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Enhancing Chinese University Students' Reading Comprehension and Self-Directed Learning Abilities through Collaborative Strategic Reading Instruction

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ABSTRACT

Collaborative Strategic Reading Instruction (CSRI) refers to the practice of enhancing students' reading comprehension ability and Self-directed Learning (SDL) ability through cooperative learning strategies and structured reading activities. The purposes of the study were to 1) design CSRI to enhance Chinese university students' reading comprehension and SDL abilities, 2) examine the effect of CSRI on enhancing Chinese university students' reading comprehension abilities, and 3) investigate SDL abilities when they have learned through CSRI. The research was conducted in two phases. In the first phase, the researcher developed and validated CSRI lesson plans, a reading comprehension test, and an SDL questionnaire, and surveyed 254 English major students to assess their current abilities. In the second phase, five CSRI lesson plans were implemented with 30 students over five weeks, and changes in reading comprehension, and SDL abilities. The results revealed that the experimental group receiving CSRI scored significantly higher ($M = 25.80$) than the control group ($M = 20.08$) in the post-test, with a large effect size ($t = 8.43, p < 0.01$). This indicates that CSRI is an effective instructional approach for improving English reading comprehension among

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university students. The experimental group who received CSRI showed significantly higher SDL scores ($M = 59.43$) than the control group ($M = 45.30$), with a large effect size ($t = 9.081, p < 0.01$). This demonstrates that CSRI effectively enhances students' SDL abilities compared to traditional instructional methods.

Keywords: Collaborative Strategic Reading Instruction; Self-directed Learning Abilities; Chinese University Students; Reading Comprehension Abilities

1. Introduction

English language teaching holds growing global importance due to its central role in international communication, business, science, and technology. In China, English education has expanded significantly and is integrated into the national curriculum from primary to university levels, reflecting the government's commitment to global engagement. English reading, in particular, is vital for accessing academic and professional resources, enhancing cross-cultural understanding, and achieving success in key examinations like TOEFL and IELTS. It equips learners with critical skills for academic advancement and supports China's participation in global affairs.

Reading comprehension is a critical skill globally, as it enables individuals to understand, interpret, and critically evaluate written texts, which is essential for academic learning and effective communication. It plays a fundamental role in navigating complex materials such as technical documents, legal contracts, and professional reports, making it indispensable in fields such as law, medicine, and business ^[1]. In the Chinese context, reading comprehension holds particular importance due to the nation's strong emphasis on education and academic achievement. Students are required to demonstrate high levels of reading comprehension to succeed in competitive examinations. Furthermore, in contemporary professional settings, Chinese employees increasingly depend on advanced reading skills to interpret technical manuals, legal documents, and international business reports in both Chinese and English ^[2].

Many students around the world face difficulties with reading comprehension due to factors such as limited vocabulary, low motivation, lack of engagement with reading materials, and socio-economic barriers that restrict access to quality education. The rise of digital distractions and shorter attention spans has further contributed to the decline in reading skills ^[3]. In China, while rapid economic growth has greatly improved literacy rates, reading comprehension

remains a significant issue. The education system's strong emphasis on rote memorization often hampers students' abilities to develop critical thinking and interpretation skills. Moreover, the digital era has seen a decline in leisure reading, exacerbating comprehension challenges ^[4].

Teaching reading comprehension globally faces significant challenges, particularly regarding students' language proficiency. A primary concern is the lack of culturally relevant reading materials, which can diminish student engagement. Effective instruction in reading strategies, such as summarization and questioning, is often limited by inadequate teaching and practice opportunities ^[5]. In China, large class sizes complicate personalized instruction and feedback, hindering the ability to meet individual student needs. Additionally, the emphasis on standardized testing promotes rote memorization, undermining deeper comprehension skills. These challenges underscore the need for effective strategies to improve reading comprehension instruction and enhance student learning outcomes ^[6].

