

The Influence of Classroom Reading Anxiety on Top-Down, Bottom-Up Reading Anxiety and Reading Strategies

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ABSTRACT

Reading anxiety remains a significant psychological barrier that affects second-language (L2) acquisition and cognitive text processing. This quantitative study explored the influence of classroom reading anxiety on top-down and bottom-up reading anxiety, as well as the perceived use of reading strategy. The data were gathered using a 39-item, 5-point Likert scale survey administered to 124 tertiary diploma and foundation students at Universiti Teknologi MARA. Descriptive and inferential statistical analyses (t-tests, ANOVA, and Pearson correlation) revealed moderate levels of overall reading anxiety and higher usage of problem-solving reading strategies. Independent samples t-tests indicated no statistically significant differences in reading anxiety or strategy use based on self-rated English proficiency or reading medium preferences. Pearson correlation analysis demonstrated strong, positive, statistically significant relationships between classroom reading anxiety and both top-down anxiety ($r = 0.572, p < 0.001$) and bottom-up anxiety ($r = 0.649, p < 0.001$). However, no significant correlation was found between classroom reading anxiety and online reading strategy deployment ($r = 0.083, p = 0.360$). The findings imply that while the pedagogical environment directly heightens cognitive processing anxieties, learners maintain autonomous strategic behaviour regardless of their anxiety levels. The findings suggest that pedagogical practices addressing classroom-related stressors and cognitive processing difficulties may be considered in L2 reading instruction. Future research should examine these relationships using longitudinal, mixed-methods, and intervention-based designs.

Keywords: classroom reading anxiety, top-down processing, bottom-up processing, reading strategies, esl learners, affective filter

INTRODUCTION

Background of Study

Reading in a second language (L2) is a complex cognitive process involving simultaneous linguistic decoding and conceptual synthesis. Before engaging with textual content, language learners frequently encounter affective impediments that alter their cognitive engagement. Second language reading anxiety serves as an internal barrier that impairs comprehension, slows processing speed, and restricts working memory capacity (Zoghi, 2012). Understanding the multidimensional structure of reading anxiety, ranging from classroom environments to cognitive processing dimensions, is crucial for secondary and tertiary educational contexts. Despite extensive research on language reading anxiety over recent decades, the topic remains relevant due to evolving learning environments and digital text platforms. As educational landscapes increasingly shift toward blended learning and online reading materials, understanding how traditional classroom anxiety interacts with

underlying cognitive decoding processes (bottom-up) and schema-driven comprehension (top-down) remains a priority for language educators (Miao & Vibulphol, 2020; Rahmat et al., 2020).

Statement of Problem

Prior literature shows that elevated foreign language anxiety impairs language performance across all four primary skills, with reading often presenting silent yet acute psychological stress (Zoghi, 2012). Learners frequently experience emotional distress when faced with unfamiliar cultural schemas, complex syntax, or dense vocabulary (Amer et al., 2010). Furthermore, traditional instructional methods such as cold-calling students to read aloud or demanding instant translations exacerbate these anxieties in the classroom environment (Miao & Vibulphol, 2020).

These elevated affective barriers frequently hinder learners' dynamic interaction with text. Recent investigations into academic reading fears suggest that affective disruptions lead to a cycle of reading failure, where cognitive anxiety limits strategy deployment and impairs overall comprehension (Rahmat et al., 2020). However, there remains a need to examine how environmental classroom factors directly correlate with top-down and bottom-up processing anxieties and whether higher affective disruption inhibits or prompts strategic online reading behaviours.

Objective of the Study and Research Questions

This study is done to explore the influence of classroom reading anxiety on top-down, bottom-up reading anxiety and reading strategies. Specifically, this study is done to answer the following questions:

- Is there a significant relationship for reading anxiety across Self-Rating English Proficiency and Reading Preferences?
- H_{01} : There is no significant relationship reading anxiety across Self-Rating English Proficiency and Reading Preferences
- Is there a significant relationship for reading strategies across Self-Rating English Proficiency and Reading Preferences?

H_{02} : There is no significant relationship reading strategies across Self-Rating English Proficiency and Reading Preferences

1. How do learners perceive classroom reading anxiety?
2. How do learners perceive top-down reading anxiety?
3. How do learners perceive bottom-up reading anxiety?
4. How do learners perceive their reading strategies?
5. Is there a relationship between classroom and top-down reading anxiety?

H_{03} : There is no relationship between classroom and top-down reading anxiety

6. Is there a relationship between classroom and bottom-up reading anxiety?

H_{04} : There is no relationship between classroom and bottom-up reading anxiety

7. Is there a relationship between classroom and reading strategies?

H_{05} : There is no relationship between classroom and reading strategies

LITERATURE REVIEW

Theoretical Framework of the Study

- Krashen (1982) Affective Filter Hypothesis and Reading Anxiety

Krashen's Affective Filter Hypothesis posits those emotional variables, including anxiety, self-confidence, and motivation, act as an adjustable filter that can hinder or facilitate input processing. In an L2 reading context, elevated anxiety strengthens the affective filter, preventing comprehensible input from reaching the language acquisition mechanism. Consequently, high classroom anxiety heightens apprehension regarding vocabulary and textual structure, limiting the learner's cognitive working memory during text processing.

