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Secondary school students' reading culture and ıts role in critical reading self-efficacy perceptions

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Abstract

Background This study examines the relationship between secondary school students' reading culture and their critical reading self-efficacy (CRSE), addressing a gap in the literature on affective factors associated with critical literacy. Understanding this relationship is crucial for promoting sustainable reading practices and fostering critical engagement among adolescents.

Methods A correlational survey design was employed with 214 secondary school students (ages 11–14) from public schools in Türkiye. Data were collected using the Critical Reading Self-Efficacy Scale (19 items, four subdimensions) and the Reading Culture Scale (30 items, multidimensional). Reliability coefficients were satisfactory ($\alpha = .80$ and $\alpha = .89$, respectively). After confirming normality assumptions, Pearson correlation and multiple regression analyses were conducted to examine the relationships between variables.

Results Students' mean CRSE scores were above average, while their reading culture levels were moderate. CRSE did not differ significantly by grade level or gender, whereas reading culture levels were higher among Grade 8 students compared to Grade 7. A strong positive correlation was found between CRSE and reading culture ($r \approx .63$, $p < .001$). Multiple regression analysis revealed that reading culture was significantly associated with CRSE, accounting for 39% of the variance. Among the subdimensions, personal development and reading relations and basic reading skills were significantly associated with CRSE, whereas visual reading and book selection were not ($p > .05$).

Conclusions The findings demonstrate a significant relationship between students' reading culture and their CRSE. These results suggest that students with higher levels of reading culture tend to report higher levels of critical reading self-efficacy. Educational programs may benefit from considering activities related to the difficulty and research dimensions of CRSE. Future studies are recommended to examine these relationships across diverse populations using longitudinal or experimental designs.

Keywords Reading culture, Critical reading, Self-efficacy, Correlation, Secondary school students

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Introduction

The means and habits of producing, sharing, and accessing information are constantly evolving. Contemporary technological advancements have a direct impact on learning and information acquisition, affecting all aspects of life. While information and communication technologies offer rapid and extensive access to diverse materials [1–3], this digital abundance also makes it increasingly difficult to distinguish reliable and relevant sources. In such an environment, the ability to evaluate the credibility of information has become a key component of literacy. Therefore, cultivating reading skills and habits remains fundamental to effective information acquisition and critical understanding, [4, 5]. Developing reading skills as a lifelong habit has been a focus of research for decades [6, 7].

In the digital age, exposure to a constant flow of diverse information requires students to possess strong critical reading skills to navigate, filter, and synthesize knowledge effectively. Critical reading extends beyond comprehension-it involves questioning texts, evaluating the trustworthiness of sources, and applying learning across various contexts. These competencies emerge within a broader reading culture, shaped by learners' practices, habits, and interactions with their environment. A strong reading culture not only promotes literacy but also nurtures a reflective and analytical engagement with texts.

At this point, self-efficacy plays a pivotal role. As Bandura [8, 9] emphasized, self-efficacy refers to individuals' belief in their capacity to plan and execute actions required to perform specific tasks. In the context of reading, students with higher self-efficacy tend to persist when faced with challenging texts, employ more effective strategies, and engage in deeper reflection. According to Bandura's social cognitive theory, such beliefs directly influence effort and resilience during the learning process. Consequently, a well-established reading culture can serve as a crucial source of self-efficacy, thereby strengthening students' confidence in their ability to read critically.

The secondary school years (Grades 5–8) are a formative stage during which students' reading identities and self-efficacy beliefs begin to develop. Reading habits established during this period have lasting effects on academic achievement and lifelong learning [10, 11]. Previous research has examined various aspects of reading, including motivation, attitudes, comprehension, and digital literacy [5, 6, 12, 13]. However, limited attention has been given to how reading culture, understood as the integration of reading into personal and social life, relates to students' beliefs in their ability to read critically. Although studies have also explored differences by gender and grade level, the findings remain inconsistent [14–16]. Moreover, the mechanisms explaining how reading experiences foster self-efficacy in critical reading are not yet fully understood. Drawing on Bandura's [8, 9] social cognitive theory, it can be assumed that an active reading culture supports the development of critical reading self-efficacy by providing students with repeated practice, positive feedback, and social models of successful reading behavior.

Addressing this gap, the present study examines the role of reading culture in shaping secondary school students' perceptions of critical reading self-efficacy. By considering gender and grade-level differences and grounding its framework in Bandura's self-efficacy theory, the study aims to contribute to a deeper understanding of how reading culture supports critical literacy in schools.

Literature review

Reading is a complex skill that begins with the desire both to gain enjoyment and to acquire knowledge [5, 17]. It has been defined as a dynamic process of constructing meaning through interaction between reader and writer, grounded in prior knowledge and communicative intent [18], and as the ability to extract meaning from written texts [19, 20].

In today's information-driven and technology-oriented world, reading constitutes a fundamental literacy skill [13]. Kim and Anderson [21] further emphasize its critical nature, noting that from school age onward, academic life depends heavily on the development of reading competence [22]. Strong reading comprehension and effective reading habits are essential for academic success and progression to higher education [23]. Previous studies confirm that reading enhances children's academic and everyday competencies [24, 25], facilitating both learning and cultural adaptation [26]. Beyond its cognitive contributions, reading also enriches individuals' intellectual and emotional worlds and strengthens communication skills [27].

Reading culture

The act and habit of reading gain cultural significance when they extend beyond school and become embedded in both private and social life. Doiron and Asselin [12] emphasize that reading culture develops as reading becomes an integral part of daily living, shaped by individual and societal needs. For such a culture to rest on solid foundations, reading should be viewed not merely as leisure but as a way of life [28]. Research highlights the cognitive and academic benefits of a strong reading culture: regular engagement with texts fosters literacy development and prepares individuals to participate effectively in modern society [10]. Individuals immersed in reading culture demonstrate greater world perception and academic achievement [11]. Hence, cultivating reading

habits and a love of reading from early adolescence is essential for long-term literacy growth.