To address these challenges, the present study aimed to design and develop CSRI to enhance Chinese university students' reading comprehension and SDL abilities. CSR enhances reading comprehension and fosters SDL through structured, collaborative strategies. It encourages active engagement with texts, helping students identify and address difficult sections ("clunks"). Group discussions and the "Get the Gist" strategy aid in clarifying and summarizing key ideas, improving overall comprehension. CSR also promotes metacognitive skills by prompting students to reflect on and adjust their reading strategies ^[7]. SDL and CSR enable students to internalize these strategies and apply them independently. They encourage ownership of learning, as students monitor their understanding and solve comprehension challenges ^[8]. The process develops critical thinking skills and builds confidence, empowering students to tackle complex texts on their own. As a result, CSR fosters both improved comprehension and greater learning autonomy.

In summary, English reading comprehension is increas-

ingly important in the globalized world, particularly in China, where it supports academic success, professional development, and international engagement. Despite significant investments in English education, challenges such as rote learning, digital distractions, and a lack of reading strategy instruction hinder students' reading abilities. To address these issues, CSRI was designed to enhance reading comprehension and SDL among Chinese university students. CSRI combines structured reading strategies, collaborative learning, and metacognitive development to promote active engagement with texts, foster independent learning, and improve students' ability to comprehend and analyze complex material.

2. Literature Review

2.1. Importance of Reading Comprehension

The National Reading Panel ^[9] states that the primary objective of reading instruction is reading comprehension, as it enables individuals to derive meaning from text, use that understanding in various situations, and enhance their critical thinking abilities. Reading comprehension plays a crucial role in academic success across all subjects. Research by Cain et al. ^[10] demonstrates that strong comprehension skills help students engage with complex texts, follow instructions, and critically evaluate content, which is essential for learning in areas like science, social studies, and mathematics. Additionally, Foorman et al. ^[11] find that students with strong reading comprehension tend to excel on standardized tests, actively participate in classroom discussions, and exhibit greater academic confidence.

Reading comprehension is essential for lifelong learning and personal growth. Snow ^[12] argues that effective comprehension helps people stay informed, make informed decisions, and critically engage with the media and public discourse. Reading comprehension plays a critical role in fostering higher-order thinking skills necessary for academic and professional success. As Graesser et al. ^[13] explain, effective comprehension enables readers to identify biases, recognize logical fallacies, and critically assess the reliability of information—skills that are essential for informed decision-making and complex problem-solving. Furthermore, Morrow ^[14] emphasizes that in technical and

research-oriented fields, the ability to comprehend complex texts such as detailed instructions or scholarly articles is indispensable. Thus, reading comprehension is not only central to academic learning but also vital for performance in specialized professional contexts. Reading comprehension also serves as a powerful tool for social empowerment and civic engagement. Freire ^[15] contends that individuals with well-developed comprehension skills are more capable of critically engaging with social issues, participating meaningfully in civic discourse, and making informed decisions about their rights and responsibilities. Expanding on this perspective, Freire ^[16] emphasizes that literacy, particularly reading comprehension, functions as a vehicle for empowerment and liberation—especially for marginalized populations—by enabling them to question dominant ideologies and advocate for social transformation. Thus, reading comprehension not only facilitates academic and intellectual growth but also plays a vital role in promoting equity and social justice. Reading comprehension is crucial for cognitive development and academic achievement, as it activates mental functions like attention, memory, and reasoning ^[17]. It also enhances executive functions such as working memory and cognitive flexibility, which are essential for both academic and real-life decision-making ^[18]. Beyond understanding texts, reading comprehension fosters critical thinking and enables active participation in academic discourse. It supports lifelong learning by equipping individuals to engage meaningfully with various types of texts. In the digital era, strong comprehension skills are essential for evaluating online information critically and responsibly.

