Education and Science

Original Article

Vol 49 (2024) No 220 109-125

The Relationship Between Critical Reading and Cognitive Awareness of Reading Strategies: A Canonical Correlation Analysis *

Halil İbrahim Bahadır [1], Cafer Çarkıt [2]

Abstract

This study aims to examine the relationship between critical reading and cognitive awareness of reading strategies based on data collected from secondary school students. Correlational research model, one of the quantitative research models, was used in the study. The research was conducted with 1026 secondary school students who were determined by simple random sampling from public schools in Hatay province. The research data were collected using Critical Reading Scale, Reading Strategies Cognitive Awareness Scale and Student Information Form. These data were analyzed using descriptive statistical analysis, Pearson correlation analysis and canonical correlation analysis. As a result of the research, it was determined that the students' critical reading was at a moderate level, their cognitive awareness of reading strategies was at a high level, and there was a strong positive relationship between the levels of critical reading and cognitive awareness of reading strategies. According to the canonical correlation analysis, 62% variance was shared between critical reading and cognitive awareness of reading strategies. Additionally, a significant and positive relationship was determined between topic, text, writer and reader, which are the sub-dimensions of critical reading, and planning, editing and evaluating, which are the sub-dimensions of cognitive awareness of reading strategies.

Keywords

Critical reading
Reading strategies
Cognitive awareness
Canonical correlation

Article Info

Received: 03.11.2023
Accepted: 06.11.2024
Published Online: 10.25.2024

DOI: 10.15390/EB.2024.12673

Introduction

In the modern age the ability to access knowledge is one of the basic skills that individuals should have. The functional use of the accessed knowledge is another skill expected from individuals. Today, depending on scientific and technological development and change, knowledge sources are increasing each day, interaction between people becomes easier through the internet, and there is a flood of knowledge in every stage of daily life. In daily life, individuals are exposed to many visual, auditory and linguistic stimuli. While this situation makes it easier to access knowledge, it makes it

* This article is derived from Halil İbrahim Bahadır's Master's thesis entitled " Investigation of the relationship between secondary school students' critical reading skills and metacognitive awareness inventory of reading strategies levels ", conducted under the supervision of Cafer Çarkıt.

[1] Gaziantep University, Institute of Educational Sciences, Department of Turkish Education, Türkiye, h.i.bahadir@hotmail.com

[2] Gaziantep University, Nizip Faculty of Education, Department of Turkish and Social Sciences Education, Türkiye, cafer_carkit_87@hotmail.com

difficult to use the accessed knowledge functionally. In addition, it reveals the need to distinguish the correct knowledge, to reveal the positive and negative aspects of the accessed knowledge, and to control knowledge and knowledge sources according to various criteria.

Reading is one of the most basic skills that individuals use in the process of accessing knowledge in modern life conditions. Reading is defined as a complex skill that starts with the desire to have fun and learn and includes a process from research to interpretation, from discussion to critical thinking (Ateş, 2013; Diyanni, 2017; Goatly, 2000). Today, reading is an important skill used in accessing knowledge in many areas of life from health to education, from trade to economy. In their daily lives, individuals access a lot of information through reading from sources such as books, magazines, newspapers, posters, brochures, signs, billboards, social media tools, blogs, internet sites, etc. In this sense, critical reading is needed to obtain the necessary, accurate, useful and functional knowledge for the individual among the masses of knowledge and to use this knowledge actively in daily life.

Critical Reading

Critical reading can be defined as a type of reading that involves the process of analysing, reasoning, comparing and evaluating what is read (Collins, 1993). Critical reading is a high-level reading in which metacognitive mental skills are used (Hudson, 2007). In the process of critical reading, the readers determines the evidence and claims put forward by the author, discovers implications and assumptions, and thus filters what they reads through a deep reasoning filter (Barnet & Bedau, 2011). The aim of the critical reader is to determine the correct and incorrect aspects of the knowledge put forward by the author and to read the text in depth and by questioning between the lines (Maker & Lenier, 1996). Critical reading is a high-level reading that requires the use of mental capabilities beyond the understanding of the content read (Sultan, Rofiuddin, Nurhadi, & Tri-Priyatni, 2017). In the critical reading process, the reader needs a deep focus, not a shallow attention (Wallace, 2003). In this process, the reader who deals with the text in a cause and effect relationship exhibits a critical stance towards both the text and the author (Combs, 1992). Critical reading, considered as an indispensable skill in the daily life of individuals today, should be seen as a life skill as well as an academic skill (Allen, 2005).

Critical reading is a type of reading in which language and thinking skills are used together. In this sense, critical reading, like all language and thinking skills, can be acquired by individuals through education and critical reading levels of individuals can be improved in this way. In the process of teaching critical reading, individuals should acquire some sub-skills and attitudes. Systematic questioning is one of them (Nguyen, 2020). The reader who has gained systematic questioning skills frees himself from the guidance of the author and the text and makes new inferences based on what he reads. Critical readers who have acquired systematic questioning skills feel sensitive and responsible for the texts they read (Diyanni, 2017). Sceptical approach is one of the attitudes that should be acquired in the process of teaching critical reading. Critical readers construct their relations with the world within a sceptical perspective based on what they read (Goatly, 2000). The sceptical approach gives the readers the opportunity to examine the texts they read in terms of information source, scientificity, timeliness and reliability. Multiple perspective is another skill that should be emphasised in the process of teaching critical reading. As a matter of fact, readers who have acquired critical reading skills are expected to analyse the texts they read or the thoughts, ideas or arguments put forward in the texts they read in terms of wrong or right, current or old, scientific or dogmatic. In this sense, critical reading requires intellectual courage (Ateş, 2013). These sub-skills and attitudes have an important place in an effective critical reading education.

High-level cognitive skills have an important place in the critical reading process. Critical readers use high-level cognitive skills such as analysis, questioning, evaluation and inference effectively in this process. Söylemez (2015) states that high-level cognitive skills are used in four dimensions as subject, text, author and reader in the critical reading process. In the critical reading process, critical readers analyse, question and evaluate the subject and text from different perspectives. The importance, topicality and scientificity of the topic, the content, format, credibility and arguments of the text are important points that readers emphasise in this process. Similarly, critical readers also question the

author in terms of purpose, style, point of view and so on. In this way, they can make inferences about the objektivity or bias of the author. Finally, critical readers question their own reading process. Thus, they have the opportunity to self-evaluate their critical reading process. In all these stages, cognitive awareness of reading strategies is of great importance.

Cognitive Awareness of Reading Strategies

Strategy can be defined as special methods followed to obtain certain knowledge, reach or control plans and designs for a subject, problem or task (Brown, 2007). On the other hand, reading strategies are the cognitive processes that readers apply in order to make sense of the text they read effectively (Pani, 2004). Reading strategies have an important place in the qualification of the reading process. Determining which text will be read for what purpose, what should be paid attention to in order to obtain the message intended to be given in the text, being aware of which steps to take in order to analyse the text at the end of reading are of great importance in terms of the reading comprehension process (Oyentunji, 2013). Reading strategies are used consciously (Supakorn & Panplum, 2022). Individuals who are proficient in reading strategies are more competent in comprehending what they read (Lau, 2006). Cognitive awareness of reading strategies contributes to readers' conscious and purposeful approach to what they read.