Reading is a complex cognitive process involving perception, understanding, and critical structuring Güneş, [29]. Accordingly, reading culture reflects the depth and quality of interaction between individuals, their societies, and reading practices [30]. It stands as a tangible indicator of a society's engagement with written culture. Developing reading skills requires both visual and linguistic stimuli, and the habitual use of written texts has become a necessity for humankind. Such engagement demands a critical stance that activates prior knowledge for interpretation and evaluation [31, 32]. A critical approach to reading thus becomes a major predictor of universal literacy and contributes to the broader cultural framework of reading within individuals and society [33]. Nevertheless, the digital age continues to reshape how people access and interact with texts, underlining the need to sustain reading habits in evolving media environments.

Adolescence, particularly the secondary school years, represents a formative period when self-efficacy beliefs and reading habits begin to solidify. Self-efficacy in academic contexts emerges strongly during this stage and predicts motivation and achievement [34]. In the reading domain, motivation is closely tied to both reading frequency and performance [35]. Recent findings also show that adolescents' reading practices vary by age, influencing comprehension and confidence [10]. These findings emphasize the importance of examining reading culture and self-efficacy among secondary school students, as this developmental stage is crucial for establishing critical literacy and enduring reading habits.

Reading culture and critical reading

The concept of reading culture emerges when reading habits become integrated into daily life, reflecting changes in tendencies and preferences. Transforming reading into a sustainable habit represents an advanced stage of literacy development. However, the acquisition of critical thinking and reading skills is a prerequisite for cultivating such a culture. Critical reading, as a complex literacy practice, extends beyond comprehension to include analysis, inquiry, evaluation, and the ability to identify accurate and reliable information [36–38]. Self-efficacy is a key factor in the acquisition and development of these critical reading skills [39]. The process of developing a reading culture is sequential, with each stage building upon the previous one, and requires effective structuring to support children's engagement with texts [40].

Bandura's self-efficacy theory provides an essential framework for understanding how students' beliefs about their reading abilities shape their engagement with texts. According to Bandura [8, 9], self-efficacy influences effort, persistence, and resilience- all crucial components of critical reading. Within this framework, a strong reading culture can serve both as a cognitive context and as a source of mastery experiences that reinforce students' confidence in their ability to read critically [41].

The relationship between reading culture, critical reading, and self-efficacy is therefore best understood as an interconnected process. A well-established reading culture nurtures the habits and dispositions necessary for critical engagement with texts, while these experiences in turn strengthen students' self-efficacy in managing complex reading tasks [42, 43]. Hence, critical reading operates not only as an outcome of reading culture but also as a psychological mechanism that reinforces perceptions of self-efficacy. Together, reading culture and critical reading jointly shape students' confidence in their critical literacy skills.

Building on this perspective, reading culture provides learners with repeated mastery experiences-such as engaging with diverse texts, reflecting on meanings, and discussing ideas-that enhance self-efficacy and sustain critical literacy [44–46]. Consequently, reading culture functions both as a foundation and as a catalyst for the development of critical reading self-efficacy.

Finally, reading culture can be defined as a set of behaviors acquired by individuals who interact with written cultural products, develop the ability to share, test, and question messages, and internalize reading as a way of life [47]. It also reflects the dimension of an individual's or society's lifestyle associated with reading [30]. İnce Samur [40] further conceptualized reading culture from a critical perspective, defining it as the structuring and socialization of reading around a critical foundation.

Technology exerts a profound influence on all aspects of human life, and reading -a practice historically intertwined with technological advancement- has evolved alongside it. Technological tools and environments now play a central role in shaping and transforming reading culture [48]. Today, a substantial part of reading is mediated by digital interfaces [49, 50] through formats such as e-books, printed books, magazines, and newspapers [51]. Consequently, technological progress has led to a paradigm shift in how individuals acquire and engage with information [52, 53]. Although reading remains the most fundamental means of gaining knowledge [54], digital tools have become the primary means of producing, sharing, and storing information [55]. The rapid development of computing technologies and the widespread use of the Internet have significantly increased the speed and volume of information exchange, enabling individuals to access extensive content instantly [56].

This digital abundance, however, has redefined both critical thinking and reading habits [48, 57] and heightened the need for reliable and accurate information

as well as effective access to primary sources [58]. Readers are now required to develop advanced cognitive dispositions-becoming critical, questioning, flexible, and creative thinkers capable of collaboration and problem-solving [59]. Consequently, technological transformations have also influenced the sociocultural characteristics of the citizens and students that societies aim to cultivate [60]. To thrive in this environment, individuals must adapt to diverse contexts, transfer their knowledge across disciplines, engage in inquiry, challenge established paradigms, and remain open to innovation and change [61].

Meeting these new expectations ultimately depends on the design of educational curricula, which play a key role in developing critical literacy and preparing students to navigate the demands of the digital age [39, 62–65]. Well-structured curricula can cultivate learners who not only use digital tools effectively but also approach information critically and creatively, fostering a sustainable reading culture aligned with twenty-first-century literacy goals.

Critical thinking is collecting, evaluating, and using information effectively and appropriately [66]. Individuals who possess this ability are characterized by several qualities, including curiosity, self-confidence, systematicity, openness, and analyticality [67]. However, achieving a consensus among experts on definitions and qualifications for critical thinking is impossible. Kim et al. [68] posited that critical thinking is predicated on problem-solving and is a solution that incorporates logical, evaluative, and reflective thinking. According to Lipman [69], critical thinking is a competent and reliable way of making judgments based on certain principles. The basis of critical thinking is predicated on standards such as clarity, accuracy, relevance, and logic [70]. Critical thinking is generally an attitude and skill that includes problem-solving, research, and questioning [71] and higher-order thinking skills based on evaluation, interpretation, analysis, and inference [72]. Critical thinking skills help students understand and apply basic concepts to complex real-life situations [73, 74]. Indeed, Halpern [75] characterizes critical thinking as a vital skill for the 21st-century world. Critical reading is a skill that complements various high-level thinking skills, such as the ability to question, compare, and solve problems, especially critical thinking [76]. Reading and critical thinking are both processes that involve analyzing, interpreting, and evaluating ideas, developing a personal perspective on controversial ideas, and justifying them [77]. Critical reading is a process of questioning that leads to enhanced reading comprehension, evaluation, and acceptance or rejection of the content [78]. According to Karadeniz [79], the literature on the subject posits that critical reading functions are intertwined with subskills such as noticing, inferring, analysing, synthesising, evaluating, questioning, thinking, and interpreting. This relational approach is further exemplified in Fig.1, which presents the relationships adapted from Karadeniz [79].