2.2. Collaborative Strategic Reading

Flavell ^[19] states that CSR is based on socio-cultural theory and the principles of scaffolding, the zone of proximal development, and cognitive psychology. The theory suggests that cognitive growth happens when ideas initially learned through social interaction are internalized and made personal. In CSR's collaborative framework, both teachers and students play a role in scaffolding learning. Teachers introduce strategies, assign group roles, and guide reading and discussions, while students support each other's learning by giving timely, appropriate feedback that suits the needs of their peers. CSR builds on this theoretical foundation and adapts it to address the needs of English language

learners and students with reading disabilities. Fitzgerald^[20] emphasizes that CSR advances the students' reading abilities by helping them activate their prior knowledge. Pérez^[21] argues that this approach connects to their personal experiences. Additionally, CSR acknowledges that students with learning disabilities and English language learners benefit from explicit instruction. As a result, the teacher clearly explains and models the strategies, giving students multiple chances to practice in supported environments before having them independently apply the strategies in cooperative learning groups. Principally, the goals of CSR are to improve reading comprehension and increase conceptual learning in ways that maximize students' involvement. Klingner^[22] developed the theories to enhance reading comprehension skills for students with learning disabilities and students at risk for reading difficulties, CSR has also yielded positive outcomes for average and high average achieving students. The primary objectives of CSR are to boost reading comprehension and enhance conceptual learning while maximizing student engagement. Initially designed to improve reading skills for students with learning disabilities and those at risk for reading challenges, CSR has also shown beneficial effects for students with average and above-average achievement levels.

2.3. Self-Directed Learning

SDL has been widely recognized as a pivotal approach to fostering learner autonomy and lifelong learning. Knowles^[23] conceptualizes SDL as a process in which individuals proactively engage in diagnosing their learning needs, setting learning goals, identifying appropriate resources, selecting and implementing effective strategies, and evaluating learning outcomes, either independently or with external support. Expanding on this foundational definition, Candy^[24] delineates four essential dimensions of SDL: personal autonomy, self-management, learner control, and the independent pursuit of knowledge, all of which underscore the learner's active role in the learning process. The learner-centered perspective is further supported by Jenwitthayayot and Tepsuriwong^[25] who highlight the multiplicity of learning sources—teachers, peers, books, and digital media—available in SDL contexts. Similarly, Bonk and Lee^[26] argue that technological advancements, particularly online platforms, have significantly expanded oppor-

tunities for SDL by enabling learners to engage in global and collaborative learning networks. Herlo^[27] reinforces the adaptability of SDL, suggesting that it allows learners to enhance their knowledge and skills through flexible selection of materials, methods, and strategies that align with their individual learning goals. In language learning, particularly English, SDL has been shown to be highly effective.

3. Methodology

This study employed a mixed-methods design based on the Design and Development Research (DDR) model proposed by Richey and Klein^[28] and was conducted in two phases. In Phase 1, qualitative and quantitative approaches were used to develop and validate CSRI lesson plans, an English reading comprehension test, and a SDL questionnaire. The population consisted of 742 English major students at Suihua University, from which 254 were selected through stratified random sampling and simple random sampling. Research instruments included documentary analysis forms, CSRI lesson plans, the reading test, and the SDL questionnaire. Expert validation was conducted using the Index of Item-Objective Congruence (IOC), and a pilot study with 30 students confirmed the reliability of the instruments, with a Cronbach's alpha of 0.99 for the SDL questionnaire. Phase 2 applied a quasi-experimental design involving 60 second-year English major students equally divided into experimental and control groups. The instruments used included the validated CSRI lesson plans, pre- and post-tests, and SDL questionnaires. Data were analyzed using descriptive statistics, paired and independent samples t-tests to assess improvements in reading comprehension and SDL abilities, and to compare group performance. It is noted that all participants consented to partake in the research and signed the Participation Letter of Information and Consent issued on March 1, 2025.

4. Results

This part presents the research findings based on three key research questions conducted at Suihua University in Heilongjiang Province, China. The questions were as follows: (1) the effectiveness of CSRI in improving students' reading comprehension and SDL abilities; (2) the com-

parison of students' reading comprehension achievements before and after CSRI implementation; and (3) the comparison of SDL achievements before and after CSRI implementation. The findings were derived from quantitative data collected through CSRI lesson plans, reading comprehension tests, and SDL questionnaires.

