The Impact of Reading Strategy Instruction on Reading Comprehension, Strategy Use, Motivation, and Self-Efficacy in Chinese University EFL Students

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Abstract
This study investigated the effect of explicit reading strategy instruction on reading comprehension, reading strategy use, reading motivation, and reading self-efficacy in Chinese university EFL learners. A total of 117 first-year university students were randomly assigned to either the experimental group or the control group. Students in the experimental group received a 16-week reading strategy training embedded into their English reading classes. The data were collected through five major instruments: a reading comprehension test, a reading strategy questionnaire, a reading motivation questionnaire, a reading self-efficacy questionnaire, and a semi-structured interview. Independent-samples t-test results showed that there was a significant difference in reading comprehension between the experimental group and the control group after the reading strategy instruction, suggesting that students who received reading strategy instruction made significant improvement in their reading comprehension. ANCOVA analysis of pre- and post-questionnaires results showed that there were no significant changes in reading strategy use, reading motivation, and reading self-efficacy at the end of the strategy instruction. Furthermore, interview data showed that experimental group students held very positive attitudes toward the reading strategy training. Interview results further suggested that lack of significant changes in strategy use, motivation, and self-efficacy at the end of strategy training could be explained by a dynamic interplay of individual and contextual factors.

Keywords
reading strategy instruction, reading comprehension, reading strategy, reading motivation, reading self-efficacy, Chinese EFL students

Reading is regarded as an indispensable skill to master a second language and achieve academic success (Anderson, 2003). One way of teaching reading is through strategy-based instruction. In the past few years, research has been conducted to scrutinize the effects of reading strategy instruction, with most examining impacts on reading comprehension and reading strategy use (e.g., Aghaie & Zhang, 2012; Akkakoson, 2013; Dabarera et al., 2014; Zenotz, 2012; Zhang, 2008), and only a few examining effects on reading motivation (e.g., Wang, 2009) and reading self-efficacy (e.g., Tavakoli & Koosha, 2016). Furthermore, the majority of these studies were carried out in the Western society or “in contexts where the learners were heterogeneous in ethnicity and they had to use English as the medium for communication among themselves” (Zhang, 2008, p. 91). Relatively little is known about the effects of English reading strategy instruction with a homogenous group of students studying in the mainland Chinese EFL learning context. The current study, therefore, aims to bridge the research gap by conducting a reading strategy instruction study with first-year Chinese university EFL students and examining whether explicit reading strategy instruction could help Chinese EFL learners to improve their reading comprehension, reading strategy use, reading motivation, and reading self-efficacy. Our orientation toward strategic reading instruction is informed by the constructivist framework (Vygotsky, 1978). Elliott et al. (2000, p. 256) define constructivism as “an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner.” According to Tam (2000), constructivist learning environments have the following four features: (1) knowledge and

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information are shared between learners and teachers; (2) learners and teachers share authority; (3) teachers play roles of just a facilitator; and (4) learning groups are usually small but they consist of different kinds of members. In the reading strategy instruction based on constructivist pedagogy, the teacher has dialogue with students and assist them in constructing their understanding through active learning. This active learning process facilitates systematic development of learners’ reading strategy use and provides a better learning effect than the pedagogy which just cultivates learners’ decoding or automaticity knowledge (Zhang, 2008). Empirical research studies have shown that reading strategy instruction based on constructivist pedagogy promotes learners’ reading comprehension and reading strategy use (e.g., Bedir, 1998, 2002; Singhal, 1999; Wang, 2009; Zhang, 2008), and reading motivation (e.g., Wang, 2009).

Researchers also agree that reading strategy instruction improves reading self-efficacy (e.g., Tavakoli & Koosh, 2016). Building on these studies, the present study set out to investigate the extent to which reading strategy instruction impacts on Chinese university EFL students’ reading comprehension, reading strategy use, reading motivation, and reading self-efficacy. In the following sections, we briefly review related second or foreign language strategic reading instruction research before we report on the study itself.

**Literature Review**

**Reading Strategy Instruction, Reading Comprehension, and Reading Strategy Use**

Second language (L2) reading strategy instruction is usually referred to as a teaching method that incorporates strategy instruction into the regular L2 reading courses based on learners’ needs (Cohen, 2000). Studies that explored the effect of reading strategy instruction on L2 reading comprehension and reading strategy use revealed a generally positive effect, which was in line with a group of meta-analyses on reading strategy instruction (e.g., Edmonds et al., 2009; Okkinga et al., 2018).

For instance, Salataci and Akyel (2002) conducted 4-week reading strategy instruction on eight Turkish college students. By analyzing the data through observation, think-aloud, questionnaire, interview as well as PET reading subtest, they found that reading strategy instruction was positively related with English reading comprehension and reading strategy use. Nevertheless, Salataci and Akyel’s intervention only lasted 4 weeks. It is unknown whether such a short duration of reading strategy instruction would also bring about positive effects in other research contexts. Adopting a constructivist pedagogy, Zhang (2008) conducted reading strategy instruction in Singapore by using different instructing approaches to examine the possible impacts of reading intervention on English reading comprehension of Chinese EFL students studying in Singapore. The experimental group in Zhang’s (2008) study received a 2-month reading strategy instruction known as reciprocal teaching whereas the instruction the control group received was teacher-centered. In other words, no strategy instruction was provided to the control group. The participants’ reading comprehension was measured by the reading test particularly prepared for the study. After the intervention, the study revealed that reading strategy instruction could boost reading strategy use and reading comprehension for the experimental group. However, no such association was found within the control group. Also noteworthy is Aghaie and Zhang’s (2012) study that reported on a 4-month explicit reading strategy instruction to Iranian EFL students based on the Cognitive Academic Language Learning Approach (CALLA) model (Chamot, 2005). The experimental group in their study was taught reading strategy use in line with the six steps of the CALLA: (1) preparation, (2) presentation, (3) practice, (4) self-evaluation, (5) expansion, and (6) assessment. Aghaie and Zhang’s study showed that reading strategy instruction could improve the reading scores and reading strategy use significantly for the experimental group. Moreover, Dabarera et al. (2014) conducted a metacognitive reading strategy instruction among 67 secondary school students in Singapore. In the training process, the experimental group received metacognitive strategy instruction based on reciprocal teaching method. Students in this experimental group were taught 5 metacognitive strategies in each training session and all the 30 strategies were covered at least once, while the control group did not receive explicit strategy training and was instructed through the teacher-centered approach. Results showed that at the end of the 5-week reading strategy instruction, there were significant differences between the experimental group and control group in the metacognitive awareness of reading strategies and reading comprehension. Quantitative and qualitative data further indicated that the multiple-strategy training was effective for improving the experimental group’s metacognitive awareness and reading comprehension. Nevertheless, this study only focused on metacognitive strategies and did not include training of cognitive strategies in the study participants. Encouraging as Zhang and his associates’ findings were, their results may not apply in the Chinese EFL learning context as their studies were conducted in a pedagogical environment where English is used as the medium of instruction in schools and daily communication in the society.