Reading strategies can be analysed in three stages: before reading, while reading and after reading (Serravallo, 2015). To achieve effective comprehension, it is a necesary to use reading strategies at all stages of the reading process (Dallagi, 2021). It is an indispensable action for effective reading for readers to realise how much they use or do not use the reading strategies they should use. Increasing the level of cognitive awareness of reading strategies is seen as an important stage in increasing individuals' reading comprehension levels. An effective reading process can only be managed by using these strategies. In this sense, cognitive awareness of reading strategies provides individuals with an important competence to be aware of what they experience in the process of learning knowledge and to manage this process. Karatay (2009) states that cognitive awareness of reading strategies should be analysed in three dimensions as planning, editing and evaluating. The planning dimension corresponds to the reading strategies to be used before reading. At this stage, which corresponds to the preparing stage, readers determine and use the strategies they can use before reading. The editing dimension refers to the strategies to be used in the reading process. At this stage, readers determine and use appropriate strategies for effective comprehension. The evaluating dimension corresponds to the reading strategies to be used after reading. At this stage, readers evaluate the reading process multidimensionally. Cognitive awareness of reading strategies is among the effective solutions for the problem of "not being able to comprehend what is read" encountered today.

The Relationship Between Critical Reading and Cognitive Awareness of Reading Strategies

When the literature is examined, it is seen that critical reading is a subject that is studied with different dimensions. In this sense, studies have been conducted in which students' critical reading levels were measured and their relationship with various variables was examined (Demir, 2017; Hairston-Dotson & Incera, 2022; Özdemir, 2017; Özmutlu, Gürler, Kaymak, & Demir, 2014). Different studies have been conducted to reveal the relationship between critical reading and reading comprehension (Roomy, 2022; Wexler, Swanson, Kurz, Shelton, & Vaughn, 2020), reading habits (Can & Bicer, 2021), critical thinking (Aghajani & Gholamrezapou, 2019; Commeyras, 1990; Wilson, 2016). Additionally, there are studies that use different methods and techniques in the development of critical reading skills (Al-Shaye, 2021; Combs, 1992; Garcia, 2008; Huijie, 2010; Macknish, 2011; Ripley, 2007; Rohmah, 2018) and measurement tools to determine the level of critical reading (Dilidüzgün, Taşcılar, & Şahin, 2020; Söylemez, 2015; Thistlethwaite, 1990; Zhou, Jiang, & Yao, 2015).

As is the case with critical reading, cognitive awareness of reading strategies has been the subject of research from a number of different perspectives in the literature. When the literature is examined, studies examining the reading strategies cognitive awareness levels of primary school students in terms of various variables (Alhaqbani & Riazi, 2012; Hong-Nam & Page, 2014; Joshua, 2016) have been carried out. Different studies examining the relationship between reading strategies cognitive

awareness and reading comprehension (Cho & Ma, 2020; Fitrisia, Tan, & Yusuf, 2015; Li, Gan, Leung, & An, 2022), reading anxiety (Melanlıoğlu, 2014), reading motivation (Cor & Conny, 2003; Guthrie, Klauda, & Ho, 2013; Öztürk & Aydoğmuş, 2021), academic self-efficacy (Koç & Arslan, 2017) and critical thinking (Amanvermez & Beyreli, 2020) have been conducted. Additionaly, there are also studies on the effect of cognitive awareness of reading strategies on academic achievement (Akhmetova, Imambayeva, & Csapó, 2022; Poole, 2019; Sheikh, Soomro, & Hussain, 2019) and the development of measurement tools to determine the level of cognitive awareness of reading strategies (Karatay, 2010; Mokhtari & Reichard, 2002).

In addition to the studies mentioned before, when other studies in the literature were examined, no study examining the relationship between secondary school students' critical reading levels and their cognitive awareness of reading strategies was found. In the studies, it is stated that the use of reading strategies affects students' reading and critical reading levels (Cho, 2013; Cotteral, 1990; Sani, Wan-Chik, Awg-Nik, & Raslee, 2011). However, no study was found to determine the level of relationship between critical reading and cognitive awareness of reading strategies. This situation makes it difficult to reveal the importance of cognitive awareness of reading strategies in the process of teaching critical reading. This study aims to meet this need identified in the literature. Based on the assumption that there is a relationship between critical reading and cognitive awareness of reading strategies, the study aims to reveal this relationship with its sub-dimensions by presenting evidence. In line with these objectives, the research questions are as follows:

1. What is the level of critical reading of secondary school students?
2. What is the level of middle school students' cognitive awareness of reading strategies?
3. What is the level of relationship between critical reading and cognitive awareness of reading strategies?
4. What is the level of importance of sub-dimensions in the relationship between critical reading and cognitive awareness of reading strategies?

Method

Research Model

The main problem of the research is to examine the relationship between critical reading and reading strategies cognitive awareness of secondary school students. The sub-problems of the research are to determine the critical reading and reading strategies cognitive awareness levels of secondary school students and to determine the importance of sub-dimensions in the relationship between critical reading and reading strategies cognitive awareness level. For these aims, the correlational research method, one of the quantitative research designs, was used in the research. The correlational research method allows the examination of the relationship between more than one variable (Tabachnick & Fidell, 2013). The relationship dimension between variables determined by using this research method forms the basis for researchers who will conduct cause-effect research in the experimental model.

Study Group

The study group of the research consists of 1065 secondary school students studying in public schools in the 2022-2023 academic year in the central districts of Hatay province. The students in the study group were selected by simple random sampling method. Ten schools were randomly selected among the schools in the central districts of Hatay province. The students in the schools were listed and the study group was randomly selected. Israel's (1992) sample size calculation formula was used to form the study group. According to this formula, the minimum number of students to be included in the sample group was determined as 622 with a 95% confidence interval of ± 4% precision. Considering the possible missing data, 1065 students were included in the study group of this research. Some of these students were excluded from the analysis before the data analysis and some of them were excluded from the analysis during the data analysis due to outlier and extreme value detection and the research was carried out with 1026 students.

Data Collection Tools

The research data were collected through Critical Reading Scale (Söylemez, 2015), Reading Strategies Cognitive Awareness Scale (Karatay, 2009) and Student Information Form developed by the researcher. Data collection tools were applied to the students in the study group after the necessary explanations and information were given to the students in the study group according to the decision of Gaziantep University Social and Human Sciences Ethics Committee dated 06.06.2022 and numbered E-87841438-604-01.01-195371. Information about the data collection tools is presented as below.