- Interactive Model of Reading by Rumelhart (1980) and Reading Strategies

Rumelhart's Interactive Model of Reading views reading comprehension as an interactive process between bottom-up mechanisms (sensory decoding of letters, words, and grammar) and top-down mechanisms (activation of background knowledge, context, and higher-level conceptual schemas). Comprehension occurs when both processing routes work concurrently. When anxiety disrupts either pathway, learners deploy cognitive and metacognitive reading strategies to compensate for processing breakdowns and restore text comprehension.

Past Studies

Empirical research demonstrates complex relationships between language anxiety, processing mechanics, and strategic text processing. Miao and Vibulphol (2020) investigated EFL reading anxiety among Chinese university students and reported that instructional techniques, fear of negative evaluation, and unfamiliar textual features were primary triggers of affective distress. Their findings underscored that high anxiety directly impeded lexical decoding (bottom-up processing) and background knowledge activation (top-down processing). Similarly, Zoghi (2012) established that L2 reading anxiety is a distinct, multidimensional construct consisting of situational and cognitive factors that alter overall comprehension performance. In a related study on strategy employment, Amer et al. (2010) evaluated student teachers' perceived use of online reading strategies and observed that learners used high levels of problem-solving and support strategies when encountering online text difficulties. Furthermore, Rahmat et al. (2020) examined the cycle of academic reading fear among undergraduates, demonstrating that academic reading apprehension creates a cycle in which perceived difficulty fuels anxiety, leading to altered strategy choice and avoidance behaviours. Together, these studies highlight that reading anxiety and strategy selection are tied to both instructional environments and cognitive processing challenges.

Conceptual Framework of the Study

Figure 1 shows the conceptual framework of the study. This framework conceptualises classroom reading anxiety as a central affective factor that shapes how learners process texts and use reading strategies. Drawing on Krashen's Affective Filter Hypothesis, high levels of anxiety are argued to raise the affective filter, restricting learners' ability to process linguistic input and negatively affecting reading comprehension (Krashen, 1982). In classroom settings, this anxiety manifests in both top-down and bottom-up reading anxiety, where learners struggle to activate background knowledge or decode textual details effectively under emotional pressure. Empirical studies support this relationship, showing that unfamiliar texts, fear of evaluation, and time constraints significantly heighten reading anxiety and impair comprehension (Zoghi, 2012; Milao & Vibulphol, 2020). The framework further integrates Rumelhart's Interactive Model of Reading, which posits that comprehension arises from the dynamic interaction of top-down and bottom-up processes and that reading strategies are deployed to manage breakdowns in either process (Rumelhart, 1980). When anxiety disrupts this interaction, learners increasingly rely on reading strategies such as problem-solving and support strategies to restore comprehension (Amer et al., 2010). However, the framework also recognises that reading anxiety and difficulty can form a cyclical pattern, where repeated comprehension failures heighten

anxiety and negatively shape future reading experiences and strategy use (Rahmat et al., 2020). Overall, the framework explains how classroom reading anxiety influences cognitive processing routes and strategic behaviour, ultimately shaping learners' reading performance and long-term engagement.

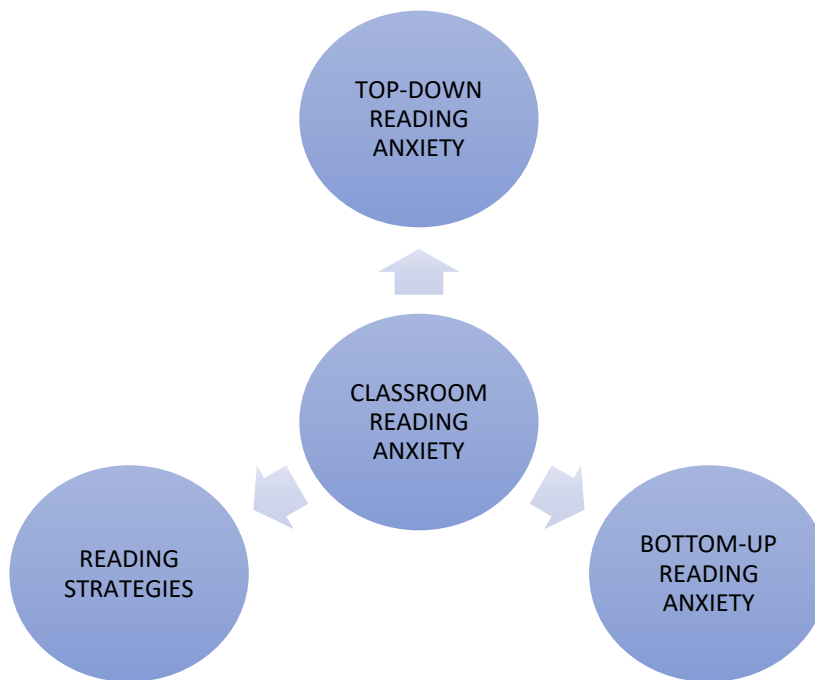


Figure 1- Conceptual Framework of the Study- The Influence of Classroom Reading Anxiety on Top-Down, Bottom-Up Reading Anxiety and Reading Strategies