According to Fig. 1, critical reading involves the integration of higher-order cognitive processes, including inference, evaluation, and interpretation, in addition to comprehension. This necessitates advanced reading skills that extend beyond basic literacy competencies

Fig. 1 The components of critical reading

and depend on a range of cognitive and affective factors. Among these, self-efficacy perception represents a key determinant of affect.

Critical reading self-efficacy

Critical reading self-efficacy refers to readers' belief in their ability to perform general and specific reading tasks critically [34, 80]. It encompasses confidence in utilizing skills such as analysis, questioning, evaluation, and synthesis, which are central to the critical reading process [39]. As Barnet and Bedau [81]and Sultan et al. [82] note, self-efficacy facilitates comprehension of texts in both form and content. Within this framework, reading culture and critical reading self-efficacy are mutually reinforcing: a well-developed reading culture enhances confidence in critical engagement with texts. In contrast, higher self-efficacy supports sustained participation in reading practices. Individual differences also play a significant role in shaping these relationships [83].

Empirical findings further indicate that reading culture provides an effective context for developing critical reading self-efficacy and promoting functional literacy [84]. However, despite its relevance, limited research has examined this relationship directly [33, 85]. Studies on critical reading have primarily focused on skill development and instructional strategies [32, 86–93], while research addressing self-efficacy in reading contexts remains comparatively limited [58, 78, 79, 94–103]. Additional studies have explored the links between book-reading attitudes, motivation, and self-efficacy [104–106].

In the Turkish context, research has also investigated the institutional and pedagogical dimensions of reading culture. Karaaslan [107]analyzed the treatment of reading habits in educational policy documents, while Altunbay and Uslu Üstten [108]examined library usage and access. Similarly, Kelley et al. [109] proposed culturally responsive pedagogies to enhance reading achievement and self-efficacy among linguistically diverse students.

Moreover, studies have highlighted the influence of gender and grade-level differences in shaping self-efficacy. While meta-analytic results indicate that girls generally report slightly higher self-efficacy levels [15], Carroll and Fox [14] found that gender differences in reading performance are domain-specific. Developmental variations also emerge across grade levels, influencing students' reading habits and confidence [10, 16]. Collectively, these findings highlight the importance of considering gender and grade-level variations when examining how reading culture influences students' perceptions of critical reading self-efficacy.

The lack of research has been identified as an issue in this field. In particular, studies should focus on the relationship between reading culture and perceptions of critical reading self-efficacy. This study examines the role of secondary school students' reading culture in shaping their perceptions of critical reading self-efficacy. In line with this purpose, the following questions have been addressed:

1. What is the level of critical reading self-efficacy perceptions of secondary school students?
2. What is the level of reading culture of secondary school students?
3. Is there a relationship between the gender of secondary school students and their critical reading self-efficacy and reading culture?
4. Is there a relationship between secondary school students' grade levels and their critical reading self-efficacy and reading culture?
5. Is there a relationship between secondary school students' critical reading self-efficacy and their reading culture?
6. Is reading culture level a significant predictor of critical reading self-efficacy?

Methodology

Research design

The objective of the present study was to investigate secondary school students' critical reading self-efficacy and reading cultures using a comparative approach. For this reason, the relational survey model was utilized in the present study. The relational survey model is a research model that aims to determine the existence and/or degree of change between two or more variables [110, 111]. As illustrated in Fig.2, the research aims to elucidate the reading cultures of secondary school students and their perceptions of critical reading self-efficacy while examining the relationship between these two factors:

Participants

The sample was formed by convenience sampling, based on the principles of easy accessibility and voluntariness. The Informed Consent Form has been completed for participants. Participants and their parents have been provided with information about the study. Furthermore, the study was approved by the Ethics Committee (IRB) of Bayburt University (Approval No. E-51694156–050.99–48,262-199/15). In the Turkish education system, Grades 5 to 8 constitute the second stage of compulsory primary education, officially referred to as secondary school. While the term 'secondary school' is often used in international literature to describe this age group, it does not align precisely with the Turkish classification. Accordingly, the participants in this study are technically secondary school students, representing the upper cycle of primary education. Years 5–8 correspond to the 11–14 age range. This age range is a developmental period during which pupils develop their reading habits, begin to

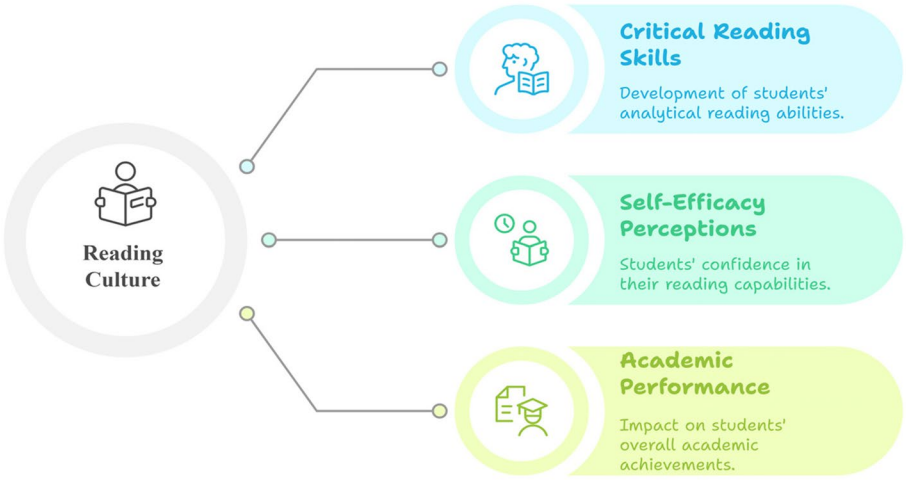

Fig. 2 Conceptual model linking reading culture to CRSE

Table 1 Distribution of the study group according to class and gender

Variable	*Category*	*n*	*%*
Gender	Male	106	49.5
	Female	108	50.5
Grade	5th grade	51	23.8
	6th grade	56	26.2
	7th grade	53	24.8
	8th grade	54	25.2
Total		214	100

engage more critically with texts, and start to demonstrate advanced cognitive thinking skills [112, 113]. Information about the sample is shown in Table1 below:

The study reached a total of 264 students. Of these students, 214 voluntarily participated in the study by completing the Participation Form. Accordingly, the response rate was approximately 81.06%. A subsequent analysis of the study group on class and gender variables reveals that female students make up 50.50% of the study group, while male students constitute 49.50%. Regarding the grade level, although the number of students is almost equal in all levels, the highest rate is observed in the 6th grade, with 26.2%.

Data collection tools

Data were obtained using the *Critical Reading Self-Efficacy Scales* and *Reading Culture Scales.* The Critical Reading Self-Efficacy Scale, used in this study, was applied to secondary school students in the original validity and reliability studies. The Reading Culture Scale has been found to be used in various studies [114, 115]. Furthermore, the language level, conceptual structure, and response format of the scales were designed to be appropriate for the cognitive development level and literacy skills of students aged 11–14. Expert opinions and pilot study findings also showed that the items were understood clearly and correctly by the students.

Critical reading self-efficacy scale

The Critical Reading Self-Efficacy Scale, developed by Kurnaz and Çelikkanat [39], comprises a four-factor structure, including analysis, questioning, difficulty, and research. The scale under consideration consists of 19 items to be scored on a 5-point Likert scale. The items are scored within the range of strongly disagree (1) to strongly agree (5). The scores obtained from the scale range from 19 to 95, with a minimum score of 19 and a maximum score of 95.

The Kaiser–Meyer–Olkin sampling adequacy measure was found to be 0.890, and Bartlett's Sphericity Test result was found to be significant ($\chi2 = 1999.102$, $df = 171$, $p < 0.01$). In the analysis, the Chi-Square Goodness-of-Fit Test, a basic measure of model fit, was found to be statistically significant ($\chi2 = 232.741$, $df = 144$, $p < 0.001$). Factor loadings ranged from 0.57 to 0.68 in the analysis dimension, from 0.57 to 0.69 in the inquiry dimension, from 0.66 to 0.83 in the difficulty dimension, and from 0.55 to 0.80 in the research dimension. Furthermore, the CR values obtained from CFA ranged from 8.85 to 11.69. The fit indices obtained from the CFA results indicate that the model is acceptable ($\chi2/df = 2.05$, SRMR = 0.07, RMSEA = 0.05, GFI = 0.91, CFI = 0.93, NNFI = 0.92).

The Cronbach's Alpha reliability coefficients for the four-factor scale were found to be 0.87 for analysis, 0.77 for inquiry, 0.79 for difficulty, 0.73 for research, and 0.87 for the entire scale. The composite reliability coefficients of the measurements ranged from 0.75 to 0.84, with an overall scale reliability of 0.82. The t-values obtained from the independent samples t-test, conducted to compare the scores of the lower and upper groups for the

items, ranged from 11.47 to 18.86 and were statistically significant ($p < 0.001$).

In the study, the Cronbach's Alpha reliability coefficients were found to be 0.84 for analysis, 0.75 for inquiry, 0.76 for difficulty, 0.74 for research, and 0.85 for the entire scale.

Reading culture scale

The Reading Culture Scale, developed by Türkel et al. (2017), is a multifaceted instrument with a 4-factor structure encompassing individual development, reading relationship, basic reading skills, visual reading, and book selection. The scale comprises 30 items, scored on a 5-point Likert scale. The scoring on the scale ranges from 30 (strongly disagree) to 150 (strongly agree).

For the Reading Culture Scale, the Kaiser–Meyer–Olkin value was found to be 0.89 as a result of the CFA, and the Bartlett's Test of Sphericity value was found to be significant ($\chi 2 = 4221.390$; $df = 435$, $p < 0.001$). The factor loadings of the scale ranged from 0.459 to 0.827. The factor loadings ranged from 0.76 to 0.52 for the individual development reading relationship; from 0.78 to 0.46 for the basic reading skills; from 0.82 to 0.66 for the visual reading; and from 0.74 to 0.64 for the book selection. The scale's internal consistency, as measured by Cronbach's alpha coefficient, was found to be 0.90. Moreover, they were 0.86 for the first factor, 0.86 for the second factor, 0.72 for the third factor, and 0.78 for the fourth factor.

In the study, the Cronbach's Alpha reliability coefficients were found to be 0.85 for the individual development reading relationship, 0.84 for basic reading skills, 0.78 for visual reading, 0.76 for book selection, and 0.89 for the entire scale.

Data collection procedure

The data collection process was carried out in May 2023, during the second term of the academic year. This time period was chosen because it is a period when students' academic workload is more balanced. The data for the study were obtained from three different secondary schools. The institutions included in the study are state secondary schools. All schools are located in the city centre and have a middle-level socio-economic student profile. This situation was selected to represent the general secondary school structure in Turkey. Additionally, ease of access and the suitability of institutional permission processes were also taken into consideration. Accordingly, the schools included in the research were selected using purposive sampling.

The data collection process was conducted directly by the researchers. The researcher has no role in the schools participating in the study. The relationship established with the schools is limited solely to research permission and the data collection process.