Critical Reading Scale

The Critical Reading Scale developed by Söylemez (2015) is a 5- Likert type scale consisting of 33 items and four dimensions: topic, text, writer and reader. The scale has 4 items in the topic sub-dimension, 11 items in the text sub-dimension, 9 items in the writer sub-dimension and 9 items in the reader sub-dimension. There are four reverse items in the scale. Reliability and validity analyses of the scale were carried out with the data collected from 781 secondary school students. The item analysis correlation range of the scale was found to be at a sufficient level between .33 and .79. In the reliability analysis, Cronbach Alpha value was calculated as .85, Spearman-Brown value as .83 and Guttman value as .84. These results indicate that the scale is a highly reliable measurement tool. In the reliability analysis conducted with the data of this study, Cronbach Alpha internal consistency coefficient for the whole scale was calculated as .88. As a result of the analysis, an internal consistency coefficient value above .70 indicates that the test is reliable (Pallant, 2020). These values show that the test has a high level of reliability. Using the research data, the construct validity of the scale was checked by confirmatory factor analysis. Chi-square/degree of freedom (CMIN/DF), significance index (P), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), correlated fit index (CFI), root mean square error of approximation (RMSEA) were taken into consideration in the analysis. The values determined as a result of the analysis were calculated as (CMIN/DF=2.3; P=.00; GFI=.95; AGFI= .94; CFI=.93; RMSEA=.37). Factor loading values were found to be significant with values between .52-.74. In the literature, CMIN/DF between 0.00-3.00, P value between .01-.05, RMSEA value between .00-.08, GFI, AGFI and CFI values between .90-1.00 indicate good fit (Schermelleh-Engel & Moosbrugger, 2003; Şimşek, 2007). These findings show that the Critical Reading Scale meets the validity level accepted in the literature (Büyüköztürk, 2002).

Reading Strategies Cognitive Awareness Scale

The Reading Strategies Cognitive Awareness Scale was developed by Karatay (2007) as a 33-item scale in a sample of university students within the scope of his doctoral research. Reading Strategies Cognitive Awareness Scale is a 5- Likert type scale. Karatay (2009) reorganised the scale he developed in a different study on a study group including elementary, high school and university students. Thus, he introduced the scale to the literature as a scale that can be used at all levels of education. The scale consists of 32 items including planning, editing and evaluating sub-dimensions. There are 9 items in the planning sub-dimension, 14 items in the editing sub-dimension and 9 items in the evaluating sub-dimension of the scale. The reliability and validity analyses of the scale were carried out with the data collected from 1338 elementary, high school and university students. In the reliability analysis of the scale, Cronbach's alpha values were calculated as .65 in the planning sub-dimension, .66 in the editing sub-dimension, .78 in the evaluating sub-dimension and .88 in the overall scale. The item-total correlations of the scale were found to be between .35 and .54. According to these values, it was determined that the scale was a reliable and valid scale. In the reliability analysis conducted with the data of this study, the Cronbach Alpha internal consistency coefficient of the scale was calculated as .90. As a result of the analysis, an internal consistency coefficient value above .70 indicates that the test is reliable (Pallant, 2020). Within the scope of these values, it can be stated that the scale has a high reliability value. The confirmatory factor analysis of the Reading Strategies Cognitive Awareness Scale showed that it had a good fit index (CMIN/DF=3.04; P=.00; GFI=.91; AGFI=.92; CFI=.91; RMSEA=0.46). It was determined that the factor loadings were between .38-.61 and these loadings were significant.

Data Analysis

In this study, firstly, critical reading and reading strategies cognitive awareness levels of secondary school students were determined. For this purpose, IBM SPSS Statistics 26 programme was used and descriptive statistics such as frequency, percentage, arithmetic mean, standard deviation, median and peak value calculations were used. Then, the relationship between critical reading and cognitive awareness of reading strategies was examined and canonical correlation analysis was used for this purpose. Canonical correlation analysis is used to examine the relationship between two data sets, each of which has at least two variables (Huo & Budescu, 2009; Tabachnick & Fidell, 2013). Thus, the interaction between the two sets is determined. In canonical correlation analysis, variable sets are called Set1 and Set2 and the relationship between these sets can be determined with a single analysis. In this sense, in the analysis process, linear components that will maximise the relationship between the two sets of variables are obtained (Everitt & Hothorn, 2011). The new variables arising from the linear components obtained as a result of the analysis are called "canonical variables" (Afifi & Clark, 1996). In canonical correlation, the variables on the right and left sides of the equation are called "canonical variable pairs" (Tabachnick & Fidell, 2013). The terms "canonical root" or "canonical function" refer to the relationship between these pairs of canonical variables and each canonical function consists of two canonical variables (Hair, Black, Babin, & Anderson, 2010). In canonical correlation analysis, it is essential to calculate the first canonical variable pair in a way to maximise the relationship between pairs of variables (Rencher, 2002). The second canonical variable pair reveals the maximum relationship between two canonical variables that are not taken into account in the correlation calculation between the first canonical variable pair (Stevens, 2009). It is observed that the value of canonical correlation decreases in new functions obtained between canonical variables (Hair et al., 2010). Functions that are statistically significant in the process are interpreted.

With the canonical correlation analysis performed in this study, the relationship between the critical reading data set consisting of topic, text, writer, reader sub-dimensions and the reading strategies cognitive awareness data set consisting of planning, editing and evaluating sub-dimensions was examined. Since one of the data sets in the study consists of four and the other of three variables, the maximum number of variable pairs that can be obtained is three. The analytical scheme for the data sets of the study is presented in Figure 1.

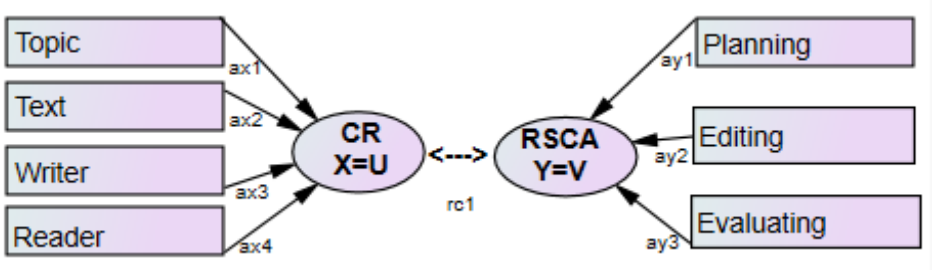

Figure 1. Analytical schema of critical reading and reading strategies cognitive awareness data sets

Before canonical correlation analysis is performed, it should be checked that the necessary prerequisites are met. In this sense, the data should be normally distributed, there should be a linear relationship between the variables and meet the assumption of multicollinearity (Tabachnick & Fidell, 2013). In the study, the normality distribution of the data was tested by examining the skewness and kurtosis coefficients. Accordingly, it was determined that the skewness coefficients were between -.04 and -.44 and the kurtosis coefficients were between -.14 and .61 (George & Mallery, 2016). It was observed that the correlation value between the variables in the data sets was less than .90. These results show that the multicollinearity assumption is met (Can, 2017). For the linearity assumption, the scatter plots of the scales were analysed and it was concluded that the data set met the prerequisites for canonical correlation.

Findings

Depending on the first sub-problem of the study, critical reading levels of secondary school students were statistically analyzed. Accordingly, descriptive statistics regarding the total scores obtained from the scale applied to determine the critical reading levels of secondary school students are presented in Table 1.

