

The Effects of Gender, Reading Anxiety and Language Learning Experience on Thai Science-oriented Students' Use of Reading Strategies

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[Abstract] The present study examines the effects of gender, reading anxiety and language learning experiences on the use of reading strategies used by science-oriented undergraduate students. The students are studying in the Northeast of Thailand. The Survey of Reading Strategies (SORS) questionnaire and the Foreign Language Reading Anxiety Scale (FLRAS) were administered to elicit the data from 1,140 students. The results of the study revealed that problem solving strategies were most frequently employed, followed by global and support strategies. In addition, students' reported the use of reading strategies varied significantly in terms of gender, reading anxiety and their prior language learning experience. The present study shows some implications for the teaching and learning of English for science-oriented students in Thailand and other EFL contexts.

[Keywords] reading; reading strategies; reading anxiety

Introduction

"To learn to read is to light a fire; every syllable that is spelled out is a spark", is a famous quote attributed to French novelist, Victor Hugo indicates the merits of reading. The importance of reading is not an easy task to express in words completely but it is experienced by the readers themselves. According to Grabe (2009), we might read in two different settings; formal and non-formal. In non-formal settings, we read different types of texts in which we consciously intend to read or we just seem to pick it up. In formal settings, we engage in reading that is demanded in educational, professional and occupational settings. In this setting, the reading often requires us to synthesize, interpret, evaluate and selectively use information from texts. To language learners, reading is considered one of essential skills that can help expand ones vocabulary knowledge and lead to lifelong learning (Chen & Zhang, 2007). Reading is a necessary skill for both ESL and EFL students. To be equipped with reading skills, students are able to make progress and attain higher development in their academic areas (Anderson, 2003). According to Richards and Renandya (2002), in EFL contexts, reading is considered one of main pedagogical purposes of students for their language learning experience.

However, comprehension problems often happen when students are faced with textbook material (McNamara, 2001; Best, Floyd, & McNamara, 2008). Reading problems come from different sources, such as word decoding, sentence comprehension level and ability to understand the genres of text, lack of the requisite knowledge and lack of appropriate reading strategies (McNamara, 2009). Reading strategies are 'techniques or conscious actions taken to improve understanding and solve difficulties encountered in reading' (Lien, 2011, p. 200). Being a strategic reader assists the reader in comprehending what is read and overcoming ones reading difficulties (Carrell, 1991). Particularly in academic reading, it is important to be a strategic reader who is aware of the goals in reading and able to administer reading strategies effectively as well as to solve comprehension problems (Grabe & Stoller, 2001). Reading strategies benefit those readers who employ them effectively and appropriately; considerable previous research have proven the positive correlation between reading strategy use and reading comprehension (Song, 1999; Darabie, 2000; Al-Nujaidi, 2003; Aegpongpaow, 2008, & Saengpakdeejit, 2009).

In order to help L2 learners read academic texts effectively. EFL teachers need to know what strategies they possess and those they may lack. In addition factors affecting learners' reading strategy use should be taken into consideration. In Thailand, students' use of reading strategies has been investigated by many previous researchers. However, the studies conducted with science-oriented undergraduate

students studying in the Northeast have been under researched in literature so far. The present study was designed to examine the frequency of reading strategies employed by the students to deal with academic reading. In addition the effects of gender, reading anxiety and prior language learning experience on their use of reading strategies are taken into consideration as well.

Related Literature

Previous research works that took gender, reading anxiety and prior language learning experience as factors affecting students' reading strategy use have been reviewed below.

Students' Reading Strategy Use and Gender

Students' gender is considered one of the key factors influencing students' reading strategy use. Through the extensive review of previous research, the results show mixed conclusions which will be shown in detail below. Sheorey and Mokhtari (2001) took student's gender as a factor that might affect reading strategy use among the native speakers of American English and non-native speakers. The results reveal that there was no statistically significant difference in the use of strategies between male and female students.

Another study carried out to examine the effects of students' gender on reading strategy use is Poole's (2005). The participants were Colombian high school students. The findings reveal that Male and female students did not significantly differ in their overall strategy use. The two groups employed problem strategies with high frequency, whereas global and support strategies were used with medium frequency.