METHODOLOGY

This quantitative study explores how classroom reading anxiety influences top-down and bottom-up reading anxiety and reading strategies. A convenient sample of 124 participants responded to the survey. The instrument used is a 5-point Likert-scale survey and is rooted in work by Miao & Vibulphol (2020), Zoghi (2012), and Amer et al. (2010) to reveal the variables in table 3 below. Table 1 below shows the categories used for the Likert scale: 1 is for Strongly Disagree, 2 is for Disagree, 3 is for Undecided, 4 is for Agree and 5 is for Strongly Agree.

Table 1- Likert Scale Use

1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Table 2- Distribution of Items in the Survey

SECTION	VARIABLE	CATEGORY	CONSTRUCT	Item/Indicator	Tot
B	READING ANXIETY Milao & Vibulphol (2020) and Zoghi (2012)	TOP-DOWN READING ANXIETY	Background and Cultural Knowledge	3	7 (.879)
			General Reading Ability	4	
		BOTTOM-UP READING ANXIETY	Vocabulary	5	9 (.920)

			Grammar	4	
C		CLASSROOM READING ANXIETY	Teaching Methods		5(.882)
D	READING STRATEGIES		Global	6	18 (.913)
	(Amer et al., 2010)		Problem-Solving	6	
			Support	6	
					39 (.936)

Table 2 shows the distribution of items in the survey. Reference/citation for the survey chosen. Explain in detail each section- how many items, total number of items.

Table 3- Reliability Levels, Cronbach's Alpha Ranges, and Their Interpretations

Reliability Level	Cronbach's Alpha range	Interpretation
Excellent	0.9 and above	Indicates very high internal consistency
Good	0.80-0.89	Reflects strong internal consistency
Acceptable	0.70-0.79	Indicates acceptable internal consistency
Questionable	0.60-0.69	Reflects questionable internal consistency
Poor	Below 0.6	Indicates poor internal consistency

In order to determine the internal reliability of the instrument, reliability analysis is conducted. Table 3 above shows the distribution and interpretation of Cronbach's Alpha. range. According to Ahmad et al. (2024), Cronbach Alpha scores between 0.7 and 0.9 are considered acceptable to excellent.

Table 2 also shows the reliability of the survey. The analysis shows a Cronbach alpha of .879 for Top-down, .920 for bottom-up, .882 for classroom reading, and .91 for reading strategies., The overall Cronbach alpha for all 39 items is .936, thus revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is conducted to present findings that answer the research questions for this study.

FINDINGS

Demographic Analysis

According to Zienefuss et al. (2021), research report demographic data in percentages to establish sample representatives and allow for generalisability to a larger population. The reporting also provides an overview of participants' characteristics. Percentages offer a clear and understandable picture of the sample makeup.

Table 4- Percentage for Demographic Profile

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	52%
		Female	48%
2	Self-Rating English Proficiency	Average	55%
		Good	45%
3	Reading Preference	Physical Books/Magazines, etc	56%
		Online Materials	44%
4	Education Level	Foundation	15%
		Diploma	85%

This study consisted of 52% male and 48% female participants. Most respondents were enrolled in diploma programmes (85%), while 15% were foundation-level students. Regarding self-rated English proficiency, 55%

categorised their ability as average, and 45% rated themselves as good. Additionally, 56% reported preferring physical reading materials, while 44% favoured online reading formats.

Inferential Statistics

According to He (2024), there are three main functions of a T-test and ANOVA. Firstly, both are used to compare means. This test is also done to determine if the average scores (mean) or values of two groups, or one group against a known value, are different enough to be considered statistically meaningful and are not just due to random chance. Secondly, T-test and ANOVA are done to test hypotheses. Researchers use t-tests and ANOVA to test hypotheses about means, such as whether a new treatment significantly impacts a variable or if there's a difference in performance between two distinct groups. Lastly, T-test and ANOVA are done to identify significant differences. The output of a t-test provides a p-value (significance value). If this p-value is below a predetermined threshold (often 0.05), it indicates a statistically significant difference, allowing researchers to draw conclusions about the populations from which their samples were drawn. A one-way ANOVA (Analysis of Variance) is a statistical method used to compare the means of three or more independent (unrelated) groups to determine if there is a statistically significant difference between them. It is a parametric test that evaluates the effect of a single independent variable (the factor) on a dependent variable.

Findings for Reading Anxiety across Self-Rating English Proficiency and Reading Preferences

This section presents data to answer research question 1: Is there a significant relationship for reading anxiety across Self-Rating English Proficiency and Reading Preferences?