In another study, Akkakoson (2013) conducted an L2 reading strategy instruction study in Thailand in which the experimental group students received the reading strategy instruction and the control group took the traditional reading courses. Participants in both the experimental and control group in Akkakoson’s study were divided into three sub-groups, that is, high proficiency level, moderate proficiency level, and low proficiency level, which was based on results of a pre-English reading test. The experimental group students were asked to provide weekly portfolio entries that consisted of an English text and the retrospective information concerning use
of reading strategies. Akkakoson’s research results showed that the experimental group outperformed the control group in the post-English reading test. Moreover, analysis of the portfolio by 30 experimental group students from 3 reading proficiency levels (i.e., high, moderate, and low) indicated that high proficiency level students used reading strategies more often and effectively than low proficiency level students. A weakness of Akkakoson’s study, however, is that although there was use of pre-reading strategy questionnaire which suggested no significant differences between the experimental and control group in the reported patterns of reading strategy use, the study did not administer a post-reading strategy questionnaire to compare the differences in reading strategy use between the experimental and control group students. To compare good readers and underachieving readers’ reading strategy use after a 16-week reading strategy and extensive reading intervention in Taiwan, Shih and Reynolds (2018b) found that good readers generally adopted more global reading strategies than underachieving readers. Besides, good readers also used a wide range of reading strategies and combined reading strategies while underachieving readers relied on using a single strategy. In another study of the effects of reading strategy intervention, Shih et al. (2018) found that the integrated reading strategy intervention with extensive reading could promote 10th-grade students’ English reading comprehension and improve their use of reading strategies.

A number of studies also revealed that reading strategy instruction had no significant impact on students’ reading comprehension. For example, Steinagel (2005) conducted a 5-week reading strategy instruction in 214 missionaries who were Spanish beginning level learners in America. The results of the Spanish reading comprehension test the missionaries took at the end of the strategy instruction showed that there was no significant difference between the reading strategy instruction group and non-reading strategy instruction group. Note that the strategy training the missionaries participated in lasted only 5 weeks, and these participants were also not given a clear explanation of the training procedures. Steinagel thus concluded that effectiveness of reading strategy instruction may be affected by factors like student responsibility, the explicitness of training procedures, the length of time for the training, and strategy transfer. Similarly, Soleimani and Hajghani (2013) found that the reading strategy instruction could not improve learners’ reading comprehension, although the paired-samples t-test showed that within the experimental group, significant changes were observed. Soleimani and Hajghani’s interview data results, however, suggested that all of the students believed the reading strategy training was useful and the majority of them felt they made progress in reading. These results led Soleimani and Hajghani to argue for a mix-method design to be used in an intervention study so as to reveal a complete picture of the intervention effects. Overall, these findings concerning the impact of reading strategy instruction on reading comprehension somewhat resonate with Jaekel’s (2020) recent finding that suggests a lack of a positive impact of learning strategy use on language proficiency (of which reading comprehension is an important part). One interpretation of this lack of positive effect of strategies on language proficiency in the literature is that certain types of learners might have developed different strategies after a long period of time, and tend to use them less consciously, thus not reporting these strategies (Hong-Nam & Leavell, 2006; Jaekel, 2020). It might also be that reading comprehension may depend on students’ linguistic knowledge such as vocabulary and grammar to a greater extent than on reading strategies (Choi & Zhang, 2021).

In addition, there were studies that suggested the reading strategy instruction had no impact on reading strategy use, though it promoted reading comprehension. For example, situated in a technology-enhanced learning context, Dreyer and Nel (2003) examined the effect of reading strategy instruction on 131 South African freshman students. After the training, although the experimental group achieved significantly higher scores on reading comprehension tests than the control group, the experimental group reported using only certain reading strategies significantly more frequently than students in the control group. Dreyer and Nel concluded that the reading strategy instruction might not be effective for each single reading strategy. Similarly, Zenotz (2012) conducted an online reading strategy instruction in Spain to explore the possible changes of online reading strategy use and reading comprehension. Besides completing an online survey of reading strategies and two reading comprehension tests, participants in Zenotz’s study also were asked to provide progressive strategy diary after each training session. The results showed that online reading strategy instruction could promote the experimental group’s online reading comprehension. However, both the quantitative and qualitative data results showed that the online strategy training had no effect on the quantity of reading strategy used or the type of reading strategy used by the experimental group participants. Findings of Dreyer and Nel’s and Zenotz’s studies thus cast doubt on the effectiveness of reading strategy instruction in improving students’ strategy use. It needs to be pointed out, however, that these two research studies were set in the online reading context, which are somewhat different from the traditional paper-based reading context.

