in mathematics in fourth-grade primary school students. *International Online Journal of Education and Teaching, 6*(3), 613–622.

Dewey, J. (1997). *How we think*. Courier Corporation.

Dowse, C., & Van Rensburg, W. (2015). "A hundred times we learned from one another": Collaborative learning in an academic writing workshop. *South African Journal of Education, 35*(1), 1–12.

Du Plessis, C. (2016). Inferences from the Test of Academic Literacy for Postgraduate Students (TALPS). *Southern African Linguistics and Applied Language Studies, 34*(1), 1–16. https://doi.org/10.2989/16073614.2015.1108206

Dunham, N. (2012). A date with academic literacies: Using brief conversation to facilitate student engagement with academic literacies. *Online Submission.*

Durak, H. Y. (2020). The effects of using different tools in programming teaching of secondary school students on engagement, computational thinking and reflective thinking skills for problem solving. *Technology, Knowledge and Learning, 25*(1), 179–195. https://doi.org/10.1007/s10758-018-9391-y

Ebadi, S., & Rahimi, M. (2018). An exploration into the impact of WebQuest-based classroom on EFL learners' critical thinking and academic writing skills: A mixed-methods study. *Computer Assisted Language Learning, 31*(5–6), 617–651.

Eğmir, E., & Ocak, G. (2018). The effect of curriculum design of critical thinking on students' reflective thinking skills. *Journal of Theoretical Educational Science, 11*(3), 431–456.

Eğmir, E., Beycan, F., & Dede, A. (2020). Yansıtıcı düşünme uygulamalarının etkisinin incelendiği lisansüstü tezlerin analizi. *Researcher: Social Science Studies, 8*(2), 62–80.

Erdoğan, F. (2019). Effect of cooperative learning supported by reflective thinking activities on students' critical thinking skills. *Eurasian Journal of Educational Research, 19*(80), 89–112.

Feldman, D. A. (2009). *Critical thinking: Make strategic decisions with confidence* (2nd ed.). Axzo Press.

Gee, J. P. (2013). Discourse and "the new literacy studies". In J. P. Gee & M. Handford (Eds.), *The Routledge handbook of discourse analysis* (Vol. 2, pp. 177–194). Routledge.

Ghanizadeh, A. (2017). The interplay between reflective thinking, critical thinking, self-monitoring, and academic achievement in higher education. *Higher Education, 74*(1), 101–114. https://doi.org/10.1007/s10734-016-0031-y

Gliner, J. A., Morgan, G. A., & Leech, N. L. (2017). *Research methods in applied settings: An integrated approach to design and analysis* (3rd ed.). New York, NY: Routledge.

Göğüş, A., Göğüş, N. G., & Bahadır, E. (2019). Intersections between critical thinking skills and reflective thinking skills toward problem solving. *Pamukkale University Journal of Education, 49*, 1–19. https://doi.org/10.9779/pauefd.526407

Grosser, M. M., & Nel, M. (2013). The relationship between the critical thinking skills and the academic language proficiency of prospective teachers. *South African Journal of Education, 33*(2).

Gunn, C., Hearne, S., & Sibthorpe, J. (2011). Right from the start: A rationale for embedding academic literacy skills in university courses. *Journal of University Teaching & Learning Practice, 8*(1), 6.

Güneş, F. (2019). Literacy approaches. *The Journal of Limitless Education and Research, 4*(3), 224–246.

Hagood, M. C. (2000). New times, new millennium, new literacies. *Literacy Research and Instruction, 39*(4), 311–328. https://doi.org/10.1080/19388070009558328

Hamied, F. A., & Emilia, E. (2020). Teaching critical thinking through academic writing to tertiary EFL students in Pontianak Indonesia: A utilization of a genre-based approach. *The Asian EFL Journal Quarterly, 6.*

Hammer, S. J., & Green, W. (2011). Critical thinking in a first year management unit: The relationship between disciplinary learning, academic literacy and learning progression. *Higher Education Research & Development, 30*(3), 303–315. https://doi.org/10.1080/07294360.2010.501075

Henderson, R., & Hirst, E. (2007). Reframing academic literacy: Re-examining a short-course for 'disadvantaged' tertiary students (Unpublished doctoral dissertation). *Waikato University*, Hamilton.