Tablo 1. Critical reading scale descriptive statistics values

	n	($\bar{x}$)	SD	Median	Peak Value
Topic	1026	3.10	0.71	3.00	3.00
Text	1026	3.53	0.67	3.54	3.18
Writer	1026	3.31	0.77	3.55	3.44
Reader	1026	3.49	0.65	3.33	3.11
CR	1026	3.31	0.57	3.36	3.61

In Table 1, the number of participants (n), mean ($\bar{x}$), standard deviation (SD), median and peak values, which are descriptive statistics for the sub-dimensions of the "Critical Reading Scale" and the overall scale, are presented. The mean of the subject sub-dimension ($\bar{x}$=3.10), the mean of the text sub-dimension ($\bar{x}$=3.53), the mean of the reader sub-dimension ($\bar{x}$=3.49), the mean of the author sub-dimension ($\bar{x}$=3.31) and the mean of the overall scale ($\bar{x}$=3.31) were determined. The determined values show that the critical reading levels of secondary school students are at the middle level. In other words, critical reading levels of secondary school students are not at a sufficient level and need to be improved.

Depending on the second sub-problem of the research, reading strategies cognitive awareness levels of secondary school students were statistically analysed. Accordingly, descriptive statistics related to the total scores obtained from the scale to determine the reading strategies cognitive awareness levels of secondary school students are presented in Table 2.

Table 2. Reading strategies cognitive awareness scale descriptive statistics values

	n	($\bar{x}$)	SD	Median	Peak Value
Planning	1026	3.57	0.73	3.66	3.67
Editing	1026	3.54	0.67	3.56	3.56
Evaluating	1026	3.46	0.76	3.55	3.67
RSCA	1026	3.52	0.66	3.54	5.00

In Table 2, the number of participants (n), mean ($\bar{x}$), standard deviation (SD), median and peak values, which are descriptive statistics of the sub-dimensions of the "Reading Strategies Cognitive Awareness Scale" and the overall scale, are presented. The mean of the students' planning strategies was 3.57, the mean of organising strategies was 3.54, the mean of evaluation strategies was 3.46 and the overall mean of the scale was 3.52. The determined values show that the students' cognitive awareness levels of planning and organising strategies are high, while their cognitive awareness levels of evaluation strategies are at medium level. The high level of planning and organising strategies shows that students have sufficient awareness about what they should do for reading comprehension before and during reading. The fact that the evaluation strategies are at a medium level indicates that the students do not have sufficient awareness about the work to be done for comprehending, criticising and summarising the text after reading. When the scores obtained from the whole scale are analysed, it is seen that the students' RSCA levels are at a high level.

Pearson correlation analysis was conducted to determine the relationship between critical reading and reading strategies cognitive awareness levels of secondary school students. The results obtained according to the analysis are presented in Table 3.

Table 3. Correlation values of critical reading and cognitive awareness of reading strategies

	CR	Topic	Text	Writer	Reader
RSCA	.80**	.51**	.66**	.70**	.67**
Planning	.73**	.44**	.62**	.65**	.59**
Editing	.76**	.50**	.63**	.66**	.64**
Evaluating	.72**	.47**	.58**	.64**	.61**

**p<.001

According to Table 3, a positive and highly significant relationship was determined between critical reading and cognitive awareness of reading strategies (r=.80, p<.001); a positive and highly significant relationship was determined between critical reading and planning (r=.73, p<.001), editing (r=.76, p<.001) and evaluating (r=.72, p<.001) sub-dimensions of cognitive awareness of reading strategies.

While there was a positive and moderately significant relationship between the level of cognitive awareness of reading strategies and the topic (r=.51, p<.001), text (r=.66, p<.001) and reader (r=.67,p<.001) sub-dimensions of critical reading, a positive and highly significant relationship (r=.70,p<.001) was determined with the writer sub-dimension.

A canonical correlation analysis was conducted to determine the relationship between two sets of variables consisting of many variables between secondary school students' critical reading and reading strategies cognitive awareness levels. According to the analysis, the canonical correlation coefficients calculated between the variable sets of students' critical reading and reading strategies cognitive awareness levels are presented in Table 5. These values obtained as a result of canonical correlation express the optimal linear relationships between the two variable sets.

Table 4. Statistical results of canonical correlation

Roots	Canonical Correlation (rc)	Square of Canonical Correlation (Rc^2)	Eigenvalue	Wilks' Lambda	F	Sd	P
1.	.789	.62	1.647	.371	102.13	12	.000**
2.	.127	.01	.016	.982	3.05	6	.006*
3.	.04	.001	.00	.99			

*p<.05, **p<.001

According to Table 4, it can be stated that the two linear functions obtained from the canonical correlation analysis are statistically significant (p<.05). Nevertheless, the Wilks' Lambda value which shows the test statistic value of canonical correlation, indicates that the first linear function is significant (Wilk's λ=.371, $F_{(12)}$=102.13, p<.001). In this sense, the canonical correlation value of the first canonical function was determined as .78. In canonical correlation analysis, along with the significance of the model, results regarding the effect size are also obtained. Wilks λ value is used for this. This value shows the unexplained variance between canonical variables of the model obtained according to the analysis performed. Accordingly, the "1-λ" value shows the common variance shared between canonical variables and can be interpreted as the R^2 value in regression analysis. In Table 4, Wilks λ value was calculated as .62. According to this information, it can be stated that the common variance shared between the critical reading and reading strategies cognitive awareness data sets is .62.

After evaluating the significance level in canonical correlation analysis, the interpretation of canonical variables is proceeded. At this stage, variable pairs that are found significant are interpreted. Thus, it is determined to what extent the variables in the data sets contribute to the relationship between canonical variables. At this stage of the application, standardized canonical coefficients and canonical load values were examined. Standardized canonical coefficients allow each canonical variable to be examined within its own set by determining the correlations between canonical variables, which express the weight of variables in forming linear combinations, and real variables. In this sense, standardized

canonical coefficients reveal the standard deviation of a one-unit change in the independent variable in the canonical variable. Canonical loadings, in other words, structural values, enable the determination of the variance explained by each variable. According to Tabachnick and Fidell (2007), the variable analyzed should have a value higher than .30 in order to be considered as a part of the relevant set. According to Sherry and Henson (2005), items with factor loadings greater than .45 can be considered as very good items. In this study, the standard coefficients and structural values of the first canonical function between the canonical variables of the topic, text, writer, reader variables in the critical reading data set and the planning, editing, and evaluating variables in the reading strategies cognitive awareness set were examined and evaluated. All of the variables in the data set of the study have a value higher than .45. The data obtained as a result of the relevant analyzes are shown in Table 5:

Tablo 5. Standardised Correlation Coefficients and Load Values in Critical Reading and Reading Strategies Cognitive Awareness Data Sets

		r_c
Valuable	**Correlation Coefficient**	**Load Value**
First Set (CR)		
Topic	-.15	-.65
Text	-.28	-.85
Reader	-.31	-.85
Writer	-.43	-.89
Second Set (RSCA)		
Planning	-.33	-.90
Editing	-.45	-.95
Evaluating	-.29	-.90

According to Table 5, the equation for the canonical variables U and V obtained from the standardized coefficients of the critical reading and reading strategies cognitive awareness data sets can be formulated as follows:

U= -.15* Topic + -.28* Text + -.43* Writer + -.31* Reader

V = -.33* Planning + -.45* Editing + -.29* Evaluating

When the equation is analyzed, it can be stated that the highest contribution to the U canonical data set is provided by the " Writer" (-.43) and the lowest contribution is provided by the " Topic" (-.15) variables. It can be said that the highest contribution to the V canonical data set is provided by the variables "Editing" (-.45) and the lowest contribution is provided by the variables "Planning" (-.33). In this sense, it can be stated that practices for analyzing the writer are more important in critical reading practices, and editing strategies (reading order) are more important in reading strategies cognitive awareness practices. The canonical correlation coefficient between the structural values of the canonical function found to be significant in the study and the data sets of critical reading and cognitive awareness of reading strategies is presented in Figure 2.