The applications were conducted in the classroom environment, outside of lesson hours, at times deemed appropriate by the school administration. Participants were informed about the purpose of the research, confidentiality principles, and the principle of voluntariness. Data was collected from 214 students in the research. The application time for each scale averaged 35–40 min. The continuous application of long-term or similar-themed measurement tools may lead to a decrease in students' attention levels and a tendency to give random or superficial responses. This situation may negatively affect the reliability and validity of the measurements [116]. Accordingly, the scales used were not applied consecutively.

Validity evidence

Both instruments have previously demonstrated acceptable construct validity and internal consistency in studies with secondary school populations. In the present study, evidence for concurrent validity was examined by exploring the relationship between reading culture and critical reading self-efficacy, two theoretically related constructs measured concurrently. A strong and statistically significant positive correlation was observed between reading culture and critical reading self-efficacy ($r = 0.63$, $p < 0.001$), indicating that students who reported higher levels of reading culture also tended to report higher critical reading self-efficacy. This finding provides empirical support for concurrent validity and is consistent with Bandura's [9] self-efficacy framework and prior findings (e.g., [84, 85]).

Predictive validity was not examined in the present study. Given the cross-sectional and correlational research design, the analyzes were limited to evaluating concurrent associations, and no predictive or causal inferences were made. Future longitudinal or experimental research may further investigate the predictive validity of reading culture in relation to critical reading self-efficacy.

The construct validity of the Critical Reading Self-Efficacy Scale was established by Kurnaz and Çelikkanat [39] through exploratory and confirmatory factor analyses, supporting a four-factor structure (analysis, questioning, difficulty, and research). Confirmatory factor analysis indicated acceptable model fit ($\chi^2/df = 2.05$, RMSEA = 0.05, SRMR = 0.07, GFI = 0.91, CFI = 0.93, NNFI = 0.92), with factor loadings ranging from 0.55 to 0.83. The construct validity of the Reading Culture Scale was established by Türkel et al. [117] through factor analytic procedures, supporting a four-factor structure (individual development and reading relations, basic reading skills, visual reading, and book selection). The original validation study reported strong sampling adequacy (KMO = 0.89), significant Bartlett's test results, and factor

Table 2 Normality analysis

Scale	Mean	Median	Skewness	Kurtosis
Critical Reading Self-Efficacy	3.543	3.579	−0.324	−0.065
Reading Culture	3.208	3.183	−0.726	1.040

loadings ranging from 0.46 to 0.83, along with high internal consistency (α = 0.90 for the total scale), providing evidence for the scale's construct validity.

Data analysis

The data obtained in the study were analyzed using SPSS 26.0 software for the research purpose and sub-problems. The results were presented in tables and interpreted. Firstly, the scores of the students in the study group were examined using measurement tools to determine whether they showed a normal distribution. The normality distributions of the data obtained from the scales are shown in Table 2.

The relevant literature [118] demonstrated that the skewness and kurtosis values exhibit a normal distribution between −2 and + 2. Accordingly, it was determined that the mean and median values of both scales were close to each other, and the skewness and kurtosis values were within the range of standard distribution criteria. In the context of these results, parametric tests were used to analyze the data.

The mean scores of the students' critical reading self-efficacy and reading culture were analyzed using percentages, frequencies, and arithmetic means. The t-test was utilized to assess the gender variable, while a one-way analysis of variance (ANOVA) was employed for the class variable. Pearson's correlation coefficient (r) was utilized to determine the relationship between critical reading self-efficacy and reading culture. The prediction level of the overall reading culture and its sub-dimensions on critical reading self-efficacy was analyzed by multiple regression analysis. Before conducting a multiple regression analysis, it is essential to verify that the prerequisites have been met. To establish the reliability of the data, it was necessary first to observe the distribution of the data. This was achieved by examining the relationship between the variables to determine whether they were normally distributed. Furthermore, the multicollinearity between the independent variables was investigated, with any variables having a correlation coefficient (r) greater than 0.80 being considered potentially multicollinear. The presence of outliers in the observation values was also examined, and it was determined that no such outliers were not present.

Furthermore, co-variance was ascertained, and it was established that the errors were independent of each other. Finally, the estimation errors were found to be normally distributed [119]. The significance level was established at 0.05 to analyze the data obtained.

The adequacy of the sample size ($n = 214$) can be justified both in light of comparable studies and in terms of statistical power. Previous research investigating the relationship between reading culture and self-efficacy has frequently employed similar or smaller samples, indicating that the present study size is sufficient to yield reliable estimates [115, 120–124].

The 5-point Likert scale was treated as an interval scale to facilitate interpretation and analysis. The interval width was calculated as (5–1)/5 = 0.80, defining the following score ranges: 1.00–1.80 (*Strongly disagree/Never*), 1.81–2.60 (*Disagree/Rarely*), 2.61–3.40 (*Undecided/Sometimes*), 3.41–4.20 (*Agree/Usually*), and 4.21–5.00 (*Strongly agree/Always*). This calculation contributes to the interpretation of scale scores, the analysability of data, and scientific comparison with other studies [125–128]. Therefore, scale interval calculations were performed in the study.

In this study, the mean and standard deviation values for each item on the scales have been reported. This enables a more detailed understanding of how participants evaluated each statement on the scale [129]. Furthermore, conducting analyses at the item level increases the transparency of the findings and strengthens the interpretability of the scale's subscales [130].

Results

Results on secondary school students' critical reading self-efficacy

The following section presents sub-dimension and item-based means in Tables 3 and Appendix 1 to reveal the levels of critical reading self-efficacy exhibited by secondary school students across different texts, purposes, and reading processes.

As illustrated in Table 3, the mean value of students' critical reading self-efficacy is 3.543. Moreover, the average of the analysis sub-dimension is 3.784, and indicating the agree level. The inquiry sub-dimension is 3.563, and

Table 3 Results related to critical reading self-efficacy

Sub-Dimensions	N	Mean	SD	Interpretation	Analysis	Inquiry	Difficulty	Research
Analysis	214	3.784	0.593	Agree	1	.507	.347	.186
Inquiry		3.563	0.799	Agree	.507	1	.284	.575
Difficulty		3.301	0.598	Undecided	.347	.284	1	.106
Research		3.271	0.986	Undecided	.186	.575	.106	1
Overall Average		3.543	0.517	Agree	-	-	-	-

revealing the agree scale level. The difficulty sub-dimension is 3.301, which signifies an undecided level. The research sub-dimension is 3.271, meaning the undecided scale level.