Hendriana, H., Putra, H. D., & Hidayat, W. (2019). How to design teaching materials to improve the ability of mathematical reflective thinking of senior high school students in Indonesia? *EURASIA Journal of Mathematics, Science and Technology Education, 15*(12), em1790. https://doi.org/10.29333/ejmste/112033

Hoy, A. W. (2010). *Educational psychology*. Pearson.

Huang, C. W., & Archer, A. (2017). Academic literacies as moving beyond writing: Investigating multimodal approaches to academic argument. *London Review of Education, 15*(1), 63–72. https://doi.org/10.18546/LRE.15.1.06

Irving, J. A., & Williams, D. I., (1995). Critical thinking and reflective practice in counselling. *British Journal of Guidance & Counselling, 23*(1), 107–114. https://doi.org/10.1080/0306989508258064

Islamiyah, M., & Al Fajri, M. S. (2020). Investigating Indonesian master's students' perception of critical thinking in academic writing in a British university. *The Qualitative Report, 25*(12), 4402–4422.

Ivanič, R. (2004). Discourses of writing and learning to write. *Language and Education, 18*(3), 220–245. https://doi.org/10.1080/09500780408666877

Jonsmoen, K. M., & Greek, M. (2017). Lecturers' text competencies and guidance towards academic literacy. *Educational Action Research, 25*(3), 354–369. https://doi.org/10.1080/09650792.2016.1178156

Jordaan, H., & Moonsamy, S. (2015). Academic literacy and cognitive processing: Effects on the examination outcomes of speech-language pathology students at a South African university. *Journal of Cognitive Education and Psychology, 14*(1), 98–109. https://doi.org/10.1891/1945-8959.14.1.98

Junqueira, L. (2016). Academic literacy and student diversity: The case for inclusive practice. *English for Specific Purposes, 41*, 84–85. https://doi.org/10.1016/j.esp.2015.09.001

Kelly, C., & Brower, C. (2017). Making meaning through media: Scaffolding academic and critical media literacy with texts about schooling. *Journal of Adolescent & Adult Literacy, 60*(6), 655–666. https://doi.org/10.1002/jaal.614

King, M. L. (1968, April). *Developing critical thinking skills through reading*. Paper presented at the International Reading Association Conference, Boston, MA.

Kish, C. K., Sheehan, J. K., Cole, K. B., Struyk, L. R., & Kinder, D. (1997). Portfolios in the classroom: A vehicle for developing reflective thinking. *The High School Journal, 80*(4), 254–260.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York: Guilford Press.

Korthagen, F. A. (1985, March–April). *Reflective thinking as a basis for teacher education*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Larson, S. C. (2014). Exploring the roles of the generative vocabulary matrix and academic literacy engagement of ninth grade biology students. *Literacy Research and Instruction, 53*(4), 287–325. https://doi.org/10.1080/19388071.2014.880974

Lea, M. R. (2004). Academic literacies: A pedagogy for course design. *Studies in Higher Education, 29*(6), 739–756. https://doi.org/10.1080/0307507042000287230

Lea, M. R., & Street, B. V. (1998). Student writing in higher education: An academic literacies approach. *Studies in Higher Education, 23*(2), 157–172. https://doi.org/10.1080/03075079812331380364

Lea, M. R., & Street, B. V. (2006). The "academic literacies" model: Theory and applications. *Theory into Practice, 45*(4), 368–377.