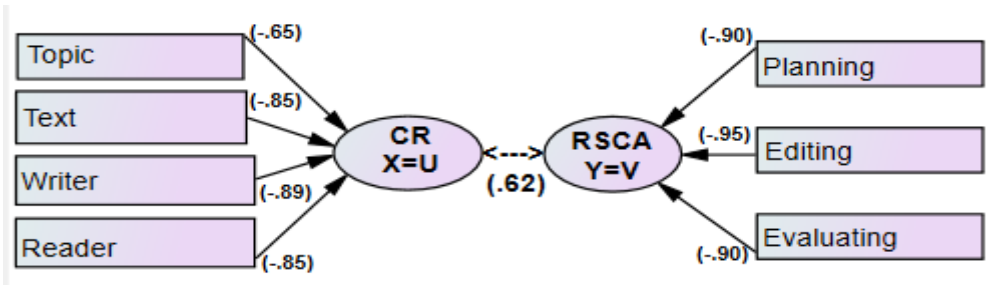

Figure 2. Structural values and correlation coefficient of the canonical function between CR and RSCA

In canonical correlation analysis, inferences can be made about the direction of the relationship between these variables by examining the signs of the variables with structural values (.45) or above, that is, the variables that make a significant contribution to the data set. In this study, the sign of the variables that contribute significantly to the Critical Reading data set, namely Topic (-.65), Text (-.85), Writer (-.89) and Reader (-.85), is negative. Accordingly, it can be said that there is a same-directional relationship between these variables. Similarly, the sign of the variables Planning (-.90), Editing (-.95) and Evaluating (-.90), which contribute significantly to the Reading Strategies Cognitive Awareness data set, is also negative. Thus, it can be said that there is a relationship between these variables in the same direction. In addition, the negative signs of both critical reading and reading strategies cognitive awareness variables indicate the existence of a same-directional relationship between these two variables. As the level of critical reading increases, the level of cognitive awareness of reading strategies also increases. This means a decrease in the level of cognitive awareness of reading strategies leads to a decrease in critical reading level. Based on the findings obtained in the study, it can be stated that the variables are ranked as Writer (-.89), Text (.-85) and Reader (.-85), Topic (.-65) in order of importance in critical reading. In cognitive awareness of reading strategies, it can be said that the variables in order of importance are listed as Editing (.-95), Planning (.-90) and Evaluating (.-90). Cross-loading values are analyzed to examine whether any of the variable sets explains the variance of the other. The cross-loading values of the reading strategies cognitive awareness data set on the critical reading data set are presented in Table 6.

Table 6. Cross-Load values of critical reading and reading strategies cognitive awareness data sets

Variable	**Load value**
	Reading Strategies Cognitive Awareness Variable Set (V Canonical Variable)
First Set (CR)	
Topic	-.51
Text	-.67
Writer	-.70
Reader	-.68
	Critical Reading Variable Set (U Canonical Variable)
Second Set (RSCA)	
Planning	-.72
Editing	-.75
Evaluating	-.71

According to Table 6, the role of the dimensions of critical reading in explaining the reading strategies cognitive awareness levels of secondary school students are ranked as writer (-.70), reader (-.68), text (-.67) and topic (-.51). On the other hand, the role of the dimensions of cognitive awareness of reading strategies in explaining the critical reading levels of secondary school students are listed as editing (.75), planning (-.72) and evaluating (-.71).

Discussion and Conclusion

In this study conducted on secondary school students, it was aimed to examine the relationship between critical reading and cognitive awareness of reading strategies within the framework of students' perceptions. For this purpose, descriptive statistics and canonical correlation analysis were used to analyze the data obtained from the students. Thus, it was aimed to present a multidimensional data set.

According to the data obtained in the study, the critical reading levels of secondary school students were determined as moderate level in the topic, text, writer, reader sub-dimensions and the whole scale. This result shows that secondary school students' critical reading skills are not sufficient and need to be improved. When the literature is examined, Demir (2017) and Özdemir (2017) determined the critical reading levels of secondary school students as moderate level. Tosun (2014)

reported that students' critical reading levels are not at a sufficient level. In the critical reading studies conducted with primary school students in the literature, there are studies indicating that students' critical reading levels are moderate (Akar, Başaran, & Kara, 2016) and insufficient (Altunsöz, 2016). In this context, the data of the study support the literature data. Critical reading education can only be successful with a free-thinking mind (Kanatlı, 2018). Individuals who can freely express their opinions about the event or issue raised in every environment with their bases can carry critical reading skills to higher levels. Individuals can gain this self-confidence through a process that starts in the family and continues at school and at every stage of life. Especially schools providing a democratic environment where students can freely express their own opinions makes critical reading education more effective. Some studies indicate that critical reading education should be carried out in schools and by teachers in a planned manner (Alvermann & Commeyras, 1994; Guy, 2000). Teachers, who are the guides of students' social, academic and cultural development, are in an important position in critical reading education. This study and other studies mentioned above show that critical reading education is not at an adequate level in schools and that the necessary environments for critical reading education are not provided.

Teaching of critical reading has a critical importance in the development of comprehension and expression skills in language teaching curriculums (Zigo & Moore, 2004). Critical reading is an effective skill on students' academic achievements (Roomy, 2022; Wilson, 2016). Critical reading is important for students to gain different perspectives, to develop skills such as questioning, discussing, analyzing and making inferences. In training students to be good critical readers, the use of strategy should be given the importance it deserves. Because good critical readers have the ability to use effective strategies (Kim, 2020). There are deficiencies in curriculum, textbook and teacher competence in critical reading teaching (Çarkıt, 2019). In this sense, it is considered important to eliminate the deficiencies in the context of curriculum, textbooks and teacher competence in the process of teaching critical reading.