The relationships between the subscales of the scale were examined using Pearson's correlation coefficient. The analysis results indicate that there are positive and statistically significant relationships between all subscales ($p < 0.01$). Specifically, there is a moderate positive relationship between the Analysis sub-dimension and the Inquiry ($r = 0.507$, $p < 0.001$) and Difficulty ($r = 0.347$, $p < 0.001$) sub-dimensions, and a low positive relationship between Analysis and Research ($r = 0.186$, $p = 0.006$). The strongest correlation was observed between the Inquiry and Research sub-dimensions ($r = 0.575$, $p < 0.001$). The results for the student reading self-efficacy averages and the corresponding interval values are displayed in Appendix 1.

As illustrated in Appendix 1, the critical reading self-efficacy interval values are at a detailed level except for four items. Among these items, “I can easily decide what is true or false from the information in a text” has the highest average score of 3.860. However, “I have difficulty detecting hidden messages (advertisement, propaganda, etc.)” has the lowest average score of 2.196. Furthermore, the statements "I decide on the reliability of the texts I will read by comparing the information they provide" and “I take notes about the text and research them while reading an article” were found to be undecided. All other items were found to be at a level compatible with the general average of the scale and in the agree range.

Results on the reading culture of secondary school students

The following section presents the means by sub-dimensions and item-based scores in Tables 4 and Appendix 2 to reveal the extent to which secondary school students exhibit a reading culture in their daily lives, as measured in the dimensions of individual development, basic reading, visual reading, and book selection.

As illustrated in Table 4, the levels at which read data is generally stored to be protected are 3.208 and sometimes. In addition, the mean of the individual development reading relationship sub-dimension is 3.212, a value that is sometimes attained. The mean of the basic reading skills sub-dimension is 3.272, which is sometimes attained. The mean of the visual reading sub-dimension is 2.978, and this value is sometimes attained. In addition, the book selection sub-dimension was found to be 3.263, a value that is sometimes attained.

According to the results of the correlation analysis related to the scale, a high level of positive correlation ($r = 0.767$, $p < 0.000$) was determined between individual development and reading and basic reading skills. Furthermore, moderate positive correlations were found between individual development and reading and visual reading ($r = 0.418$, $p < 0.000$) and book selection ($r = 0.454$, $p < 0.000$). Similarly, the basic reading skills sub-dimension was also significantly related to visual reading ($r = 0.390$, $p < 0.000$) and book selection ($r = 0.462$, $p < 0.000$). The relationship between visual reading and book selection was found to be low but significant ($r = 0.304$, $p < 0.000$).

As illustrated in Appendix 2, the results for the students' reading culture averages and the corresponding range values are presented.

As shown in Appendix 2, the students' reading culture values fall within the intermediate level. Among these, the item 'Reading books improves my vocabulary' has the highest average of 4.262. This average corresponds to the always level. On the other hand, the item 'I read e-books instead of printed books' has the lowest average of 2.323. This average corresponds to the rarely level. In addition, items 1, 6, 8, 12, 14, 15, 17, 21, 22, and 24 are generally at the same level. This result indicates that these items exceed the scale average. Furthermore, items 2, 5, and 26 were found to be at the rare level and below the scale average. The items that fell outside this range were compatible with the scale mean and were in the range corresponding to the sometimes level.

Table 4 Results on reading culture

Sub-Dimensions	N	Mean	SD	Interpretation	Individual Development and Reading	Basic Reading Skills	Visual Reading	Book Selection
Individual development and reading	214	3.212	0.708	Sometimes	1	.767	.418	.454
Basic reading skills		3.272	0.769	Sometimes	.767	1	.390	.462
Visual reading		2.978	0.848	Sometimes	.418	.390	1	.304
Book selection		3.263	0.911	Sometimes	.454	.462	.304	1
Overall Average		3.208	0.634	Sometimes	-	-	-	-

Table 5 Analysis of critical reading self-efficacy and reading culture according to grade level

Scale	Grade Level	N	Mean	SD	F	p	Difference	Cohen's d
Critical reading self-efficacy	5th grade	51	3.524	0.429	2.340	0.074		-
	6th grade	56	3.532	0.540				
	7th grade	53	3.403	0.511				
	8th grade	54	3.711	0.542				
Reading culture	5th grade	51	3.205	0.552	3.317	0.021	7–8	0.42
	6th grade	56	3.297	0.619				
	7th grade	53	3.021	0.735				
	8th grade	54	3.301	0.591				

Table 6 Analysis of critical reading self-efficacy and reading culture according to gender variable

Scale	Gender	N	Mean	SD	t	P
Critical reading self-efficacy	Male	106	3.489	0.492	0.876	.125
	Female	108	3.597	0.538		
Reading culture	Male	106	3.202	0.615	–0.131	.896
	Female	108	3.213	0.655		

Results on the relationship between Secondary School Students' grade levels and their critical reading self-efficacy and reading culture

The results on the relationship between secondary students' grade level and their critical reading self-efficacy and reading culture are presented in Table 5:

As shown in Table 5, the critical reading self-efficacy of secondary students does not exhibit a statistically significant difference by grade ($F = 2.340$; $p > 0.05$). The investigation revealed no statistically significant difference in the critical reading self-efficacy of secondary school students according to their grade level. In summary, levels of critical reading self-efficacy demonstrate homogeneity across different grade levels. Secondary school students' reading cultures exhibit a statistically significant difference according to grade level ($F = 3.317$; $p < 0.05$). A Tukey pairwise comparison analysis was used to determine which groups had a significant difference. According to the results of this comparison, there was a significant difference in favor of 8th graders compared to 7th graders (Tukey HSD: 8th > 7th, $p < 0.05$, $d = 0.42$). This difference is at a moderate level, as indicated by Cohen's d value. Furthermore, when analyzing the average reading culture scores of the classes, it is evident that as the grade level increases, the average reading culture scores of the pupils also rise.