Liao, H. C., & Wang, Y. H. (2019). Reflective Thinking Scale for healthcare students and providers—Chinese version. *Social Behavior and Personality: An International Journal, 47*(2), 1–10. https://doi.org/10.2224/sbp.7671

Liendo, P., & Palmira Massi, M. (2017). Academic literacy, genres and competences: A didactic model for teaching English to translation students. *Estudios de Lingüística Inglesa Aplicada, 17*, 251–272. https://doi.org/10.12795/elia.2017.i17.1

Lillis, T. (2003). Student writing as 'academic literacies': Drawing on Bakhtin to move from critique to design. *Language and Education, 17*(3), 192–207. https://doi.org/10.1080/09500780308666848

Lombard, K., & Grosser, M. (2008). Critical thinking abilities among prospective teachers: A comparative study. *South African Journal of Education, 28*(4), 561–579.

Loo, D. B. (2020). Integrating critical thinking in online language tasks: Considerations for an academic writing class. *International Journal of TESOL Studies, 2*(2), 52–61. https://doi.org/10.46451/ijts.2020.09.05

McKinley, J. (2013). Displaying critical thinking in EFL academic writing: A discussion of Japanese to English contrastive rhetoric. *RELC Journal, 44*(2), 195–208. https://doi.org/10.1177/0033688213488386

McWilliams, R., & Allan, Q. (2014). Embedding academic literacy skills: Towards a best practice model. *Journal of University Teaching & Learning Practice, 11*(3), 8. https://doi.org/10.14453/jutlp.v11i3.8

Mihriay, M. (2020). Investigation of the relationship between critical thinking levels and academic achievement levels of students in Faculty of Sports Science. *Educational Research and Reviews, 15*(7), 370–376. https://doi.org/10.5897/ERR2020.3946

Nardi, P. M. (2017). *Critical thinking: Tools for evaluating research*. University of California Press.

Neeley, S. D. (2001). *Academic literacy*. Pearson.

Nicoll, B. (1993, November). *Critical thinking: Developing a critical thinking environment for child development students*. Paper presented at the National Association for the Education of Young Children Conference.

Oxman, W. G., & Barell, J. (1983, April). *Reflective thinking in schools: A survey of teacher perceptions*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada.

Özen, Y., & Gül, A. (2007). Population-sampling issue on social and educational research studies. *Journal of Kazım Karabekir Education Faculty, 15*, 394–422.

Özsoy, S., & Özsoy, G. (2013). Effect size reporting in educational research. *Elementary Education Online, 12*(2), 334–346.
Paul, R. (2005). The state of critical thinking today. *New Directions for Community Colleges, 2005*(130), 27–38. https://doi.org/10.1002/cc.193

Pham, T. N., Lin, M., Trinh, V. Q., & Bui, L. T. P. (2020). Electronic peer feedback, EFL academic writing and reflective thinking: Evidence from a Confucian context. *SAGE Open, 10*(1), 2158244020914554. https://doi.org/10.1177/2158244020914554

Pujiono, S. (2020). Academic writing using critical thinking approach of student PBSI FBS Universitas Negeri Yogyakarta. *Jurnal Pendidikan Bahasa dan Sastra Indonesia, 4*(2).

Rahmat, N. H., Aripin, N., Lin, N. M., Whanchit, W., & Khairuddin, Z. (2020). Exploring the connection between critical thinking skills and academic writing. *International Journal of Asian Social Science, 10*(2), 118–128. https://doi.org/10.18488/journal.1.2020.102.118.128

Richards, K., & Pilcher, N. (2018). Academic literacies: The word is not enough. *Teaching in Higher Education, 23*(2), 162–177. https://doi.org/10.1080/13562517.2017.1360270

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of educational research*, *99*(6), 323-338.

Sheridan-Thomas, H. K. (2006). Making sense of multiple literacies: Exploring pre-service content area teachers' understandings and applications. *Literacy Research and Instruction, 46*(2), 121–150. https://doi.org/10.1080/19388070709558464

Smith, H. F. (1958). Reflective thinking—A unifying aim of secondary education. *The High School Journal, 41*(4), 127–136.

Sönmez, V., & Alacapınar, F. G. (2019). *Örneklendirilmiş bilimsel araştırma yöntemleri* (7. Baskı). Ankara: Anı Yayıncılık.