**Reading Strategy Instruction, Reading Comprehension, and Reading Motivation**

Reading motivation was defined as “those feelings that cause a reader to approach or avoid a reading situation” (Readence et al., 1989, p. 102). One school of thought argues that reading strategy instruction can improve learners’ motivation for reading. Nevertheless, empirical findings have so far yielded
mixed results. For example, based on the constructivist framework, Wang’s (2009) 10-week metacognitive reading strategy instruction (MRSI) with 118 high school students in Taiwan revealed that intensive reading strategy instruction could positively influence participants’ reading comprehension and reading motivation, including intrinsic reading motivation, extrinsic reading motivation, importance of reading, and reading efficacy. Similarly, by recruiting 101 tenth-grade students in a junior college in Taiwan to participate in one academic year’s English reading intervention program, Shih and Reynolds (2018a) found the goal setting integrated reading strategy intervention was more effective in promoting students’ reading comprehension and learner motivation than the traditional teaching methods. In the L1 reading context, Guthrie et al. (1996), Guthrie et al. (2000) had confirmed that the concept-oriented reading instruction (CORI) could boost participants’ intrinsic motivation. Shinozuka et al. (2017) study of a 3-month reading strategy instruction with 32 Japanese freshman students, however, demonstrated no significant changes in students’ motivation after the reading strategy instruction. In Shinozuka et al.’s study, a modified version of reading motivation questionnaire (Narita, 1998) adapted from Gardner and Lambert’s (1972) Motivation Questionnaires Battery was used to measure learners’ motivation before and after the reading strategy instruction. Among the six motivational factors investigated in their study, four motivational factors (i.e., “To use English as a tool for future career,” “To learn an academic subject in English,” “To obtain cultural knowledge,” and “To communicate with other people”) witnessed a decrease, while the remaining two motivational factors (i.e., “To meet the expectation of parents” and “To fulfill graduation requirement”) witnessed a slight increase. Nevertheless, Shinozuka et al.’s study showed significant positive changes in learners’ reading comprehension. More empirical research is thus needed to investigate the impact of second language reading strategy instruction on students’ reading motivation.

**Reading Strategy Instruction, Reading Comprehension, and Reading Self-efficacy**

Bandura (1986) defines self-efficacy as “people’s judgement of their capabilities to organize and execute courses of action required to attain designated types of performance” (p. 391). In the literature of reading research, reading self-efficacy is often viewed as “learners’ perceptions of their reading abilities to perform various reading tasks” (Li & Wang, 2010, p. 146). Relatively few studies have been conducted to explore the effects of reading strategy instruction on learners’ reading self-efficacy. The few currently available studies have been conducted in the Western society and yielded mixed results. For example, Tavakoli and Koosha (2016) carried out a 12-week metacognitive strategy instruction in line with CALLA model (Chamot & O’Malley, 1994) and found the intervention could boost their study participants’ reading self-efficacy and reading comprehension significantly. On the other hand, Antoniou and Souvignier (2007) found the reading strategy instruction could not enhance the reading self-efficacy and reading comprehension of German students with learning disability shortly after the intervention although learners reported significant gains in reading self-efficacy and reading comprehension in the delayed test. More empirical research is therefore needed to examine the intervention effects on reading self-efficacy.

In summary, while there is an increasingly large body of reading strategy instruction research, little is known about how Chinese EFL learners respond to strategic reading instruction in the Chinese learning context. Meanwhile, there is also concern in the literature that Chinese students may resist learner-centered teaching methodology as their culture links with Confucian learning tradition, where the instructors are highly respected to conduct teaching activities (Zhang, 2008). Against this backdrop, this study aims at examining how reading strategy instruction in the Chinese university EFL context impacts on EFL learners’ English reading comprehension and strategy use, English reading motivation, and English reading self-efficacy. Specifically, the present study set out to examine the following research questions:

1. Does explicit reading strategy instruction have an impact on Chinese university EFL learners’ reading comprehension?
2. Does explicit reading strategy instruction have an impact on Chinese university EFL learners’ reading strategy use?
3. Does explicit reading strategy instruction have an impact on Chinese university EFL learners’ reading motivation and reading self-efficacy?

**This Study**

**Participants**

This study which adopted a mixed methods quasi-experimental design (Creswell & Creswell, 2017) involved first-year students in a university in southern China. At the time of this study, all first-year students were placed into 28 classes according to their English subject test results in College Entrance Examination. Four classes of these students (N=117) majoring in Hotel Management, International Trade, Chinese and Accounting were recruited to participate in the present study. The age of these study participants ranged from 17 to 21 (M=18.22, SD=0.70). There were 26 males and 91 females. The four chosen classes had similar proportion of male and female students. Thus, gender factors would not likely affect the results of reading strategy instruction. Two of these four participating classes were randomly assigned to be the experimental group, while the other two classes were randomly assigned to be the control group.
Each of the two teachers involved in teaching these four classes had more than 10 years university English teaching experience, and each was teaching one class in the experimental group and one class in the control group at the time of this study.

**Instruments**

The reading strategy questionnaire. The reading strategy questionnaire contains 30 items. The first 15 items in our reading strategy questionnaire were metacognitive strategy items adapted from Hong-Nam and Page's (2014) questionnaire measuring Korean EFL learner’s reading strategy use and Aghaie and Zhang's (2012) questionnaire measuring EFL students’ reading strategy use in Iran. The last 15 items in this questionnaire were cognitive strategy items. Eleven of these cognitive strategy items were adapted from Aghaie and Zhang’s (2012) questionnaire and Singhal’s (1999) reading strategy questionnaire. Informed by Chamot and O’Malley’s (1994) theoretical framework, we also created four cognitive strategy items.

Before conducting EFA, Bartlett’s (1954) test of sphericity was explored to investigate the factoriality of the data, and the Kaiser-Meyer-Olkin (KMO) test (Kaiser, 1958) was performed to measure the sampling adequacy. For the metacognitive strategy questionnaire, results revealed a significant test statistic for Bartlett’s test of sphericity with the chi-square value of 497.31 (p < .001), and a KMO value was 0.78, exceeding the minimum adequacy value of 0.50 (Tabachnick & Fidell, 2007). Following Aghaie and Zhang (2012) and considering exploratory factor conventions (i.e., items were accepted as belonging to their intended factor when their loading was >.40, and factors had to have at least three items which were conceptually aligned), exploratory factor analysis (EFA) of the 15-item metacognitive strategy part of the reading strategy questionnaire in the present study resulted in a 3-factor metacognitive strategy structure with 10 metacognitive strategy items, accounting for 49.76% of the total variance: (1) Monitoring (four items, e.g., “While I read, I periodically check whether the material is making sense to me”); (2) Planning (three items, e.g., “I decide in advance what my reading purpose is, and then I read with that goal in mind”); (3) Self-Management (three items, e.g., “I use typographical features like bold face and italics to identify key information”). The Cronbach's alpha coefficients for the three factors were .643 for “Monitoring,” .683 for “Planning,” and .699 for “Self-Management,” respectively. The correlations among three metacognitive strategy factors ranged from .48 to .53, indicating medium-to-large correlations.