According to the data obtained within the scope of the research, the level of cognitive awareness of reading strategies of secondary school students was determined as high level in the sub-dimensions of planning and editing, and as moderate level in the sub-dimension of evaluating. According to the overall scale, students' cognitive awareness of reading strategies is at a high level. Within the scope of these results, it can be said that secondary school students are generally aware of what they should do in the reading comprehension process, but their competences in the process of evaluating the text after reading are not at the expected level. When the studies conducted in the literature are examined, Bulut (2016) determined students' cognitive awareness of reading strategies as high level in the sub-dimensions of planning and editing, and as moderate level in the sub-dimension of evaluating. This result coincides with the findings of this study. In his study, Karatay (2010) determined students' cognitive awareness of reading strategies as high level in the planning sub-dimension and as moderate level in the editing and evaluating sub-dimensions. In the literature, there are studies that determine that students' cognitive awareness of reading strategies is at a high level in all dimensions (Koç & Arslan, 2017; Toksun, 2020). In this study, the fact that students' cognitive awareness of reading strategies was found to be at a moderate level in the evaluation dimension indicates that students have problems in the process of evaluating what they read. Evaluating is a high-level strategy and allows students to make inferences from what they read (Song, 1998). In this sense, the evaluating dimension should be paid special attention in the process of providing students with reading strategies. After all, reading strategies facilitate the reading process and prepare the ground for the reading process to be more effective (Sheorey & Mokhtari, 2001; Tercanlıoğlu, 2004).

In the study, it was determined that a common variance of 62% was shared between critical reading and reading strategies cognitive awareness data sets. In other words, a student's cognitive awareness of reading strategies explains 62% of the change in critical reading level. This rate shows that cognitive awareness of reading strategies has a significant explanatory power on critical reading. In addition, a significant and positive relationship was determined between the topic, text, writer and reader variables of critical reading and the planning, editing and evaluating variables of cognitive

awareness of reading strategies. According to these findings, it can be stated that as the students' reading strategies cognitive awareness levels increase, their critical reading levels also increase. It is expected that students with cognitive awareness of reading strategies will show an increase in their tendency to exhibit a critical attitude in the reading process. Critical reading requires a more intensive cognitive process than the reading comprehension process (Roussey & Piolat, 2008; Wilson, 2016). Individuals need to be aware of reading strategies and use them effectively in order to manage this process. Reading strategies facilitate the planning and implementing of the processes that individuals will perform in order to analyse what they read in the reading process (Oyentunji, 2013). The findings obtained in this study show that a strong variance is shared between critical reading and cognitive awareness of reading strategies. Karabay (2015) found that the metacognitive reading strategies awareness of the group receiving critical reading training increased in his study. In another study, Bayraktar (2012) concluded that the critical reading levels of students who used reading strategies increased. All these results support the strong relationship between critical reading and cognitive awareness of reading strategies in this study.

In the study, it was determined that the writer sub-dimension of critical reading became prominent in explaining the reading strategies cognitive awareness levels of secondary school students. Accordingly, critical reading practices for the writer are important in the development of cognitive awareness of reading strategies. In the writer sub-dimension of critical reading, criteria such as the writer's purpose, attitude, bias, care in using language, style and command of the topic are taken into consideration by the reader. These criteria should be objectively evaluated by the reader in ensuring the development of cognitive awareness of reading strategies. According to Goatly (2000), it is seen as a need to emphasise the background of the writer's discourses in teaching critical reading skills. According to Ateş (2013), critical readers should free themselves from the writer's guidance. In this process, there is a need to use reading strategies.

The data obtained in the study show that the writer sub-dimension of critical reading comes to the fore in explaining the reading strategies cognitive awareness levels of secondary school students. According to these data, critical reading practices for the author are important in the development of cognitive awareness of reading strategies. In the writer sub-dimension of critical reading, criteria such as the writer's purpose, attitude, objectivity, style, care in using language and command of the subject are taken into consideration by the reader. These criteria should be objectively evaluated by the reader in ensuring the development of cognitive awareness of reading strategies. According to Goatly (2000), it is seen as a need to emphasise the background of the writer's discourses in teaching critical reading skills. According to Ateş (2013), critical readers should free themselves from the writer's guidance. In this process, there is a need to use reading strategies. In the study, it was determined that the editing dimension of the cognitive awareness of reading strategies came to the fore in explaining the critical reading levels of secondary school students. Editing strategies meet the strategies that correspond to the reading process. At this stage, the reader uses appropriate strategies for effective understanding and comprehension. In other words, it is important for the reader to choose appropriate strategies for effective comprehension and comprehension at the editing stage. This situation points to the importance of strategy use in the reading process. According to Pani (2004), the strategies used during critical reading facilitate the critical reading process. Based on these results, it can be stated that more attention should be paid to editing strategies when teaching cognitive awareness of reading strategies.

Suggestions

The research was conducted on secondary school students and was limited to the sample reached. In this sense, the research can be repeated on different sample groups. Research findings can be tested with experimental studies. The findings obtained in this research can be examined in depth with qualitative studies to be conducted. The effects of different variables on critical reading and cognitive awareness of reading strategies can be examined. In addition to these, importance should be paid to gaining cognitive awareness of reading strategies in the process of teaching critical reading. Textbooks and teaching activities should be designed to enable the use of reading strategies in the critical reading process. Professional development of teachers should be supported for the teaching process of critical reading and cognitive awareness of reading strategies.

References

Afifi, A. A., & Clark, V. (1996). *Computer-aided multivariate analysis*. London: Chapman & Hall.

Aghajani, M., & Gholamrezapou, E. (2019). Critical thinking skills, critical reading and foreign language reading anxiety in Iran context. *International Journal of Instruction, 12*(3), 219-238. doi:10.29333/iji.2019.12414a

Akar, C., Başaran, M., & Kara, M. (2016). The investigation of 4th elementary shool students' critically reading skills in terms of several variables. *Journal of Turkish Studies, 11*(3), 1-14. doi:10.7827/TurkishStudies.9306

Akhmetova, A., Imambayeva, G., & Csapó, B. (2022). Reading strategies and reading achievement in middle school: Kazakhstani young learners. *SAGE Open*, *12*(3), 1-15. doi:10.1177/21582440221113843

Alhaqbani, A., & Riazi, M. (2012). Metacognitive awareness of reading strategy use in Arabic as a second language. *Reading in a Foreign Language, 24*(2), 231-255.

Allen, M. (2005). *Smart thinking: Skills for critical understanding and writing*. Oxford: Oxford University Press.

Al-Shaye, S. (2021). Digital storytelling for improving critical reading skills, critical thinking skills, and self-regulated learning skills. *Cypriot Journal of Educational Sciences, 16*(4), 2049-2069.

Altunsöz, D. (2016). *Investigation of the Turkish course 4th grade curriculum in terms of developing students' critical reading skills* (Unpublished master's thesis). Bartın University, Bartın.

Alvermann, D. E., & Commeyras, M. (1994). Inviting multiple perspectives: Creating opportunities for student talk about gender inequalities in text. *Journal of Reading, 37*(7), 556-571.