Street, B. (1997). The implications of the 'New Literacy Studies' for literacy education. *English in Education, 31*(3), 45–59. https://doi.org/10.1111/j.1754-8845.1997.tb00133.x

Suwono, H., Rofi'Ah, N. L., Saefi, M., & Fachrunnisa, R. (2023). Interactive socio-scientific inquiry for promoting scientific literacy, enhancing biological knowledge, and developing critical thinking. *Journal of Biological Education, 57*(5), 944–959. https://doi.org/10.1080/00219266.2021.2006270

Tabachnick, G. B., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). New York: Pearson.

Taghinezhad, A., Riasati, M. J., Rassaei, E., & Behjat, F. (2018). The impact of teaching critical thinking on Iranian students' writing performance and their critical thinking dispositions. *BRAIN: Broad Research in Artificial Intelligence and Neuroscience, 9*, 64–80.

Tahir, M., Dollah, S., & Radiyani, F. (2020, December). Academic writing learning model based on critical thinking skills with problem-based learning approach. In *International Conference on Science and Advanced Technology (ICSAT)*.

Takano, N. (2013). Making progress: A case study of academic literacy development. *CATESOL Journal, 24*(1), 157–167.

Tardy, C. M. (2005). "It's like a story": Rhetorical knowledge development in advanced academic literacy. *Journal of English for Academic Purposes, 4*(4), 325–338. https://doi.org/10.1016/j.jeap.2005.07.005

Tekin, N., Aslan, O., & Yağız, D. (2016). Fen bilimleri öğretmen adaylarının bilimsel okuryazarlık düzeyleri ve eleştirel düşünme eğilimlerinin incelenmesi. *Amasya Üniversitesi Eğitim Fakültesi Dergisi, 5*(1), 23–50.

Tekkol, İ. A., & Bozdemir, H. (2018). An investigation of reflective thinking tendencies and critical thinking skills of teacher candidates. *Kastamonu Education Journal, 26*(6), 1897–1910.

Temel, S. (2014). The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability. *South African Journal of Education, 34*(1), 1–20.

Teng, M. F., & Yue, M. (2023). Metacognitive writing strategies, critical thinking skills, and academic writing performance: A structural equation modeling approach. *Metacognition and Learning, 18*(1), 237–260.

The plurality of literacy and its implications for policies and programs: Position paper. (2004). UNESCO. Paris: United National Educational, Scientific and Cultural Organization, 13.

Tohamba, C. P. P. (2021, April). The challenges that Indonesian students faced in academic writing: A cross-disciplinary study of academic literacies. In *2nd International Conference on Technology and Educational Science (ICTES 2020)* (pp. 12–18). Atlantis Press.

Tsingos-Lucas, C., Bosnic-Anticevich, S., Schneider, C. R., & Smith, L. (2017). Using reflective writing as a predictor of academic success in different assessment formats. *American Journal of Pharmaceutical Education, 81*(1), Article 8.

Türkben, T., & Satılmış, S. (2022). Öğretmen adaylarının akademik okuryazarlık, dijital okuryazarlık ve eleştirel okuryazarlık becerilerinin çeşitli değişkenler açısından incelenmesi. *Türkiye Eğitim Dergisi, 7*(2), 345–364.

UNESCO. (2004). *The plurality of literacy and its implications for policies and programs: Position paper*. Paris: United Nations Educational, Scientific and Cultural Organization.

Weideman, A. (2003). Assessing and developing academic literacy. *Per Linguam: A Journal of Language Learning, 19*(1–2), 55–65.

Wilson, K. (2016). Critical reading, critical thinking: Delicate scaffolding in English for academic purposes (EAP). *Thinking Skills and Creativity, 22*, 256–265. https://doi.org/10.1016/j.tsc.2016.10.002

Wingate, U. (2015). *Academic literacy and student diversity: The case for inclusive practice*. Multilingual Matters.

Yaacob, A., Asraf, R. M., Raja Hussain, R. M., & Ismail, S. N. (2021). Empowering learners' reflective thinking through collaborative reflective learning. *International Journal of Instruction, 14*(1), 709–726. https://doi.org/10.29333/iji.2021.14143a