As for the cognitive reading strategy questionnaire, the KMO value was 0.82, exceeding the threshold value of 0.50, and the Bartlett’s Test of Sphericity revealed a significant chi-square value of 552.63 (p < .001). The EFA of the 15-item cognitive strategy part of the reading strategy questionnaire yielded a 3-factor cognitive strategy structure with 10 cognitive strategy items, accounting for 52.74% of the total variance: (1) Identifying Important Information (three items, e.g., “I can identify the subject, verb, object in a long sentence”); (2) Elaboration of Prior Knowledge (four items, e.g., “Before I read, I think of what I already know about the topic”); (3) Inferring Meaning (three items, e.g., “I use information in the story to help me determine the overall meaning of a text”). The Cronbach’s alpha coefficients for the three factors were .757 for “Identifying Important Information,” .762 for “Elaboration of Prior Knowledge,” and .693 for “Inferring Meaning,” respectively. The correlations among three cognitive strategy factors ranged from .48 to .51, suggesting medium-to-large correlation. The overall Cronbach’s alpha reliability for the reading strategy questionnaire was .901 for the pre-test and .889 for the post-test.

The reading self-efficacy questionnaire. This questionnaire contains 14 items adapted from Li and Wang’s (2010) questionnaire measuring Japanese EFL students’ reading self-efficacy. Before conducting EFA for reading self-efficacy questionnaire, the KMO test and Bartlett’s Test of Sphericity were also checked. The KMO value was 0.92, exceeding the acceptable limit of 0.50 and Bartlett’s Test of Sphericity revealed a significant chi-square value of 1,480.08 (p < .001). The EFA of the reading self-efficacy questionnaire data resulted in a 2-factor reading self-efficacy structure with 14 items, accounting for 67.25% of the total variance: (1) Extensive Reading Self-efficacy (seven items, e.g., “Can you
read and understand an English tourist brochure introducing western countries?”); (2) Classroom-based Reading Self-efficacy (seven items, e.g., “Can you read and understand new lessons in your comprehensive English coursebook?”).

The Cronbach’s alpha coefficients for the two factors were .913 for “Extensive Reading Self-efficacy” and .912 for “Classroom-based Reading Self-efficacy.” The correlation between two reading self-efficacy factors was .77, indicating a strong correlation. The overall Cronbach’s Alpha reliability for reading self-efficacy questionnaire was .945 for the pre-test and .907 for the post-test.

The English reading comprehension test. The reading comprehension section of the College English Test Band 4 (CET-4) was adopted to measure participants’ reading test performance in the pre-test and post-test in this study. The CET is a national standardized test, which has undergone rigorous validation in order to function as an effective tool of language assessment (Yang & Weir, 1998). Specifically, the reading comprehension test used in the pre-test was adapted from the reading comprehension section of the CET-4 delivered by the National College English Testing Committee in June 2015; the reading test used in the post-test was adapted from the reading comprehension section of the CET-4 delivered by the National College English Testing Committee in June 2016. The CET-4 reading test usually includes 30 items that fall into three sections: (1) vocabulary comprehension (10 items), (2) long-form reading (10 items); (3) close reading (10 items). The total score for the reading test is 35 marks. Each time when the students finished the tests, the test answer sheets were then marked according to the marking criteria set by the National College English Testing Committee.

The semi-structured interviews. Following Lee (2015), Akkakoson (2013), and Dabarera et al. (2014), nine participants from each experimental class were selected for interview through purposive sampling to guarantee a representation of high, intermediate, low English reading performance on the pre-test reading test. As the experimental group consisted of two classes, there were 18 participants chosen for the interview, accounting for nearly a third of the experimental group students. During the interviews, interviewees were asked about their perceptions about the English reading strategies they were taught in class during the reading instruction period. They were also asked about whether they experienced any changes in English reading motivation and English reading self-efficacy. The interview questions can be found in the Appendix. All the interviews were tape-recorded, transcribed verbatim for content analysis.

In this study, the three questionnaires (i.e., the reading strategy questionnaire, the reading motivation questionnaire, and the reading self-efficacy questionnaire) and the English reading comprehension test described above were administered twice, that is, at the beginning and the end of the reading strategy instruction, respectively. The semi-structured interviews were conducted shortly after the reading strategy instruction.

Reading strategy instruction. In keeping with Pressley (1995) and Wang (2009), this study selected six major groups of core reading strategies from Chamot and O’Malley’s (1994) categories of learning strategies for instruction in the classroom: (1) planning (i.e., advance organization, organizational planning, selective attention, and self-management); (2) monitoring (i.e., monitoring comprehension); (3) summarizing; (4) elaboration of prior knowledge; (5) making inferences; and (6) deduction. Note that reading strategies included in the reading strategy questionnaire in this study were incorporated into different training sessions depending on the nature and content of the specific instructional materials. Consequently, the reading strategies taught in class covered all 30 reading strategy items in the reading strategy questionnaire used in this study. The students from the experimental group had eight training sessions incorporated into their English classes lasting 16 weeks. In each training session, which lasted 80 minutes, the students were required to read two passages with a word count of around 800 words from their college English text books (i.e., New Horizon College English) used in China. The choice of specific reading strategies for instruction for each session was based on specific reading texts’ information, style, and questions (Dabarera et al., 2014; Lee, 2015). At least four reading strategy items were taught during each training session (Table 1).