Amanvermez, İ. F., & Beyreli, L. (2020). Effect of metacognitive reading strategies on critical thinking: A mixed methods research. *Education and Science, 45*(202), 173-190. doi:10.15390/EB.2020.7857

Ateş, S. (2013). Critical reading and its teaching as a skill. *Turkish Journal of Education, 2*(3), 40-49. doi:10.19128/turje.181063

Barnet, S., & Bedau, H. (2011). *Critical thinking, reading, and writing*. Boston & New York: Bedford/St. Martin's.

Bayraktar, M. (2012). *The effect of schematic learning on critical reading skills development* (Unpublished master's thesis). Abant İzzet Baysal University, Bolu.

Brown, H. D. (2007). *Principles of language learning and teaching.* New York: Pearson Education.

Bulut, A. (2016). Cognitive awareness levels of reading strategies of secondary school students. *Journal of Turkish Studies, 11*(3), 625-644. doi:10.7827/TurkishStudies.9319

Büyüköztürk, Ş. (2002). Faktör analizi: Temel kavramlar ve ölçek geliştirmede kullanımı. *Kuram ve Uygulamada Eğitim Yönetimi*, *32*(32), 470-483.

Can, A. (2017). *SPSS ile bilimsel araştırma sürecinde nicel veri analizi.* Ankara: Pegem Akademi.

Can, F., & Bicer, N. (2021). An examination of relationship between preservice teachers' reading habits and critical reading skills. *Journal of Language and Linguistic Studies*, *17*(1), 615-627.

Cho, B. Y. (2013). Adolescents' constructively responsive reading strategy use in a critical internet reading task. *Reading Research Quarterly*, *48*(4), 329-332. doi:10.1002/rrq.49

Cho, Y. A., & Ma, J. H. (2020). The effects of schema activation and reading strategy use on L2 reading comprehension. *English Teaching, 75*(3), 49-68. doi:10.15858/engtea.75.3.202009.49

Collins, D. (1993). Teaching critical reading through literature. ERIC Clearinghouse on Reading, English, and Communication. Retrieved from https://eric. ed.gov/?id=ED363869

Combs, R. (1992). Developing critical reading skills through whole language strategies. Opinion paper, Foundations in Reading II, ERIC, Southern Nazarene University. Retrieved from https://files.eric.ed.gov/fulltext/ ED353556.pdf

Commeyras, M. (1990). Analyzing a critical-thinking reading lesson. *Teaching and Teacher Education, 6*(3), 201-214.

Cor, A., & Conny, S. (2003). Learning reading strategies by triggering reading motivation. *Educational Studies, 29*(4), 387-410.

Cotteral, S. (1990). Developing reading strategies through small group interaction. *RELC Journal, 21*(2), 55-59.

Çarkıt, C. (2019). The evaluation of 8th grade Turkish textbook that prepared according to 2018 Turkish curriculum. *Electronic Journal of Social Sciences, 18*(71), 1368-1376.

Dallagi, M. (2021). Recognition and application of reading strategies: Case of Tunisian University learners. *Journal of Practical Studies in Education, 2*(2), 14-24. doi:10.46809/jpse.v2i2.19

Demir, R. (2017). *Critical reading skills of 7th grade students* (Unpublished master's thesis). Mustafa Kemal University, Hatay.

Dilidüzgün, Ş., Taşcılar, M. Z. L., & Şahin, G. (2020). Validity and reliability study of critical reading scale for children between the ages 8-10. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 14*(1), 372- 386. doi:10.17522/balikesirnef.657527

DiYanni, R. (2017). Reading responsively, reading responsibly: An approach to critical reading. In R. Diyanni & A. Borst (Eds.), *Critical reading across the curriculum: Humanities* (pp. 1-23). New York: John Wiley and Sons.

Everitt, B., & Hothorn, T. (2011). *An introduction to applied multivariate analysis with R*. New York: Springer.

Fitrisia, D., Tan, K. E., & Yusuf, Y. Q. (2015). Investigating metacognitive awareness of reading strategies to streng then students' performance in reading comprehension. *Asia Pacific Journal of Educators and Education*, *30*(1), 15-30.

Garcia, A. (2008). Removing the veil: Developing critical reading skills through systemic functional linguistics. *Zona Próxima*, *9*, 28-45. doi:10.14482/zp.09.206.14

George, D., & Mallery, P. (2016). Frequencies. In *IBM SPSS statistics 23 step by step* (pp. 115-125). New York: Routledge.

Goatly, A. (2000). *Critical reading and writing*. New York: Routledge.

Guthrie, J. T., Klauda, S. L., & Ho, A. N. (2013). Modeling the relationships among reading instruction, motivation, engagement, and achievement for adolescents. *Reading Research Quarterly*, *48*(1), 9-26. doi:10.1002/rrq.035

Guy, L. A. (2000). *Strategies to increase the critical reading skills of secondary students* (Theses digitization project). California State University, California.

Hair, J. F., Black, W. C, Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis.* New Jersey: Prentice Hall.

Hairston-Dotson, K., & Incera, S. (2022). Critical reading: What do students actually do?.*Journal of College Reading and Learning, 52*(2), 113-129. doi:10.1080/10790195.2022.2033648

Hong-Nam, K., & Page, L. (2014). Investigating metacognitive awareness and reading strategy use of EFL Korean University students. *Reading Psychology, 35*(3), 195-220.

Hudson, T. (2007). *Teaching second language reading.* Oxford: Oxford University Press.

Huijie, L. I. (2010). Developing a hierarchical framework of critical reading proficiency. *Chinese Journal of Applied Linguistics Foreign Language Teaching & Research Press, 33*(6), 40-54.

Huo, Y., & Budescu, D. V. (2009). An extension of dominance analysis to canonical correlation analysis. *Multivariate Behavioral Research,* 44, 688-709.

Israel, G. D. (1992). Determining sample size. *University of Florida Cooperative Extension Service, Institute of Food and Agriculture Sciences*, 5, 1-5.

Joshua, J. M. (2016). Difference in metacognitive awareness of reading strategies by sex and physical location among secondary school students in Tanzania. *International Journal of Education and Social Science, 3*(7), 83-91.

Kanatlı, F. (2018). Psikolojik dayanıklılık ve bilişsel esneklik kavramları çerçevesinden eğitime farklı bir yaklaşım denemesi. In Y. E. Çekici (Ed.), *Orhan Özdemir'e Armağan* (pp. 85-98). Akademisyen Kitapevi.

Karabay, A. (2015). Effect of critical reading education on metacognitive reading strategies and media literacy. *Journal of Theory and Practice in Education, 11*(4), 1167-1184.

Karatay, H. (2007). *A reserach about reading comprehension skills of primary school preservice teachers of Turkish* (Unpublished doctoral dissertation). Gazi University, Ankara.

Karatay, H. (2009). A metacognitive awareness inventory of reading strategies. *Abant İzzet Baysal University Journal of Social Sciences, 9*(2), 58-79. doi:10.11616/AbantSbe.242

Karatay, H. (2010). The secondary school students' meta cognitive awareness in reading comprehension. *Journal of Turkology Research*, 27, 457-475.

Kim, H. K. (2020). The mediating effects of self-efficacy on learners' reading strategy use and reading proficiency. *Asian EFL Journal, 24*(3), 73-98.