However, Martinez (2008) reported the opposite results to the research works mentioned earlier. She investigated how reading strategy awareness employed by female and male ESP university students. The findings indicate that female students employed reading strategies more frequently than their male counterparts, particularly in their use of support strategies. In Cantrell and Carter's studies (2009) gender was taken into consideration as a factor that might affect adolescent's perceptions about strategy use. The findings reveal that female students reported using all types of academic reading strategies to a greater extent than male students.

In the Thai context, gender has been received little attention. One available study was conducted by Saengpakdeejit (2009) revealing that female students generally reported using overall reading strategies more frequently than did their male counterparts. In addition female students reported more frequent use of strategies for comprehending reading texts, and those for enhancing textual comprehension than did their male counterparts.

Students' Reading Strategy Use and Reading Anxiety

Song (2010) investigated the effects of anxiety on Korean ESL learners' reading strategy use and reading comprehension. The findings reveal that anxiety affected learners' reading processing in terms of their strategy use and cognitive interference. Highly anxious students who were occupied with off-task thoughts tended to use more local strategies while less anxious students employed more global strategies and background knowledge strategies.

Ghonsooly and Barghchi (2011) explored the relationship between reading anxiety and learners' use of reading strategies. The findings show that anxious and non-anxious readers make use of very different higher-level strategies; the non-anxious readers were concerned with processing and decipherment of meaning, whereas the anxious readers were preoccupied with identifying problems and passing over them. Lien (2011) investigated EFL learners' reading strategy use in relation to reading anxiety. The findings indicate a negative correlation between reading anxiety and reading strategies. It was also found that EFL learners with low anxiety levels tended to use general reading strategies, such as guessing, while EFL learners with high anxiety levels employed basic support mechanisms, such as translation, to help themselves understand texts.

Students' Reading Strategy Use and Language Learning Experience

There are few studies of students' reading strategy use and their language learning experiences. One research work that was found was conducted by Munsakorn (2012) who took the number of years that students had spent studying English as a way to compare English learning experience with reading strategy use. The results reveal that students with English learning experience of less than 8 years, 8-12 years and more than 12 years did not significantly differ in their strategy use.

Method***Data Collection***

To examine the reading strategy use and level of reading anxiety, the Survey of Reading Strategies (SORS) questionnaire (30 items) invented by Mokhtari and Sheorey (2002) and the Foreign Language Reading Anxiety Scale (FLRAS) (20 items) developed by Saito, Horwitz and Garza (1999) were adapted and translated into Thai to elicit the data. A 4-point rating scale was used in which 'never valued' was scored as 1, 'sometimes valued' was scored as 2, 'often valued' was scored as 3 and 'always or almost always valued' was scored as 4; the term 'valued' refers to the frequency of strategy use and the level of reading anxiety as well. The total raw score of students' reading anxiety level ranged from 20-80. The low-anxiety group ranged from 20-44. The moderate-anxiety group ranged from 45-49. The high-anxiety group ranged from 60-74.

The extreme-anxiety group ranged from 75-80. The reliability estimate based on 1,140 students of SORS and FLARS questionnaire was .93 and .79 respectively which were considerably higher than the acceptable reliability coefficient of .70, the rule of thumb for research purpose (Fraenkel & Wallen, 2000).

Participant

Participants numbered 1,140 Thai science-oriented undergraduate students who have been studying in the Northeast. The students are enrolled in a four year regular program provided by the four types of institutions established under the jurisdiction of the Office of Higher Education Commission (OHEC). The main agency is responsible for the education at the tertiary level in Thailand. They are public/autonomous public university, private college/ university, Rajabhat University and Rajamangala University of Technology.

Data Analysis

Three different levels of data analysis were carried out, consisting of 1) overall strategy use 2) use of strategies by the three main categories; global strategies (GLOB), support strategies (SUP) and problem solving strategies (PROB) and 3) use of individual strategies. The mean frequency of students' strategy use was categorized into three groups: 'high', 'medium' and 'low' use. The mean frequency score valued from 1.00 to 1.99 is determined as 'low use', from 2.00 to 2.99 as 'medium use' and from 3.00 to 4.00 as 'high use'. ANOVA was used to test the significance among the mean scores. In comparing the mean scores of students with different levels of reading anxiety, Scheffe's test was performed post hoc to determine which pair was significantly different.