H_{01} : There is no significant relationship between reading anxiety across Self-Rating English Proficiency and Reading Preferences

Table 5- T-Test/ANOVA for Reading Strategies

		MEAN	SD	T-Statistics <i>df</i>	p-value	OUTCOME
Self-Rating English Proficiency	Average	2.98	0.57	t(122)=1.363	0.175	Ho accepted
	Good	2.82	0.69			
Reading Preference	Physical Books/Magazines, etc	2.96	0.63	t(122)=1.060	0.291	Ho accepted
	Online Materials	2.84	0.49			

With reference to Table 5, a T-test was conducted to examine the effects reading anxiety across Self-Rating English Proficiency and Reading Preferences. The analysis shows there were significant difference between reading anxiety across Self-Rating English Proficiency and Reading Preferences

Findings for Reading Strategies across Self-Rating English Proficiency and Reading Preferences

This section presents data to answer research question 2: Is there a significant relationship for reading strategies across Self-Rating English Proficiency and Reading Preferences?

H_{02} : There is no significant relationship reading strategies across Self-Rating English Proficiency and Reading Preferences

Table 5- T-Test/ANOVA for Reading Strategies

		MEAN	SD	T-Statistics <i>df</i>	p-value	OUT COME
Self-Rating English Proficiency	Average	3.32	0.48	t(122)=1-.626	0.107	Ho accepted

	Good	3.48	0.66			
Reading Preference	Physical Books/Magazines, etc	3.34	0.66	$t(122)=-1.131$	0.26	Ho accepted
	Online Materials	3.46	3.46			

With reference to Table 5, a T-test was conducted to examine the effects reading strategies across Self-Rating English Proficiency and Reading Preferences. The analysis shows there were significant differences between reading strategies across Self-Rating English Proficiency and Reading Preferences

Descriptive Statistics

Why is there a need to report the mean and standard deviation? According to Vetter (2017), Mean (M) represents the average, or centre, of a data set. Standard deviation (SD) indicates the typical distance of individual observations from the mean, which shows the data's variability or spread. A low SD means the data points are clustered close to the mean, while a high SD means they are spread out. SD indicates they are more spread out. It is beneficial to have a high SD.

Findings for Classroom Reading Anxiety

This section presents data to answer research question 3: How do learners perceive classroom reading anxiety?

CLASSROOM READING ANXIETY

Table 6- Mean (M) and Standard Deviation (SD) for Teaching Methods (TM)

ITEM	M	SD
TMQ1 It bothers me when the instructor calls on me to read out.	2.62	0.99
TMQ2 It worries me when the instructor calls on me to translate a piece of an English text into our first language.	2.73	0.97
TMQ3 When the instructor asks me reading comprehension questions, it is worrying to me.	2.62	0.83
TMQ4 It upsets me when the instructor chooses uninteresting texts to read in class.	2.63	0.96
TMQ5 I am nervous when the instructor uses English as a medium of instruction and hardly ever makes use of our first language.	2.48	0.95

Table 6 indicates that learners experience moderate levels of classroom reading anxiety related to teaching methods, with the highest anxiety stemming from being asked to translate text (TMQ2: M=2.73) and the lowest from English being used as the primary medium of instruction (TMQ5: M=2.48). Other, moderate stressors include the selection of uninteresting texts, being called on to read aloud, and answering comprehension questions, with all items exhibiting a consistent spread of opinions among respondents.

Findings for top-down reading anxiety

This section presents data to answer research question 4: How do learners perceive top-down reading anxiety? In the context of this study, this is measured by (i) background and (ii) general reading ability.

Table 7- Mean (M) and Standard Deviation (SD) for Background and Cultural Knowledge (BCK)

ITEM	M	SD
BCKQ1 I do not feel at ease when the title of the text is unfamiliar to me.	2.86	0.71
BCKQ2 It is worrying to me when the ideas expressed in the text are culturally unclear	3.04	0.79
BCKQ3 I get upset when I lack the previous knowledge about the ideas expressed in the text.	3.20	0.88

The findings indicate that learners experienced varying levels of anxiety related to background and cultural knowledge. Among the three items, BCKQ3, "*I get upset when I lack the previous knowledge about the ideas expressed in the text,*" recorded the highest mean score (M = 3.20, SD = 0.88). This was followed by BCKQ2,

which examined anxiety arising from culturally unclear ideas in the text ($M = 3.04$, $SD = 0.79$). BCKQ1, concerning unfamiliarity with the title of the text, recorded the lowest mean score ($M = 2.86$, $SD = 0.71$). Overall, the findings suggest that a lack of prior knowledge about ideas expressed in a text was the most prominent source of top-down reading anxiety related to background and cultural knowledge.