Specifically, in line with CALLA model (Chamot, 2005; Chamot et al., 1999), which focuses on integrating learning strategy training in academic language and content instruction, our strategy instruction involved six steps: (1) Preparation: Teacher identified reading strategies to be taught and designed tasks for training of these strategies; (2) Presentation: Teacher modeled and explained how a specific strategy was used; (3) Practice: Students practiced the strategy; (4) Self-evaluation: Students evaluated their own strategy use immediately after practice; (5) Expansion: Students transferred the taught strategies to new reading tasks; and (6) Assessment: Teacher assessed students’ reading strategy use and the impact of strategy training on students’ reading performance. In each session, the instruction started with assisting EFL learners to recall some kinds of reading activities they had experienced before (Aghaie & Zhang, 2012; Chamot et al., 1999; Macaro & Erler, 2008). After this warming-up activity, the teacher explained and demonstrated a particular set of reading strategies. Then the students were required to share their understanding of each reading strategy by providing a definition of the strategy. Also, they were asked to share when and where the reading strategies should be used so as to improve reading. Afterwards, the teachers provided examples of how to use the relevant reading strategies. The students were then given more opportunities to practice the relevant reading strategies through the use of
reading passages in their English textbooks. In this way, teacher-scaffolding was gradually removed so as to develop the students' ability to use reading strategies independently.

Unlike students in the experimental group, no explicit reading strategy instruction was provided to the students in the control group. Nevertheless, they received the same amount of English reading lessons and used the same text books. In the English classes these students attended, the teacher played the dominant role and adopted a teacher-centered instructional approach. Specifically, the teacher read aloud the text or asked some students to read the text. After that, the teacher would explain some difficult language points in the textbook. Finally, the teacher would analyze some difficult texts and ask students questions to check their understanding of the texts. Outside the reading class, they were given equivalent amount of reading assignments. However, explicit reading strategy information or knowledge was not provided.

### Data Analysis

Exploratory Factor Analysis (EFA) was conducted to find the most likely factor structure underlying each questionnaire. Items were accepted as belonging to their intended factor when their loading was >0.40, and factors had to have at least three items which were conceptually aligned (Bandalo & Finney, 2010). Besides, the reliability of the reading strategy use, reading motivation, reading self-efficacy were assessed by internal consistency coefficient with the Cronbach’s coefficient, for which a value more than .6 indicates acceptable reliability (Gan et al., 2019). Independent-samples t-tests were used to compare performances on pre- and post-reading comprehension tests between the experimental and control groups. Descriptive statistics (e.g., mean and standard deviation) in relation to the students’ reading strategy use, reading motivation and self-efficacy were reported. ANCOVA was used to examine the effect of reading strategy instruction on reading strategy use, reading motivation, reading self-efficacy between the experimental and control group.

Content analysis (Bell, 2001) was used to analyze the semi-structured interview data to identify students’ perceptions of the reading strategy instruction as well as sources for different dimensions of reading strategy use, motivation, and self-efficacy. When issues of ambiguity arose, all the researchers in this study discussed until an agreement was reached. Following Nguyen and Gu (2013), the study will report interview results in the discussion part to complement the statistical findings.

### Results

#### Effects of Reading Strategy Instruction on Students’ Reading Comprehension Between the Experimental and Control Group

For both the pre-test and post-test of reading comprehension, skewness and kurtosis values ranged between −2 and 2, suggesting that the data are normally distributed (Bachman & Kunnan, 2005). Additionally, the assumption of homogeneity of variances was violated as the significance level of Levene’s test was less than .05, which applies to both the pre-test and post-test of reading comprehension. However, t-tests are robust to violations of this assumption (Stevens, 1996). Independent-samples t-tests results showed that there was no significant difference in the pre-test of reading comprehension between the experimental group ($M=12.3$, $SD=5.35$) and the control group ($M=11.7$, $SD=3.43$), $t(106.9)=-0.64$, $p>.05$ (see Table 2 below). For the pre-test of reading comprehension, the magnitude of the differences

### Table 1. Reading Strategies Taught During eight Training Sessions.

| Training sessions | Strategies taught |
|-------------------|-------------------|
| Session 1         | Making inferences (e.g., I guess unfamiliar vocabulary items through contextual clues) |
| Session 2         | Advance organization (e.g., I look for relationships between main ideas and details), monitoring comprehension (e.g., I check to see if my predictions were correct) |
| Session 3         | Organizational planning (e.g., I decide in advance what my reading purpose is, and then I read with that goal in mind), elaboration of prior knowledge (e.g., While reading, I decide whether the information makes sense based on what I already know about the topic) |
| Session 4         | selective attention (e.g., I decide in advance specific aspects of information to look for, and I focus on that information when I read), note-taking (e.g., I underline or circle some key information while reading) |
| Session 5         | Deduction (e.g., I find the meaning of a word by dividing the word into parts which I understand), grouping (e.g., I can identify the subject, verb, object in a long sentence), imagery (e.g., I imagine scenes or draw pictures of what I am reading) |
| Session 6         | Summarizing (e.g., I read the text again to summarize its meaning), advance organization (e.g., I take an overall view of text to see what it is about before reading it) |
| Session 7         | Self-management (e.g., I use tables, figures, and pictures in the text to increase my understanding), self-assessment (e.g., I examine how well the text is understood) |
| Session 8         | Review |
in the means (mean difference = −0.52, 95% CI: −2.15 to 1.10) was very small (\(\eta^2 = .003\)).

Table 2 also shows that there was a significant difference in performance on the post-test of reading comprehension between the experimental (\(M = 17.8, SD = 6.66\)) and control group (\(M = 12.7, SD = 4.91\)), \(t(112.6) = −4.74, p < .05, \eta^2 = .163\). For the post-test of reading comprehension, the magnitude of the differences in the means (mean difference = −5.09, 95% CI: −7.21 to −2.96) was large (\(\eta^2 = .163\)). These results suggested that the experimental group achieved greater gains in reading comprehension at the end of the reading strategy instruction.