Results on the relationship between secondary school students' gender and their critical reading self-efficacy and reading culture

The results regarding the relationship between students' gender and their critical reading self-efficacy and reading cultures are presented in Table 6.

As shown in Table 6, the critical reading self-efficacy of female and male students did not exhibit a significant difference ($t = 0.876$; $p > 0.05$). It was also found that the reading cultures of female and male students were similar and did not differ significantly ($t = -0.131$; $p > 0.05$).

Results on the relationship between critical reading self-efficacy and reading culture

Simple linear correlation analysis (Pearson Correlation) was used to determine the relationship between secondary students' critical reading self-efficacy and reading culture. Pearson correlation analysis revealed a statistically significant, positive, and strong relationship between secondary school students' critical reading self-efficacy and reading culture. ($r = 0.630$, $p < 0.05$).

Results on the predictive level of secondary school students' reading cultures on critical reading self-efficacy

A multiple regression analysis was conducted between the sub-dimensions of reading culture and the Critical Reading Self-Efficacy Scale to examine the significant explained variance in the status of reading culture on critical reading self-efficacy. The results of the analysis are shown in Table 7.

Multiple regression analysis was used to determine in which dimension the sub-dimensions of reading culture significantly explained variance in critical reading self-efficacy. As a result of the analysis, reading culture was found to be significantly associated with critical reading self-efficacy (Adj. $R^2 = 0.39$). The variance explained by the total level of reading culture on critical reading self-efficacy was 39%.

When analyzing the significance values ($p < 0.01$) of the regression coefficients of the sub-dimensions of reading culture, it was found that individual development and essential reading skills were significant explanatory factors of critical reading self-efficacy. However, the visual reading and book selection sub-dimensions did not make

Table 7 Multiple regression analysis results between reading culture and sub-dimensions of critical reading self-efficacy scale

Variables	N	B	SE B	β	t	p	r (Bivariate)	r (Partial)
Constant	214	1.945	0.144	-	13.491	0.000	-	-
Individual development and reading		0.172	0.062	0.236	2.754	0.006	0.187	0.146
Basic reading skills		0.261	0.057	0.388	4.565	0.000	0.301	0.243
Visual reading		0.036	0.036	0.060	1.003	0.317	0.069	0.053
Book selection		0.026	0.035	0.046	0.746	0.457	0.052	0.040

$R=.64$, $R^2=.40$, Adj. $R^2=.39$, $F(4, 209)=36.16$, $p<.001$

a significant contribution to the explained variance in critical reading self-efficacy.

Discussion and conclusions

The present study compared critical reading self-efficacy and reading culture among secondary school students and revealed several interrelated findings that merit careful consideration.

The results showed that the students' critical reading self-efficacy scores were at the *agree* level, suggesting that participants generally perceived themselves as confident in their critical reading abilities. This finding is consistent with previous studies reporting above-average self-efficacy levels [43, 100, 131], while Özdemir [132] reported more moderate levels. The convergence of these findings across different contexts indicates that many students view themselves as capable critical readers. Such perceptions may reflect the increasing emphasis on critical thinking skills in education systems, instructional approaches that promote deeper questioning, and the accessibility of diverse digital information sources that provide students with opportunities to engage with a range of texts [133–138]. As Lluch [139] notes, the digitalisation of reading practices has reshaped how young people approach information and knowledge, which may be related to their growing self-confidence in evaluating texts.

When the sub-dimensions of the scale are examined, the *analysis* and *questioning* dimensions were found to align with the general average and remain at the *agree*-level, supporting the findings of Alan and Amaç [133] and Çevik and Demir [140]. These results indicate that students are relatively confident in identifying main ideas, asking questions, and engaging in analytical thinking while reading. However, the*difficulty* and *research*-sub-dimensions were below the general average, showing that students may have less confidence in understanding implicit meanings, evaluating the accuracy of information, conducting textual research, and taking effective notes. This suggests that while they are comfortable with surface-level analysis, they may face challenges in higher-order cognitive processes such as evaluating and synthesising information. Studies by Yıldız et al. [141] and Sari [142] similarly reported that students' advanced comprehension skills were not at the desired level, supporting this interpretation.

The findings also indicated that students' reading culture was at an intermediate level, corresponding to the *sometimes*range on the scale. Although eleven items scored above the average, three fell below, and the remaining sixteen items were consistent with the mean. Items with low means related to the following printed newspapers and magazines, reading e-books, and developing regular reading habits. These patterns suggest that students' reading culture is shaped by occasional rather than habitual engagement with various reading materials. Similar trends were identified by İşleyen and Günal [115], who reported lower levels in visual reading and book selection dimensions. The literature further supports the idea that regular engagement with diverse reading materials contributes to a more established reading culture [120, 122, 124, 143, 144].

When differences across grade levels were examined, no statistically significant difference was found in students' critical reading self-efficacy. Although it might be expected that critical reading self-efficacy would increase as students progress through grade levels, the data did not confirm this pattern. This result may be related to instruction that prioritises exam performance, limited classroom time devoted to deep reading tasks, or reliance on multiple-choice assessments that encourage surface learning. Similar findings were reported by Şahin [100]and Aybek and Aslan [58], whereas other studies [145, 146] found grade-level differences, suggesting that contextual and curricular factors may influence these outcomes. By contrast, reading culture did differ significantly by grade level, favouring eighth graders over seventh graders. This tendency may relate to older students' exposure to a wider range of books, teacher-guided reading activities, environmental influences, and access to age-appropriate resources. Increased family awareness and easier digital access to reading materials may also contribute to these patterns [121, 147, 148].