Table 8- Mean (M) and Standard Deviation (SD) for General Reading Ability (GRA)

ITEM	M	SD
GRAQ1 I worry when I cannot get the gist of the text although no new vocabulary items or grammatical points exist in the text.	2.98	0.89
GRAQ2 When I cannot recognize minor ideas (details) of the text, it is worrying to me.	2.99	0.92
GRAQ3 I am nervous when I cannot spot the main idea of a paragraph.	3.12	0.94
GRAQ4 It bothers me when I cannot express my opinions or feelings about the text.	3.07	0.97

The findings for general reading ability show that GRAQ3, "*I am nervous when I cannot spot the main idea of a paragraph*," obtained the highest mean score ($M = 3.12$, $SD = 0.94$). This was followed by GRAQ4, which focused on learners' difficulty expressing their opinions or feelings about the text ($M = 3.07$, $SD = 0.97$). GRAQ2 and GRAQ1 recorded mean scores of 2.99 ($SD = 0.92$) and 2.98 ($SD = 0.89$), respectively. These findings indicate that difficulty identifying the main idea was the most prominent source of anxiety related to learners' general reading ability.

Findings for bottom-up reading anxiety

This section presents data to answer research question 5: How do learners perceive bottom-up reading anxiety? In the context of this study, this is measured by (i) Vocabulary, and (ii) grammar.

Table 9- Mean (M) and Standard Deviation (SD) for Vocabulary(V)

ITEM	M	SD
VQ1 It bothers me when I encounter a lot of words whose meanings are unclear	3.15	0.86
VQ2I get upset when I cannot figure out the meaning of a word that I feel I have seen before	3.12	0.95
VQ3 I get confused when the word that I know has a different meaning in the sentence.	2.98	0.82
VQ4 I get upset when I come across idioms that are unfamiliar to me.	2.96	0.91
VQ5 I feel worried when the unknown word is difficult to pronounce.	2.99	0.99

Table 9 above shows that vocabulary-related difficulties generated varying levels of anxiety among the learners. VQ1, which concerns encountering many words with unclear meanings, recorded the highest mean score ($M = 3.15$, $SD = 0.86$). This was followed by VQ2, which focused on difficulty recalling the meaning of

a previously encountered word ($M = 3.12$, $SD = 0.95$). VQ5 recorded a mean of 2.99 ($SD = 0.99$), while VQ3 and VQ4 recorded lower mean scores of 2.98 ($SD = 0.82$) and 2.96 ($SD = 0.91$), respectively. Overall, the findings suggest that encountering numerous unfamiliar words was the most prominent source of vocabulary-related reading anxiety.

Table 10- Mean (M) and Standard Deviation (SD) for Grammar(G)

ITEM	M	SD
GQ1 I am nervous when a certain sentence is long and has a complex structure	2.78	0.88
GQ2 When a certain sentence is grammatically unfamiliar is worrying to me.	2.94	0.90
GQ3 I feel upset when the tense of a certain sentence is unclear to me.	2.89	0.88
GQ4 I worry when I am unable to recognize different parts of speech such as adjectives, adverbs, or connective words.	2.94	0.89

Regarding grammar-related reading anxiety, GQ2 and GQ4 recorded the highest mean score of 2.94 ($SD =$

0.90 and 0.89, respectively). These findings indicate that learners experienced relatively greater anxiety when encountering grammatically unfamiliar sentences and when they were unable to identify different parts of speech. GQ3 recorded a mean score of 2.89 (SD = 0.88), while GQ1 obtained the lowest mean score of 2.78 (SD = 0.88). Thus, difficulty with grammatical unfamiliarity appeared to generate greater anxiety than encountering long and complex sentence structures.

Findings for reading strategies

This section presents data to answer research question 6: How do learners perceive their reading strategies? In the context of this study, this is measured by (i) global strategies, (ii) global strategies, (ii)problem-solving strategies, (iii)

Table 11- Mean (M) and Standard Deviation (SD) for GLOBAL STRATEGIES

ITEM	M	SD
GSQ 1I think about whether the content of the on-line text fits my reading purpose	3.40	0.90
GSQ 2When reading on-line, I decide what to read thoroughly and what to ignore	3.18	0.94
GSQ3I use context clues to help me better understand what I am reading online	3.39	0.90
GSQ4I use typographical features like boldface and italics to identify key Information.	3.15	0.97
GSQ5I try to guess what the content of the online text is about when I read.	3.50	0.92
GSQ6 I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.27	0.90

The findings in table 11 indicate that learners employed global reading strategies to varying degrees when reading online texts. GSQ5, which involved guessing the content of the text before reading, recorded the highest mean score (M = 3.50, SD = 0.92). This was followed by GSQ1, concerning consideration of whether the content matched the learners' reading purpose (M = 3.40, SD = 0.90), and GSQ3, which involved using contextual clues to facilitate comprehension (M = 3.39, SD = 0.90). The lowest mean score was recorded for GSQ2, which concerned deciding which parts of an online text to read thoroughly and which to ignore (M = 3.18, SD = 0.94). Overall, the findings suggest that learners most frequently engaged in anticipatory and purpose-orientated strategies when approaching online texts.