Results

Results obtained from 1,140 Thai science-oriented students through the SORS and FLARS questionnaires: *Overall Strategy Use*

Table 1

Students' Overall Reading Strategy Use

Overall Strategy Use	\bar{x}	S.D	Frequency of Use
Overall Strategy Use	2.74	.43	Medium Use

Table 1 reveals that as a whole, science-oriented students reported the medium frequency of use with the mean frequency score of 2.74.

Use of Global, Support and Problem Strategies

Table 2

Frequency of Students' Reading Strategy Use in GLOB, SUP and PROB Categories

Strategy Category	\bar{x}	S.D.	Frequency of Use
1) GLOB	2.72	.45	Medium use
2) SUP	2.71	.48	Medium use
3) PROB	2.79	.52	Medium use

Table 2 above demonstrates that the use of reading strategies in the three main categories was at the medium frequency. PROB category strategies were employed most frequently, followed by GLOB and SUP strategies. The top and bottom five individual strategies are present in Tables 3,4 respectively.

Use of Individual Strategies

Table 3

Students' Use of Individual Strategies (the Top Five Strategies)

Individual Strategy Use	\bar{x}	S.D.	Frequency of Use
GLOB 9. I use typographical features like bold face and italics to identify key information.	3.03	.76	High Use
SUP 4. I use reference materials (e.g., a dictionary) to help me understand what I read.	2.98	.79	Medium Use
GLOB 12. I try to guess what the content of the text is about when I read.	2.96	.74	Medium Use
SUP 3. I underline or circle information in the text to help me remember it.	2.96	.79	Medium Use
GLOB 7. I use tables, figures, and pictures in text to increase my understanding.	2.91	.72	Medium Use

Table 4

Students' Use of Individual Strategies (the Bottom Five Strategies)

Individual Strategy Use	\bar{x}	S.D.	Frequency of Use
SUP 1. I take notes while reading to help me understand what I read.	2.60	.76	Medium Use
GLOB 4. I think about whether the content of the text fits my reading purpose.	2.57	.69	Medium Use
GLOB 1. I have a purpose in mind when I read.	2.55	.69	Medium Use
GLOB 5. I review the text first by noting its characteristics like length and organization.	2.41	.76	Medium Use
SUP 7. I ask myself questions like to have answered in the text.	2.39	.75	Medium Use

Use of Reading Strategies according to Gender

Table 5

Students' Overall Reported Reading Strategy Use according to Gender

Female (757)		Male (383)		Sig. Level	Comments
\bar{x}	S.D.	\bar{x}	S.D.		
2.76	.42	2.69	.44	P<.01	Female>Male

Table 5 reveals that as a whole, students' reading strategy use varied significantly according to gender. The mean frequency scores of female and male students were 2.76 and 2.69 respectively. Table 6 below illustrates variations in frequency of students' reading strategy use by the three main categories according to their gender.

Table 6

Students' Reading Strategy Use by the GLOB, SUP and PROB Categories according to Gender

Strategy Category	Female (757)		Male (383)		Sig. Level	Comments
	\bar{x}	S.D.	\bar{x}	S.D.		
GLOB	2.73	.44	2.70	.47	P>.05	N.S.
SUP	2.76	.47	2.61	.50	P<.001	Female>Male
PROB	2.81	.51	2.75	.52	P>.05	N.S.

Table 6 reveals that significances were found in the mean frequency of students' reading strategy use in the SUP category. Female students reported employing reading strategies at significantly greater levels than their male counterparts, with mean frequency score of 2.76 and 2.61 respectively.

Use of Reading Strategies according to Reading Anxiety

Table 7

Students' Overall Reading Strategy Use according to Reading Anxiety

High (n=189)		Moderate (n=801)		Low (n=150)		Sig. Level	Comments
\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.		
2.82	.49	2.71	.39	2.75	.52	P<.05	High>Moderate

Table 7 reveals that as a whole, students' reading strategy use varied significantly according to the level of reading anxiety. The mean frequency scores of the high, moderate and low-anxiety groups were 2.82, 2.71 and 2.75 respectively. The results of *Scheffe's* test reveal that the high anxiety group employed reading strategy at significantly greater levels than the moderate-anxiety group.