Effects of Reading Strategy Instruction on Students’ Reading Strategy Use, Reading Motivation, Reading Self-efficacy Between the Experimental and Control Group

Table 3 presents descriptive statistics for reading strategy factors in pre- and post-reading strategy questionnaire between the experimental and control group. In terms of metacognitive strategy use, the experimental group obtained slightly lower mean scores in the pre-strategy questionnaire. As for cognitive strategy use, the experimental group obtained slightly higher mean scores on all of the three cognitive strategy factors than the control group in the pre-strategy questionnaire.

In the post-reading strategy questionnaire, the reading strategy mean scores showed that there was a general pattern in favor of the experimental group in metacognitive strategy factors, including “monitoring,” “planning,” and “self-management.” With regard to cognitive strategy use, the control group obtained slightly higher mean scores.

Table 4 presents descriptive statistics for reading motivation factors in pre- and post-reading motivation questionnaire between the experimental and control group. In the pre-reading motivation questionnaire, the control group was slightly higher in “intrinsic value of reading,” “extrinsic utility value of reading” than the experimental group. While for “reading curiosity,” both the two groups’ mean scores were roughly identical. However, in the post-reading motivation questionnaire, the mean scores in the table indicated that the experimental group outperformed the control group in all reading motivation factors.

Table 5 presents descriptive statistics for reading self-efficacy factors in pre- and post-reading self-efficacy questionnaire between the experimental and control group. The control group was slightly higher than the experimental group on two reading self-efficacy factors in the pre-reading self-efficacy questionnaire. A similar pattern of mean scores emerged between the two groups in the post-reading self-efficacy questionnaire.

To ascertain the potential impact of the reading strategy instruction on students’ reading strategy use, reading motivation, and reading efficacy, a one-way ANCOVA was conducted separately to examine if there was a significant difference between the experimental group and the control group in the post-reading strategy questionnaire, post-reading motivation questionnaire, and post-reading self-efficacy questionnaire. The study conducted preliminary checks to make sure that there was no violation of the assumptions of linearity, normality, homogeneity of regression slopes,
Table 4. Descriptive Statistics for Reading Motivation Factors in Pre- and Post-Reading Motivation Questionnaire Between Experimental and Control Group.

| Reading motivation | Pre-SBI | Post-SBI |
|--------------------|---------|----------|
|                    | N  | M  | SD | M  | SD |
| IVR                |    |    |    |    |    |
| Experimental       | 63 | 28.68 | 7.54 | 27.91 | 6.87 |
| Control            | 54 | 29.45 | 6.72 | 27.59 | 5.29 |
| EUVR               |    |    |    |    |    |
| Experimental       | 63 | 29.29 | 4.61 | 28.35 | 5.07 |
| Control            | 54 | 29.84 | 4.36 | 27.65 | 4.78 |
| RC                 |    |    |    |    |    |
| Experimental       | 63 | 31.23 | 5.37 | 30.02 | 5.69 |
| Control            | 54 | 30.48 | 6.46 | 28.26 | 5.76 |

Notes. IVR = intrinsic value of reading; EUVR = extrinsic utility value of reading; RC = reading curiosity; Pre-SBI = pre-strategy based instruction; Post-SBI = post-strategy based instruction.

Table 5. Descriptive Statistics for Reading Self-Efficacy Factors in Pre- and Post-Reading Self-Efficacy Questionnaire Between Experimental and Control Group.

| Reading self-efficacy | Pre-SBI | Post-SBI |
|-----------------------|---------|----------|
|                       | N  | M  | SD | M  | SD |
| ERS                   |    |    |    |    |    |
| Experimental          | 63 | 29.63 | 7.06 | 29.74 | 5.80 |
| Control               | 54 | 30.43 | 5.53 | 31.19 | 5.25 |
| CRS                   |    |    |    |    |    |
| Experimental          | 63 | 32.11 | 6.78 | 32.02 | 5.57 |
| Control               | 54 | 32.30 | 6.33 | 32.09 | 4.69 |

Notes. ERS = extensive reading self-efficacy; CRS = classroom-based reading self-efficacy; Pre-SBI = pre-strategy based instruction; Post-SBI = post-strategy based instruction.

homogeneity of variance, and reliable measurement of the covariate. Regarding reading strategy use, the students’ reading strategy performance in the pre-reading strategy questionnaire was used as the covariate in the ANCOVA analysis. The results showed that after adjusting the pre-reading strategy questionnaire performance, there was no significant difference between the experimental and the control group at the strategy factor level in the post-reading strategy questionnaire performance for “monitoring,” $F(1, 114)=0.21$, $p=.65$, partial $\eta^2=.002$; for “planning,” $F(1, 114)=0.89$, $p=.35$, partial $\eta^2=.008$; for “self-management,” $F(1, 114)=3.08$, $p=.08$, partial $\eta^2=.026$; for “identifying important information,” $F(1, 114)=0.33$, $p=.57$, partial $\eta^2=.003$; for “elaboration of prior knowledge,” $F(1, 114)=0.28$, $p=.60$, partial $\eta^2=.002$; for “inferring meaning,” $F(1, 114)=0.01$, $p=.94$, partial $\eta^2=.000$. Additionally, at the individual item level, significant difference was only found in the following two metacognitive items, “I check to see if my predictions were correct,” $F(1, 114)=7.85$, $p<.05$, partial $\eta^2=.064$; “I use typographical features like bold face and italics to identify key information,” $F(1, 114)=5.08$, $p<.05$, partial $\eta^2=.043$. Besides, statistics also showed that the experimental group used “I use typographical features like bold face and italic to identify key information” more frequently than the control group. Nevertheless, the control group used “I check to see if my predictions were correct” more frequently than the experimental group. Moreover, the effect sizes indicated by partial $\eta^2$ values were generally quite small for reading strategy use, suggesting the reading strategy instruction could only explain a small percentage of variance in the post-reading strategy assessment at the factor level and the item level.