Table 12- Mean (M) and Standard Deviation (SD) for PROBLEM--SOLVING STRATEGIES

ITEM	M	SD
PSSQ1 I try to get back on track when I lose concentration	3.72	0.86
PSSQ2 I adjust my reading speed according to what I am reading on-line	3.58	0.87
PSSQ3 I stop from time to time and think about what I am reading on-line	3.41	0.90
PSSQ4 When on-line text becomes difficult, I re-read it to increase my Understanding	3.83	0.87
PSSQ5 When I read on-line, I guess the meaning of unknown words or phrases	3.48	0.86
PSSQ6 I can distinguish between fact and opinion in on-line texts	3.47	0.81

Among the problem-solving strategies, PSSQ4, which involved rereading difficult online text to improve understanding, obtained the highest mean score (M = 3.83, SD = 0.87). This was followed by PSSQ1, concerning efforts to regain concentration when attention was lost (M = 3.72, SD = 0.86), and PSSQ2, which involved adjusting reading speed according to the text (M = 3.58, SD = 0.87). The lowest mean score was recorded for PSSQ3, which concerned stopping periodically to reflect on the text (M = 3.41, SD = 0.90). These findings suggest that learners particularly relied on rereading and concentration-recovery strategies when encountering difficulties during online reading.

Table 13- Mean (M) and Standard Deviation (SD) for SUPPORT STRATEGIES

ITEM	M	SD
SSQ1 I take notes while reading on-line to help me understand what I read	3.10	0.93

SSQ2 I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.	3.31	0.99
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.42	0.86
SSQ4I ask myself questions I like to have answered in the on-line text	3.31	0.86
SSQ5 When reading on-line, I translate from English into my native language	3.19	0.94
SSQ6 When reading on-line, I think about information in both English and my mother tongue	3.39	0.96

The findings further indicate that learners employed support strategies during online reading. SSQ3, which involved paraphrasing ideas in their own words to facilitate comprehension, recorded the highest mean score ($M = 3.42$, $SD = 0.86$). This was followed by SSQ6, which involved considering information in both English and the learners' mother tongue ($M = 3.39$, $SD = 0.96$). SSQ2 and SSQ4 each recorded a mean score of 3.31, indicating the use of reference materials and self-questioning as additional support strategies. SSQ1, concerning note-taking, obtained the lowest mean score ($M = 3.10$, $SD = 0.93$). Overall, paraphrasing appeared to be the most frequently used support strategy among the learners.

Exploratory Statistics

According to He (2024), correlation is a statistical technique that shows how strongly two variables are related to each other or the degree of association between the two. It's a common tool for describing simple relationships without making a statement about cause and effect. This section presents data to answer research questions on correlation.

To determine if there is a significant association in the mean scores between metacognitive, effort regulation, cognitive, social and affective strategies, data is analysed using SPSS for correlations. Results are presented separately in Table 14 below

According to He (2024), the coefficient is significant at the .05 level, and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0.

Table 14- Correlation between Classroom, Top-down, Bottom-Up Anxiety and Reading Strategies

		TOP DOWN	BOTTOM UP	READING STRATEGIES
CLASSROOM	Pearson Correlation	.572**	.649**	.083
	Sig. (2-tailed)	<.001	<.001	.360
	N	124	124	124
**. Correlation is significant at the 0.01 level (2-tailed).				

Findings for Relationship between classroom and top-down reading anxiety

This section presents data to answer research question 7: Is there a relationship between classroom and top-down reading anxiety?

H_{03} : There is no relationship between classroom and top-down reading anxiety

Table 14 shows there is an association between classroom and top-down reading anxiety. Correlation analysis shows that there is a high significant association between classroom and top-down reading anxiety ($r=.572^{**}$) and ($p=<.001$). This means that there is also a strong positive relationship between classroom and top-down reading anxiety. Null hypothesis is rejected for H_{03} .

Findings for the Relationship between classroom and bottom-up reading anxiety

This section presents data to answer research question 8: Is there a relationship between classroom and bottom-

up reading anxiety?

H₀₄: There is no relationship between classroom and bottom-up reading anxiety

Table 14 also shows there is an association between classroom and bottom-up reading anxiety. Correlation analysis shows that there is a high significant association between classroom and bottom-up reading anxiety ($r=.649^{**}$) and ($p<.001$). This means that there is also a strong positive relationship between classroom and top-down reading anxiety. Null hypothesis is rejected for H₀₄.

Findings for the Relationship between classroom and reading strategies

This section presents data to answer research question 9: Is there a relationship between classroom and reading strategies?

H₀₅: There is no relationship between classroom and reading strategies

Lastly, Table 14 also shows there is no association between classroom and reading strategies. Correlation analysis shows that there is no significant association between classroom and reading strategies. Null hypothesis is accepted for H₀₅.

CONCLUSION

Summary of Findings and Discussions

This study examined the relationship between classroom reading anxiety, top-down and bottom-up reading anxiety, and the use of online reading strategies by tertiary L2 learners. Overall, the findings indicate that reading anxiety relates to both classroom experiences and difficulties in processing texts. The first research question indicated no significant differences in reading anxiety based on learners' self-rated English proficiency or reading preferences. Similarly, the second research question showed no significant differences in reading strategy use based on these two factors. This suggests that learners perceived English proficiency and preferred reading medium did not strongly affect their reading anxiety or strategy use. This finding is consistent with Zoghi (2012), who described L2 reading anxiety as a multidimensional construct. It also supports Miao and Vibulphol (2020), who found that reading anxiety can be influenced by instructional practices and textual features.