Table 8

Students' Reading Strategy Use by the GROB, SUP and PROB Categories according to Level of Reading Anxiety

Strategy Category	High (n=189)		Moderate (n=801)		Low (n=150)		Sig. Level	Comments Pattern of Variation
	\bar{x}	S.D.	\bar{x}	S.D.	\bar{x}	S.D.		
1) GLOB	2.76	.50	2.70	.41	2.77	.54	P>.05	N.S.
2) SUP	2.83	.55	2.69	.45	2.68	.56	P<.01	High>Moderate High>Low
3) PROB	2.89	.60	2.76	.48	2.80	.58	P<.01	High>Moderate

Note: N.S. = Non-Significance

Table 8 reveals the significance in the mean frequency of students' reading strategy use in the SUP and PROB categories. In the SUP category, the results of Scheffe's test reveal that the high-anxiety group employed reading strategies at significantly greater levels than the moderate and low-anxiety groups. In the PROB category, the test shows that the high-anxiety group employed reading strategy at significantly greater levels than the moderate -anxiety group.

Use of Reading Strategies according to Language Learning Experience

Table 9

Students' Overall Strategy Use according to Language Learning Experience

Non-Limited (614)		Limited (526)		Sig. Level	Comments Pattern of Variation
\bar{x}	S.D.	\bar{x}	S.D.		
2.81	.40	2.64	.44	P<.001	Non -Limited>Limited

Note: Non-Limited = Non-limited to formal classroom instructions; Limited = Limited to formal classrooms instructions

Table 9 demonstrates that as a whole students' reading strategy use varied significantly according to prior language learning experience. The mean frequency scores of participants with non-limited and limited to formal classroom instructions were 2.81 and 2.64 respectively. Table 10 illustrates the students' use of reading strategies by the three main categories according to their language learning experience.

Table 10

Students' Reading Strategy Use by the GROB, SUP and PROB Categories according to Language Learning Experience

Strategy Category	Non-Limited (614)		Limited (526)		Sig. Level	Comments Pattern of Variation
	\bar{x}	S.D.	\bar{x}	S.D.		
1.GLOB	2.79	.42	2.64	.46	P<.001	Non-Limited> Limited
2.SUP	2.78	.46	2.63	.50	P<.001	Non-Limited> Limited
3.PROB	2.88	.48	2.68	.53	P<.001	Non-Limited> Limited

Table 10 shows the differences that were found in students' reading strategy use by the three categories. Students whose language learning experiences were non-limited employed reading strategies significantly greater than those whose language learning experiences were limited to formal classroom instructions in the GLOB, SUP and PROB categories.

Discussions and Conclusions

Frequency of Strategy Use

Results reveal that in overall, science-students reported medium frequency of reading strategy use. The students employed problem solving strategies most frequently, followed by global and support strategies respectively. This is consistent with Mo'nos (2005), Wu (2005) and Lien (2011) who also found that EFL students preferred to use problem solving strategies the most and then global and support strategies the least. This implies that EFL students often encounter reading problems, and thus employ a variety of problem solving strategies to cope with the problems. When looking at the individual strategy level, the top five strategies indicate that text features, such as bold face, italics as well as tables, figures, and pictures in texts seem to work well with science-oriented students in increasing their understanding, and as a result they make use of these strategies to supplement their comprehension while reading academic texts. In addition, it is noticeable that the students rely mostly on a bottom-up reading process which involves decoding written symbols or a given written text to arrive at the meaning (Nunan, 1999). According to Hu and Nation (2000), if 95%-98% of running words in a text are familiar to the learners, there is no burden upon them to understand the text.

The science-oriented students seem to consider the text from the smallest unit such as words and symbols that appear in the texts to help grasp the meaning. This reflects the possibility that their vocabulary knowledge is insufficient. The bottom five strategies such as *'I think about whether the content of the text fits my reading purpose'*, *'I have a purpose in mind when I read'* indicate a top-down reading process and in which students were likely to pay little attention. According to Oxford (2011), top-down strategies are beyond the immediate data, they are dealing with broad conceptualizing. Top down process assumes that the act of reading is predominantly directed by the reader's goals and expectations (Grabe and Stoller 2007). The reasons why the students were less likely to employ top-down strategies might be attributable to either their lack of background knowledge regarding the texts and or lack of appropriate strategy instructions.