Koç, C., & Arslan, A. (2017). Academic self-efficacy perceptions and metacognitive awareness of reading strategies of secondary school. *YYU Journal Of Education Faculty, 14*(1), 745-778 doi:10.23891/efdyyu.2017.29

Lau, K. L. (2006). Reading strategy use between Chinese good and poor readers: A think-aloud study. *Journal of Research in Reading, 29*(4), 383-399. doi:10.1111/j.1467-9817.2006.00302.x

Li, H., Gan, Z., Leung, S. O., & An, Z. (2022). The Impact of reading strategy instruction on reading comprehension, strategy use, motivation, and self-efficacy in Chinese university EFL students. *SAGE Open*, *12*(1), 1-14. doi:10.1177/21582440221086659

Macknish, C. J. (2011). Understanding critical reading in an ESL class in Singapore. *Tesol Journal*, *2*(4), 444-472. doi:10.5054/tj.2011.269747

Maker, J., & Lenier, M. (1996). *Academic reading with active critical thinking.* Belmont: Wadsworth Publishing Company.

Melanlıoğlu, D. (2014). Impact of metacognitive strategies instruction on secondary school students' reading anxieties. *Education and Science, 39*(176), 107-119. doi:10.15390/EB.2014.3540

Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94, 249-259.

Nguyen, N. (2020). Critical reading skills in ESL students: Challenges and pedagogical recommendations. *English Australia Journal, 36*(2), 34-51.

Oyentunji, C. (2013). Does reading strategy instruction improve students' comprehension?. *Per Linguam-a Journal of Language Learning, 29*(2), 33-55. doi:10.5785/29-2-114

Özdemir, S. (2017). Secondary school students' critical reading self-efficacy. *Mehmet Akif Ersoy University Journal of the Institute of Educational Science, 5*(7), 41-55.

Özmutlu, P., Gürler, İ., Kaymak, H., & Demir, Ö. (2014). Secondary school student's critical reading skills investigation according to several variables. *Turkish Studies, 9*(3), 1121-1133. doi:10.7827/TurkishStudies.6066

Öztürk, M. B., & Aydoğmuş, M. (2021). Relational assessment of metacognitive reading strategies and reading motivation. *International Journal of Progressive Education*, *17*(1), 357-375.

Pallant, J. (2020). *SPSS Survival Manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). New York: Routledge.

Pani, S. (2004). Reading strategy instruction through mental modeling. *ELT Journal,* 58, 355-362.

Poole, A. (2019). Reading strategies and academic success: The case of first-semester college males. *Journal of College Student Retention: Research, Theory & Practice*, *21*(1), 2-20. doi:10.1177/1521025116685094

Rencher, C. A. (2002). *Methods of multivariate analysis*. New York: A John Wiley & Sons, INC. Publication.

Ripley, B. (2007). Causation, counterfactuals, and critical reading in the active classroom. *International Studies Perspectives,* 8, 303-314. doi:10.1111/j.1528-3585.2007.00291.x

Rohmah, G. N. (2018). Critical reading: Students' problems, strategies, and reflections. *Journal of English Language, Literature, and Teaching, 2*(1), 21-26.

Roomy, M. A. (2022). Investigating the effects of critical reading skills on students' reading comprehension. *Arab World English Journal*, *13*(1), 366-381. doi:10.24093/awej/vol13no1.24

Roussey, J. Y., & Piolat, A. (2008). Critical reading effort during text revision. *European Journal of Cognitive Psychology*, *20*(4), 765-792.

Sani, B. B., Wan-Chik, M. N., Awg-Nik, Y., & Raslee, N. A. (2011). The reading motivation and reading strategies used by undergraduates in University Teknologi Mara Dungun, Terengganu. *Journal of Language Teaching & Research*, *2*(1), 32-39.

Schermelleh-Engel, K., & Moosbrugger, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*(2), 23-74.

Serravallo, J. (2015). *The writing strategies book: Your everything guide to developing skilled writers.* Portsmouth, NH: Heinemann.

Sheikh, I., Soomro, K. A., & Hussain, N. (2019). Metacognitive awareness of reading strategies, reading practices and academic attainments of university students. *Journal of Education and Educational Development, 6*(1), 126-137.

Sheorey, R., & Mokhtari, K. (2001). Differences in the metacognitive awareness of reading strategies among native and nonnative readers. *System, 29*(4), 431-449.

Sherry, A., & Henson, R. K. (2005). Conducting and interpreting canonical correlation analysis in personality research: A user-friendly primer. *Journal of Personality Assessment, 84*(1), 37-48. doi:10.1207/s15327752jpa8401_09

Song, M. (1998). Teaching reading strategies in an ongoing EFL university reading classroom. *Asian Journal of English Language Teaching, 8*(1), 41-54.

Söylemez, Y. (2015). *Developing scales for critical basic language skills intended for secondary school students* (Unpublished doctoral dissertation). Atatürk University, Erzurum.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences.* New York: Routledge.

Sultan, S., Rofiuddin, A., Nurhadi, & Tri-Priyatni, E. (2017). The effect of the critical literacy approach on pre-service language teachers' critical reading skills. *Eurasian Journal of Educational Research,* 71, 159-174. doi:10.14689/ejer.2017.71.9

Supakorn, P., & Panplum, S. (2022). EFL reading: Learning-to-read and test-taking strategies. *International Journal of Instraction, 15*(3), 989-1006. doi:10.29333/iji.2022.15353a

Şimşek, Ö. F. (2007). *Yapısal eşitlik modellemesine giriş temel ilkeler ve Lisrel uygulamaları*. Ekinoks Yayınları.

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental desigins using ANOVA.* Pacific Grove, CA: Thomson/Brooks/Cole.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston: Allyn and Bacon.

Tercanlıoğlu, L. (2004). Postgraduate students' use of reading strategies in L1 and ESL contexts: Links to success. *International Education Journal, 5*(4), 562-570.

Thistlethwaite, L. L. (1990). Critical reading for at-risk students. *Journal of Reading, 33*(8), 586-593.

Toksun, S. E. (2020). Middle school students level of using reading strategies cognitive awareness skills. *Education and Society in the 21st Century, 9*(26), 417-430.

Tosun, M. F. (2014). *Examining the instruction of critical reading in secondary schools according to the views of the teachers of Turkish* (Unpublished master's thesis). Kütahya Dumlupınar University, Kütahya.

Wallace, C. (2003). *Critical reading in language education.* Basingstoke, UK: Palgrave Macmillan.

Wexler, J., Swanson, E., Kurz, L. A., Shelton, A., & Vaughn, S. (2020). Enhancing reading comprehension in middle school classrooms using a critical reading routine. *Intervention in School and Clinic*, *55*(4), 203-213. doi:10.1177/1053451219855738

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

Zhou, J., Jiang, Y., & Yao, Y. (2015). The investigation on critical thinking ability in EFL reading class. *English Language Teaching, 8*(1), 84-93.

Zigo, D., & Moore, M. T. (2004). Serious reading, critical reading. *The English Journal, 94*(2), 85-90.