In addition, learners experienced moderate classroom reading anxiety. The main sources of anxiety were being asked to translate English texts, answer reading comprehension questions, and read aloud. This finding is consistent with Miao and Vibulphol (2020), who found that instructional techniques were important sources of reading anxiety. The finding also supports Krashen's (1982) Affective Filter Hypothesis, which suggests that anxiety can create a barrier to language learning.

Moreover, learners experienced top-down reading anxiety, particularly when they lacked background knowledge and had difficulty identifying the main idea of a text. This finding is consistent with An et al. (2024), who found that background knowledge positively influenced L2 reading comprehension and reading processes. It is also similar to Miao and Vibulphol (2020), who found that unfamiliar textual features could increase reading anxiety. The findings also revealed that learners experienced bottom-up reading anxiety, particularly when they encountered unfamiliar vocabulary and grammatical difficulties. Unclear word meanings were an important source of vocabulary-related anxiety, while unfamiliar grammatical structures and parts of speech were important sources of grammar-related anxiety. This finding supports Zoghi (2012) and Miao and Vibulphol (2020) highlighted linguistic and textual difficulties as important aspects of L2 reading anxiety.

Learners reported frequent use of online reading strategies, particularly problem-solving strategies. Rereading difficult texts was the most frequently used problem-solving strategy. Learners also used global strategies such as predicting content and support strategies such as paraphrasing. These findings are consistent with Amer et al. (2010), who found that learners frequently used problem-solving and support strategies when dealing with

online reading difficulties. The study exposed that classroom reading anxiety had strong, positive relationships with both top-down and bottom-up reading anxiety. This means that learners who experienced greater classroom reading anxiety also tended to experience greater anxiety when processing background knowledge, meaning, vocabulary, and grammar. These findings are consistent with those of Miao and Vibulphol (2020) and Zoghi (2012), who emphasised the multidimensional nature of L2 reading anxiety. The findings also support Krashen's (1982) Affective Filter Hypothesis by showing an association between classroom anxiety and anxiety during reading processes.

Furthermore, there was no significant relationship between classroom reading anxiety and online reading strategy use. This suggests that learners continued to use reading strategies even when they experienced classroom reading anxiety. This finding is consistent with Amer et al. (2010), who found that learners used problem-solving and support strategies when reading online. However, it differs from Rahmat et al. (2020), who suggested that reading anxiety may influence reading behaviours and strategy use. Overall, the findings show that classroom reading anxiety is significantly associated with both top-down and bottom-up reading anxiety, but not with online reading strategy use. The findings suggest that classroom experiences may be closely related to learners' anxiety when processing texts, while their use of reading strategies may remain relatively stable. Therefore, reading anxiety and reading strategies should not be viewed as simple opposites. Learners may experience anxiety while still using strategies to overcome reading difficulties. These findings provide useful support for the Affective Filter Hypothesis (Krashen, 1982) and are also consistent with findings reported by Zoghi (2012), Miao and Vibulphol (2020), Amer et al. (2010), and Rahmat et al. (2020).

Implications and Suggestions for Future Research

Theoretical and Conceptual Implications

To effectively address both affective and cognitive barriers in the L2 reading classroom, educators should adopt targeted pedagogical practices that minimise instructional stressors and scaffold comprehension. Instructors should reduce high-anxiety practices such as cold-calling for spontaneous reading aloud or demanding direct translation into the first language and instead implement pre-reading schema activation tasks to ease top-down anxiety alongside pre-taught target vocabulary to reduce bottom-up decoding stress. Building on learners' strong reliance on problem-solving strategies, teachers should explicitly integrate instruction on self-regulated online reading behaviours to foster greater independence and confidence in their text processing.

Pedagogical Implications

The findings have several implications for L2 reading instruction at the tertiary level. To reduce L2 reading anxiety and enhance text comprehension, educators should adopt targeted pedagogical practices that address both affective and cognitive barriers. Specifically, instructors should minimise stressors such as cold-calling for spontaneous aloud reading or direct L1 translation, while actively incorporating pre-reading schema activation tasks to mitigate top-down anxiety and pre-teaching target vocabulary to alleviate bottom-up anxiety. Furthermore, given learners' strong reliance on problem-solving strategies, teachers should explicitly integrate instruction on self-regulated online reading behaviours to cultivate their independent comprehension skills.