Use of Reading Strategies by Gender

The findings demonstrate that female students employed reading strategies significantly greater than their male counterparts in overall strategy use and in the support category. According to Ellis (1994), students' gender is one of the key factors influencing student strategy use. In addition, female and male students have different ways of dealing with a foreign or second language (Intaraprasert, 2000). The results of the present investigation are consistent with Poole (2005), Sheorey and Baboczky (2008), Poole (2009) and Madhumathi and Arijit (2012) in that female students employed certain reading strategies more frequently than their female counterparts. Sample strategies in the support category are *'I use reference materials (e.g., a dictionary) to help me understand what I read'*, *'When reading, I translate from English into my native language'*, *'I go back and forth in the text to find relationship among ideas in it'* and *'When text becomes difficult, I read aloud to help me understand what I read'*. According to brain-based gender research (Hodgins, n.d.), male seems to be unable to handle the complex vocabulary and textual material as easily as female counterparts as to the male students "the words are just the words".

This might be the reason why male students tended to employ support strategies less frequently than the female students. The results are consistent to Ehrman and Oxford (1989) who discovered significant gender differences in favor of woman in terms of general strategy studies, strategies for language usage, metacognitive strategies. Then females tended to be more active strategy users than their male counterparts (Oxford 1993). In relation to the relationship between students' gender and their learning style preference, female tended to use seek personal relevance or individual connection with

material being learn or read while male has preference for rational evaluation and logic (Lie, Angelique & Cheone, 2004; Choudhary, Dullo & Tandon, 2011). This could be a possible factor for a greater use of supporting strategies by female students.

Use of Reading Strategies by Reading Anxiety

The level of reading anxiety in the present investigation was classified into three sections: low, moderate, high and severe anxiety. A majority of students were assigned into the moderate-anxiety group while the other students were assigned into either the high or low-anxiety groups. No participants were assigned into the extreme-anxiety group as their scores did not meet this criterion. The results reveal that the high and moderate-anxiety groups varied significantly according to their reading strategy use, with the high-anxiety group employing reading strategies more frequently than the moderate-anxiety group. When taking a closer look at the category level, the high-anxiety group employed support strategies at significantly greater levels than the moderate and low-anxiety groups. In addition, the high-anxiety group employed problem solving strategies significantly more than the moderate-anxiety group. The results of the present study are consistent with Lien's (2011) in that the high-anxiety group employed support strategies more frequently than the other groups.

According to Lien, (2011) the high-anxiety readers usually are less confident in enjoying the content of reading texts. They might just pay attention to know the meanings of unfamiliar words and sentences to ensure their understanding of the texts in order to ease their anxiety and let them feel secure while reading. In the present study, apart from paying attention to the meanings of unfamiliar words and phrases, the high anxiety group seems to worry that they might forget the content they have read, as can be seen when 'I underline or circle information in the text to help me remember it' was among the top three strategies most frequently employed by this group.

According to Saito et al (1999), foreign language reading anxiety results from encountering unfamiliar scripts and unfamiliar cultural materials. In the present study, the high-anxiety group might experience anxiety when they couldn't decipher unfamiliar scripts, felt uncertain of what they understood, and questioned whether they could recall the reading contents. This implies that members of the high-anxiety group may also be low proficient learners because they are busy with bottom-up decoding and paying attention to every word. Other empirical research works support this inverse correlation between reading anxiety and reading proficiency (Sellers 2000; Hou, 2009; Tsai & Li, 2012).

The high-anxiety group also employed problem solving strategies significantly greater than the moderate-anxiety group. However, the high-anxiety group and the low-anxiety group did not differ significantly in employing problem solving strategies. When taking a closer look at the top three problem solving strategies reported by the high and low-anxiety groups, it indicates that the two groups faced different problems when reading academic texts. The high anxiety-group tended to face the problems with unknown words or phrases and the uncertainty of their comprehension. Whereas the lack of concentration while reading was identified as the main problem faced by the moderate and low-anxiety groups. It can be concluded that the high, moderate and low-anxiety groups are similar in that they face the problems while reading academic materials, however; their problems seem to be different when reading academic texts. In the present study, an inverse correlation between reading anxiety and self-rated English proficiency was also found.

The high-anxiety group tended to rate themselves as low English proficient learners, while the low-anxiety group were likely to rate themselves as high English proficient learners. Assuming that language anxiety is a psychological construct which mostly stems from the learner's own 'self-perception' (Schwartz, 1972 cited in Scovel, 1991), this explains why the higher the level of reading anxiety the students have, the lower in English proficiency they tended to rate themselves.