Similarly, results of ANCOVA analysis with students’ reading motivation performance in the pre-reading motivation questionnaire being used as the covariate, showed that there was no significant difference between the experimental and the control group in the following three motivational factors in the post-reading motivation questionnaire: for “intrinsic value of reading,” $F(1, 114)=0.93$, $p=.34$, partial $\eta^2=.008$; for “extrinsic utility value of reading,” $F(1, 114)=1.68$, $p=.20$, partial $\eta^2=.015$; for “reading curiosity,” $F(1, 114)=2.81$, $p=.10$, partial $\eta^2=.024$. Additionally, at the individual item level, significant difference between the control group and the experimental group was found in only one item, “I am learning to read in English because I might study abroad in the future,” $F(1, 114)=4.77$, $p<.05$, partial $\eta^2=.040$. The experimental group was found to have a higher mean score than the control group on this reading motivation item. Finally, the effect sizes were negligible, indicating that the reading strategy instruction can only explain a small percentage of variance in the post-reading motivation questionnaire at the factor level and the item level.

Finally, results of ANCOVA analysis with the pre-reading self-efficacy questionnaire as the covariate showed that there was no significant difference between the experimental and the control group in the two reading self-efficacy factors in the post-reading self-efficacy questionnaire: for “extensive reading self-efficacy,” $F(1, 114)=0.85$, $p=.36$, partial $\eta^2=.007$; for “classroom-based reading self-efficacy,” $F(1, 114)=0.01$, $p=.94$, partial $\eta^2=.000$. At the individual item level, significant difference was found in one item, “Can you read and understand an English tourist brochure introducing western countries?” $F(1, 114)=5.51$, $p<.05$, partial $\eta^2=.046$. The control group was found to have a higher mean score than the experimental group in this reading self-efficacy item. The effect sizes were negligible, suggesting that reading strategy instruction may only explain a small percentage of variance in the post-reading self-efficacy assessment at the factor level and the item level.

Discussion

This study focused on the impacts of reading strategy instruction on reading comprehension, reading strategy use, reading...
motivation, and reading self-efficacy in Chinese university EFL learners. The first research question asks whether explicit reading strategy instruction has an impact on Chinese EFL learners’ reading comprehension. The result showed that the experimental group outperformed the control group significantly in reading comprehension after the reading strategy instruction. Thus, the result is congruent with prior research finding that explicit reading strategy instruction based on constructivist pedagogy was effective in improving L2 learners’ reading comprehension (e.g., Singhal, 1999; Wang, 2009; Zhang, 2008) as learners may gradually learn and internalize new knowledge on how to use reading strategies through teacher’s guidance. An important implication of this finding is that reading strategy training should be incorporated into the daily college English classes in Chinese universities to help students to become autonomous proficient English readers.

The second research question asks whether explicit reading-strategy instruction has an impact on Chinese EFL learners’ reading strategy use. The questionnaire results based on ANCOVA analysis showed that there was no significant difference in reading strategy use between the experimental group and the control group at the end of the 16 weeks’ strategy instruction, somewhat contradicting some of the previous studies in the literature (e.g., Aghaie & Zhang, 2012; Dabarera et al., 2014; Okkinga et al., 2018; Shih et al., 2018; Zhang, 2008) which documented positive effects of strategy instruction on learners’ reading strategy use. Nevertheless, the results echo prior quantitative research findings which showed that reading strategy instruction had no impacts on reading strategy use, but it could boost reading comprehension (Dreyer & Nel, 2003; Zenotz, 2012). How should this discrepancy be explained? One possibility is that the strategy instructional procedures did result in learning and awareness of reading strategies in the experimental group, but the students might not have many opportunities to apply those strategies outside the class after the strategy training, thus failing to internalize the strategies. Another possibility is that students might be using those strategies unconsciously (Chamot & O’Malley, 1994; Jaekel, 2020; Wenden, 2001). Under this circumstance, it could be natural that students did not report any increased use of reading strategies since the reading strategy questionnaire in this study adopted frequency-based evaluations of the strategy items. Interview data in this study, however, showed that the participants in this study held very positive attitudes toward the reading strategy training, and reported extensive experience of acquisition and application of the reading strategies. This result lends support to previous qualitative research findings that reading strategy instruction was effective for enhancing the experimental group’s metacognitive awareness (Dabarera et al., 2014; Salataci & Akyel, 2002; Soleimani & Hajghani, 2013). Nearly all of the interviewees commented that they found those reading strategies helpful for improving reading comprehension and they started to apply some reading strategies in their reading, as illustrated in the following comment:

I found the following reading strategies are quite helpful for improving my reading comprehension, for instance, ‘identify the subject, predicate, object in a long and difficult sentence’; ‘summarize the main idea of the article and reread the article’; ‘check whether my predication is right’ and so on. As a result, I started to use many new strategies after the training. I could only find one reading strategy that may not be applicable, which is ‘I decide to read some certain information in advance and I pay attention to such information while reading’, because I am used to reading the whole passages before reading questions. I think all of them are very useful, which will improve my reading.

(Student1, a first-year international trade major student)

Another student said during the interview that she found most strategies helpful except for the strategy “Summarizing”:

Actually, I find almost every reading strategy helpful, and I will try to use them. The least helpful strategy, if I need to mention one, is ‘summarizing’. Because when I finish reading, I do not spend time summarizing each paragraph’s idea or the main idea of the whole passage.

(Student2, a first-year Chinese major student)

Furthermore, the interview data showed that there was considerable variation among the students in terms of learning and application of the taught reading strategies. For example, one student acknowledged that his frequently used strategies were “note-taking” and “reading the first and the last paragraph,” and that he might use some other reading strategies only when there was a need to. This was echoed by another student describing her preferred reading strategy as “reading the whole passage first before reading questions.” The interview data also showed that the students appeared to be aware of the distinction between learning and use of reading strategies, as in:

I have learned many new strategies in the strategy training class, but I don’t find many chances to use them. Furthermore, it is not necessary to use all the strategies with similar characteristics while doing the reading exercise.