SUGGESTIONS FOR FUTURE RESEARCH

Several directions for future research can be proposed based on the findings and limitations of the present study. The cross-sectional and correlational nature of the present study also limits causal interpretation. Although significant associations were identified between classroom reading anxiety and both top-down and bottom-up reading anxiety, the findings do not establish that classroom reading anxiety causes changes in cognitive-processing anxiety. Future research could employ longitudinal designs to examine how these relationships develop over time or mixed-methods designs to combine statistical relationships with learners' detailed accounts of their reading experiences. Future studies could also use probability-based sampling across multiple institutions to improve the representativeness and generalisability of the findings. Second, future research could examine reading anxiety using real-time measures of reading behaviour, such as eye-tracking,

reading time, pauses, rereading frequency, or other behavioural indicators. Such measures could provide more direct evidence of how anxiety is associated with actual reading processes rather than relying exclusively on self-reported perceptions. Finally, future studies could examine the effectiveness of specific anxiety-reduction interventions. For example, researchers could investigate whether pre-reading schema activation, vocabulary preparation, gradual exposure to reading aloud, collaborative reading, or explicit strategy instruction can reduce reading anxiety while improving comprehension and strategic reading behaviour.

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APPENDIX

READING ANXIETY & PERCEIVED USE OF ONLINE READING STRATEGIES

This instrument is adapted from Milao & Vibulphol (2020), Zoghi (2012), and Amer, et.al., (2010)

SECTION	VARIABLE	CATEGORY	CONSTRUCT	Item/Indicator	Tot
B	READING ANXIETY Milao & Vibulphol (2020) and Zoghi (2012)	TOP-DOWN READING ANXIETY	Background and Cultural Knowledge	3	7
			General Reading Ability	4	
		BOTTOM-UP READING ANXIETY	Vocabulary	5	9
			Grammar	4	
		CLASSROOM READING ANXIETY	Teaching Methods		5

C	READING STRATEGIES		Global	6	18
	(Amer,et.al.,2010)		Problem-Solving	6	
			Support	6	39

SECTION B-READING ANXIETY

TOP-DOWN READING ANXIETY

Background and Cultural Knowledge (BCK)

ITEM	1	2	3	4	5
BCKQ1 I do not feel at ease when the title of the text is unfamiliar to me.					
BCKQ2 It is worrying to me when the ideas expressed in the text are culturally unclear					
BCKQ3 I get upset when I lack the previous knowledge about the ideas expressed in the text.					

General Reading Ability (GRA)

ITEM	1	2	3	4	5
GRAQ1 I worry when I cannot get the gist of the text although no new vocabulary items or grammatical points exist in the text.					
GRAQ2 When I cannot recognize minor ideas (details) of the text, it is worrying to me.					
GRAQ3 I am nervous when I cannot spot the main idea of a paragraph.					
GRAQ4 It bothers me when I cannot express my opinions or feelings about the text.					

BOTTOM-UP READING ANXIETY

Vocabulary(V)

ITEM	1	2	3	4	5
VQ1 It bothers me when I encounter a lot of words whose meanings are unclear					
VQ2I get upset when I cannot figure out the meaning of a word that I feel I have seen before					
VQ3 I get confused when the word that I know has a different meaning in the sentence.					
VQ4 I get upset when I come across idioms that are unfamiliar to me.					
VQ5 I feel worried when the unknown word is difficult to pronounce.					

Grammar(G)

ITEM	1	2	3	4	5
GQ1 I am nervous when a certain sentence is long and has a complex structure					
GQ2 When a certain sentence is grammatically unfamiliar is worrying to me.					
GQ3 I feel upset when the tense of a certain sentence is unclear to me.					
GQ4 I worry when I am unable to recognize different parts of speech such as adjectives, adverbs, or connective words.					

CLASSROOM READING ANXIETY

Teaching Methods (TM)

ITEM	1	2	3	4	5
TMQ1 It bothers me when the instructor calls on me to read out.					

TMQ2 It worries me when the instructor calls on me to translate a piece of an English text into our first language.					
TMQ3 When the instructor asks me reading comprehension questions, it is worrying to me.					
TMQ4 It upsets me when the instructor chooses uninteresting texts to read in class.					

SECTION C-READING STRATEGIES

GLOBAL STRATEGIES

ITEM	1	2	3	4	5
GSQ 1I think about whether the content of the on-line text fits my reading purpose					
GSQ 2When reading on-line, I decide what to read thoroughly and what to ignore					
GSQ3I use context clues to help me better understand what I am reading online					
GSQ4I use typographical features like boldface and italics to identify key Information.					
GSQ5I try to guess what the content of the on-line text is about when I read.					
GSQ6 I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.					

PROBLEM--SOLVING STRATEGIES

ITEM	1	2	3	4	5
PSSQ1 I try to get back on track when I lose concentration					
PSSQ2 I adjust my reading speed according to what I am reading on-line					
PSSQ3 I stop from time to time and think about what I am reading on-line					
PSSQ4 When on-line text becomes difficult, I re-read it to increase my Understanding					
PSSQ5 When I read on-line, I guess the meaning of unknown words or phrases					
PSSQ6 I can distinguish between fact and opinion in on-line texts					

SUPPORT STRATEGIES

ITEM	1	2	3	4	5
SSQ1 I take notes while reading on-line to help me understand what I read					
SSQ2 I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.					
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.					
SSQ4I ask myself questions I like to have answered in the on-line text					
SSQ5 When reading on-line, I translate from English into my native language					
SSQ6 When reading on-line, I think about information in both English and my mother tongue					