Use of Reading Strategies by Language Learning Experience

Language learning experience in the present study was classified into terms of whether their prior language learning experiences were either limited or non-limited to formal classroom instructions. The results reveal that student with non-limited experiences employed reading strategies significantly more

than those whose language learning experiences were limited to formal classroom instructions. This was true for overall strategy use and in all three categories. This indicates that language learning experience seems to play an important role for developing a learner as a strategic reader. Students with non-limited experiences are considered more skillful readers than those with limited experiences. Many researchers argue that strategic reading and skillful reading differ; however, they are not clearly distinguished (Koda, 2005). Paris et al (1991) states that skills are used subconsciously, while strategies are used deliberately. They point out further that developing skills can be construed as a strategy whenever it was applied in conscious activation because strategies are 'skills under consideration' (p.611).

Another reason for the greater use of strategies by students whose language learning experiences were non-limited to formal classroom instructions can be the result of their ability to transfer the strategies in L1 to L2. According to Swan (2008) reading strategies are transferable. The readers are able to transfer their L1 strategies to L2 without being trained when their background knowledge is high. This may imply that the background knowledge of students with non-limited experiences may be high enough to carry some strategies from L1 to L2. More explanation for the greater use of reading strategies by students with non-limited experiences might be attributed to their characteristics as autonomous learners. 'Autonomy' and 'self-regulation' are often compared under the same label (Dornyei, 2001). Outside the classroom, the role of teacher fades in prominence. Therefore, it is up to the students to take responsibility for their own learning. Non-limited students are considered more autonomous than those with limited experiences.

According to Koda (2005), three core elements of readings strategies are deliberate, goal/problem-oriented and reader-initiated/ controlled. Students who are autonomous or self-regulated tended to be intentional, goal-directed, effortful and voluntary (Boekaerts et al, 2006). For a student who learns outside a classroom setting, the qualities of autonomous or self-regulated learners might be the explanatory factor for their greater frequency of use and the greater variety of strategies that are used.

Implications for the Teaching and Learning of English for Science-oriented Students in Thailand and other EFL Contexts

The research findings bear some implications for the teaching and learning of English as presented follows:

1. According to the research findings, science-oriented students in the present study prefer to utilize text features, such as bold face, italics to identify the key information as well as tables, figures, and pictures in texts to increase their understanding while reading academic texts. It is recommended that language teachers provide knowledge related to text features such as boldface, italic, symbol so that students can employ them for the utmost use to increase their understanding of assigned informational texts. In addition, knowledge related to a visual representation of the text such as graphs, charts, maps should be supplemented in the reading courses.

2. The important point which should be noted here is that the students seem to have insufficient vocabulary knowledge to read academic materials as they tended to pay a great deal of attention to the small units, such as words or phrases in order to grasp the meaning. It is recommended that apart from the high frequency words, and academic words be supplemented in the reading courses because a lack of familiarity with more than 5% of lexical words in the text can cause comprehension problems (Sutarsyh, Nation & Kennedy, 1994).

3. One of the important findings is that students tended to pay very little attention to top-down strategies such as 'I have a purpose in mind when I read, 'I ask myself questions like to have answered in the text'. The combination of both bottom-up and top-down strategies should be introduced to students, depending on the text genres as well as students' background knowledge.

4. Based on the findings, female students employed support strategies at significantly greater levels than the male students. This calls upon teachers to provide more support for male students to acquire the strategies in this category.

5. As shown in the research findings, high anxiety group seems to face the problem with unknown words or phrases and the uncertainty of their comprehension. The lack of concentration while reading was also found to be of a significant problem faced by the students in the moderate and low-anxiety groups. Language teachers should play important role in helping students to identify their reading problems and suggesting the ways to solve the problems.

6. As can be seen from the findings, students whose prior language learning experiences were non-limited to formal classroom instructions seem to be more strategic readers than those whose language learning experiences were limited. One of the effective ways to encourage students to become strategic readers is to promote to them the merits of autonomous or self-directed learning. Being autonomous or self-directed learners can contribute to their development as strategic readers who can apply a variety of strategies to deal with different text genres appropriately.

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