(Student3, a first-year international trade major student)

Clearly, the interview data provided valuable insights into why the questionnaire data failed to reveal positive impact of strategy training on students’ strategy use in reading. The questionnaire used to measure students’ strategy use in the current study in fact assessed frequency of use of different kinds of reading strategies. The interview results have already shown that students’ use of specific reading strategies could be mediated by some individual and contextual factors. These results echo prior qualitative research findings which revealed that students’ reading proficiency levels may affect the effectiveness of reading strategy instruction (Akkakoson, 2013; Shih & Reynolds, 2018b). More importantly, the interview results provided empirical evidence that
no changes in strategy use documented in the pre- and post-reading strategy questionnaires did not mean that students did not learn and acquire the reading strategies taught during the reading strategy instruction intervention. It could be that after the reading strategy instruction intervention, these students had acquired the skills to apply a range of reading strategies in solving reading problems. But they might not have sufficient chances to practice those reading strategies and therefore reported a low use of strategies. This was supported by Okkinga et al.’s (2018) meta-analysis which suggested that reading strategy intervention had a large effect on application of reading strategies in reading comprehension, but a small effect on self-reports of strategy use and strategy knowledge.

The third research question asks whether explicit reading strategy instruction has an impact on Chinese EFL learners’ reading motivation and reading self-efficacy. The questionnaire results revealed that after the explicit reading strategy instruction, there were no significant differences in changes in students’ reported reading motivation and reading self-efficacy. These results were congruent with the observation in a number of previous studies that reading strategy intervention did not impact on students’ reading motivation and self-efficacy significantly (e.g., Antoniou & Souvignier, 2007; Lau, 2016; Lau & Chan, 2007; Shinozuka et al., 2017).

There are two possibilities why students’ reading motivation and self-efficacy remained relatively stable at the end of reading strategy instruction in this study. First, as motivation belongs to a comparatively stable construct (Meece & Miller, 1999), a short duration of reading strategy intervention like the one implemented in the current study may not bring about considerable changes in reading motivation and self-efficacy. This interpretation finds an echo in Shinozuka et al. (2017) results that Japanese university EFL students’ motivation hardly changed after 3 months’ reading instruction. It may be that obvious motivational or attitudinal transfer effects of reading strategy intervention only happen in intervention studies which last more than one year (Brown et al., 1996; Deshler & Schmake, 1993). For instance, Shih and Reynolds’ (2018a) found that their one academic year’s reading strategy instruction could promote junior college students’ learner motivation in Taiwan. In the current study, which lasted only 16 weeks, most interviewees mentioned that after the reading strategy training, they did not feel any significant changes in reading motivation. One student responded:

Frankly speaking, I don’t feel English reading becomes more interesting after reading strategy training. I have gained some more reading skills. But English reading interests can’t be improved instantly. Besides, I won’t read English newspapers, magazines in my spare time. But I think I watch English films a little bit more than before. Also, I don’t want to study abroad.

(Student4, a first-year international trade major student)

It thus seemed that although these participants received a 16-week reading strategy instruction, they probably needed more time to internalize the reading strategies and develop reading skills before they are aware of any tangible progress in their reading abilities, which in turn may result in attitudinal or motivational changes. This is apparently reflected in another student’s remarks during the interview:

I don’t think reading strategy instruction improves my reading self-efficacy. For instance, I have a British classic novel Jane Eyre. While reading it, I will look up the strange words in the dictionary. One word may have many different meanings in the dictionary. I couldn’t identify the exact meaning of each strange word, which made me feel difficult to read. Therefore, I didn’t keep reading it and just finished a small part of it. After I have learned reading strategies, I still feel it is quite difficult to read.

(Student5, a first-year Chinese major student)

Second, the materials used for strategy training in class could be another reason for lack of changes in reading motivation and self-efficacy documented in the questionnaire data in the present study. In keeping with previous studies (e.g., Dabarera et al., 2014), the training materials in the current study were essentially designed to improve learner’s reading comprehension rather than students’ reading motivation or reading self-efficacy. Consequently, reading instructional activities based on use of these training materials were focused on helping students understand and apply a particular set of reading strategies rather than develop motivational teaching practices in the EFL classroom that might effect changes in students’ English learning motivation or self-efficacy. Thus, it is suggested that motivational instructional practices should also be incorporated in future strategy training interventions.

Conclusion

The present study set out to examine the impact of explicit reading strategy instruction on reading comprehension, reading strategy use, reading motivation, and reading self-efficacy among Chinese university EFL students. Pre- and post-test of students’ reading comprehension revealed that the reading strategy instruction positively impacted on students’ reading comprehension significantly, although pre- and post-questionnaires results showed that there were no significant changes in reading strategy use, reading motivation, and reading self-efficacy at the end of reading strategy instruction. Interview data, however, showed that students held very positive attitudes toward the reading strategy instruction. Interview results further revealed that lack of changes in strategy use, motivation, and self-efficacy at the end of strategy instruction could be explained by a dynamic interplay of individual and contextual factors. Given these findings, this study contributes to knowledge about how mainland Chinese university students respond to strategic
reading instruction in an EFL learning context, as well as knowledge about the effects of reading strategy instruction on students’ reading comprehension, reading strategy use, reading motivation, and reading self-efficacy. In addition, the study displayed a methodological strength in use of both questionnaire and interview data in unpacking the reasons why there was an apparent lack of changes in reading strategy use, reading motivation, and reading self-efficacy among the students at the end of reading strategy instruction.

A number of limitations of the present study need to be acknowledged. First, although 117 students participated in this reading strategy training intervention study, they were all first-year non-English major students from one university. As such, the findings of this study may not be representative of all Chinese university EFL students. Including students from different types of educational institutions and from a wide range of disciplines would allow future researchers to gain deeper insights into the impact of reading strategy training intervention on students’ reading comprehension, reading strategy use, and reading motivation or self-efficacy. Second, the present study employed a pre-test and post-test experiment design. In future studies, a further delayed-test can be considered in order to potentially better measure the potential changes in students’ reading strategies, motivation, and self-efficacy.

Appendix

Interview Questions

1. What are the most helpful reading strategies to improve your current English reading comprehension? Could you please give me some exact examples?
2. What are the least helpful reading strategies to improve your current English reading comprehension? Could you please give me some exact examples?
3. Do you feel English reading motivation improved after the reading strategy instruction?
4. Do you feel English reading self-efficacy improved after the reading strategy instruction?

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