Gender-based comparisons revealed no significant differences in critical reading self-efficacy or reading culture. This result aligns with several studies [14, 15, 132, 145] showing gender-neutral outcomes but contrasts with others reporting higher scores for female students [115, 121, 131, 149–152]. These inconsistencies across

studies indicate that gender-related differences in reading behaviour and self-efficacy are not uniform and may depend on cultural, social, or educational variables within specific learning environments.

A statistically significant and strong relationship was identified between students' critical reading self-efficacy and their reading culture. The multiple regression analysis further showed that the sub-dimensions of reading culture accounted for a meaningful portion of the variance in critical reading self-efficacy. Students with richer reading habits also tended to express higher levels of confidence in their ability to engage critically with texts. These results are consistent with Kelley et al. [109], who found that culturally responsive practices were associated with improved reading performance and stronger self-efficacy beliefs. However, because this study employed a cross-sectional design, these associations should not be interpreted causally. While the data indicate that reading culture and self-efficacy are positively linked, it remains unclear whether one directly influences the other or whether both are shaped by underlying educational and social factors.

Overall, the findings highlight several key points. Students perceive themselves as capable of analysing and questioning texts but feel less confident in evaluating implicit meanings or conducting independent research. Their reading culture remains moderate, suggesting that although reading is valued, it has not yet become a sustained habit for many students. The positive association between reading culture and critical reading self-efficacy underscores the potential importance of fostering reading engagement to support students' confidence as readers. Yet, this should be interpreted as a correlational relationship rather than a causal one. Strengthening reading culture may coincide with improvements in perceived reading competence, but further research-particularly longitudinal or experimental studies-is needed to clarify these connections.

The cross-sectional nature of the study represents its primary limitation, as the design does not allow conclusions about causality or change over time. Future research could include longitudinal approaches to examine developmental trajectories of reading culture and self-efficacy, as well as intervention studies to test whether specific instructional strategies lead to measurable improvements. Qualitative data, such as interviews or classroom observations, may also provide deeper insights into how students' reading experiences and classroom contexts shape their self-perceptions as critical readers.

In conclusion, this study indicates that secondary students possess relatively strong self-efficacy in critical reading alongside a moderate level of reading culture. Although these constructs are strongly associated, further research is required to understand the mechanisms linking them and to identify practical strategies that could help educators nurture both simultaneously.

Recommendations

The following recommendations are proffered in relation to the practical results:

- For the lower sub-dimensions of reading culture (e.g. reading periodicals), a weekly newspaper and magazine analysis club can be established for students and the results monitored.
- Given the low level of research skills, practical activities can be carried out to enable students to research texts, gather information from different sources and take notes.
- Group work and project-based learning activities can be implemented for the dimensions in which students are weak (difficulty and research).
- For students with low text evaluation skills, learning outcomes can be examined using AI-supported text analysis tools.
- To explain the difference in reading culture according to class level, the reading material preferences (printed vs. digital) of 7th and 8th grade students can be examined comparatively.
- The contribution of AI-supported digital reading platforms to students' reading culture and self-efficacy can be investigated.
- Schools of different socio-economic and cultural backgrounds can be compared in terms of reading culture and critical reading self-efficacy.
- To develop students' critical reading skills, teachers can be use post-reading discussion and questioning technique.

In addition, this study employed a cross-sectional design; therefore, the relationships identified among the variables cannot be interpreted as causal. Future research utilizing longitudinal or experimental designs would provide deeper insights into the directionality and causality of these associations.

Limitations

This study has certain limitations. In particular, the participant group consists solely of students with a single cultural background, similar demographic characteristics, and a common language. Therefore, it remains uncertain what the findings would be regarding the reading cultures and critical reading self-efficacy of students with different cultural and demographic backgrounds.

The data for the study were obtained using only two scales. Variables that could influence students' critical reading, self-efficacy, and reading culture, such as

parental educational level, socio-economic status, or access to digital resources, were not taken into account.

The study found a positive relationship between critical reading self-efficacy and reading culture. However, this relationship was measured only by scales. Since students' actual reading behaviours and text analysis performance, i.e. observation-based data, were not included, it remains unclear how this relationship manifests at the behavioural level.

The fact that students' critical reading self-efficacy does not show a meaningful difference according to class level can be explained by the similarity of teaching programmes and classroom activities. However, as teacher practices, students' out-of-class reading habits, or the level of support provided by the school for critical reading self-efficacy were not included in the study, the possible effects of these factors have been overlooked.

Finally, the study was conducted using a quantitative approach, and students' responses were evaluated based on numerical data. The lack of qualitative data collection methods (such as interviews, focus group discussions, or student diaries) limited the depth of information obtained regarding students' reading experiences, motivations, and critical thinking processes.

Abbreviations

n	Sample Size
%	Percent
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
EFA	Exploratory Factor Analysis
Df	Degrees of Freedom
χ^2	Chi-Square
p	P-value
R	Pearson Correlation Coefficient
F	F-statistic (ANOVA)
t	T-statistic
α	Cronbach's Alpha
B	Unstandardized Regression Coefficient
β (Beta)	Standardized Regression Coefficient
Cohen's d	Cohen's d Effect Size
SPSS	Statistical Package for the Social Sciences
ANOVA	One-Way Analysis of Variance
CRSE	Critical Reading Self-Efficacy

Supplementary Information

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Supplementary Material 1. Appendix 1 Means and values of critical reading self-efficacy. Appendix 2 Averages and values related to reading culture

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Authors' contributions

AÖ and SM collected and analyzed the date. ASM., SM and AÖ wrote the main manuscript text. ASM and AÖ prepared all figures in the manuscript. All authors reviewed the manuscript.

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Data availability

The dataset used in this study is available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

All procedures applied in this study, in studies involving human participants, were performed in accordance with the ethical standards of the institutional and/or national research committee and the 1964 Declaration of Helsinki and its subsequent amendments or similar ethical standards. Furthermore, the study was approved by the Ethics Committee (IRB) of Bayburt University (Approval No. E-51694156–050.99–48262-199/15). As all participants were below the age of 16 (i.e. minors), written informed consent was obtained from their parents or legal guardians prior to their participation in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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