4.1. The Effectiveness of CSRI in Improving Students' Reading Comprehension and SDL Abilities

From **Table 1**, it was found the mean (M) and standard

deviation (S.D.) for 16 statements assessing Chinese university students' reading comprehension and SDL abilities. The mean values ranged from 1.67 to 1.86, all categorized at a low level, indicating a generally weak reading comprehension and SDL abilities among the surveyed students. Moreover, item 3 (I can make inferences based on the information I read) received the lowest score ($M = 1.67$), indicating this to be the most challenging skill. Other weak areas include item 1 (I can answer comprehension questions accurately after reading a passage), and item 6 (I use reading strategies to enhance comprehension).

Table 1. Results of the questionnaire on current state of Chinese university students' reading comprehension and SDL abilities.

No.	Statements	Mean	S.D.	Level
1.	I can answer comprehension questions accurately after reading a passage.	1.73	0.87	Low
2.	I can identify supporting details in a reading passage.	1.78	0.84	Low
3.	I can make inferences based on the information I read.	1.67	0.82	Low
4.	I can summarize the main points after reading a text.	1.81	0.90	Low
5.	I can understand vocabulary from context while reading.	1.80	0.85	Low
6.	I use reading strategies to enhance comprehension.	1.75	0.86	Low
7.	I can distinguish between facts and opinions in a passage.	1.86	0.87	Low
8.	I can understand the main ideas of academic texts.	1.82	0.90	Low
9.	I set clear learning goals for myself.	1.86	0.93	Low
10.	I am motivated to learn even without supervision.	1.83	0.92	Low
11.	I make study plans and follow them consistently.	1.83	0.90	Low
12.	I evaluate my own learning progress regularly.	1.82	0.84	Low
13.	I seek additional learning resources when I encounter difficulties.	1.82	0.86	Low
14.	I manage my study time effectively.	1.84	0.90	Low
15.	I adjust my learning strategies based on outcomes.	1.80	0.82	Low
16.	I enjoy exploring topics beyond what is taught in class.	1.76	0.84	Low
Total		1.80	0.87	Low

For the item 9 to item 16 that are about university students' SDL abilities, it was shown that the highest mean scores (1.86) appear in "I set clear learning goals for myself." The lowest mean score (1.76) is for "I enjoy exploring topic beyond what is taught in class.". The second lowest mean score (1.80) is for "I adjust my learning strategies based on out comes."

These results suggest a consistently low level of both reading comprehension and SDL abilities among Chinese university students.

According to **Table 2**, the validity evaluation of CSRI lesson plans in overall were at a high level ($\bar{X} = 4.39$, S.D. = 0.57). The evaluation results of the CSRI lesson plans demonstrated a high degree of expert appropriateness, with mean scores ranging from 4.2 to 4.8. All major aspects were rated either at the "High" or "Highest" appropriateness levels. Areas identified for further improvement included the selection and analysis of lesson case studies and the precision of targeted guidance, both receiving slightly lower but still strong ratings ($M = 4.2$).

Table 2. Results of evaluating CSRI lesson plans.

Evaluation Contents	Appropriateness		
	\bar{X}	S.D.	Level
1. Lesson Plans Contents			
1.1 The lesson plans content is clearly structured and focused.	4.60	0.55	Highest
1.2 The lesson plans content is practical and meets the actual teaching needs of the learners.	4.60	0.55	Highest
1.3 The selection and analysis of lesson plans cases are relevant to the lesson plans content.	4.20	0.45	High
2. Teaching Methods			
2.1 The teaching method is effective.	4.60	0.55	Highest
2.2 The teaching method utilizes different teaching methods to provide targeted guidance.	4.20	0.45	High
2.3 The teaching method is reasonable use of CSR according to lesson plans content.	4.40	0.55	High
3. Lesson Plans Resources			
3.1 Lesson plans resources can fully cover the lesson plans content.	4.40	0.55	High
3.2 Lesson plans resources can be effectively applied to further teaching research.	4.40	0.55	High
4. Time Allocation			
4.1 The overall lesson plans duration is appropriate.	4.20	0.84	High
4.2 The time allocation is scientific and reasonable.	4.80	0.45	Highest
5. Lesson Plans Effect			
5.1 Lesson plans can really help improve students' reading comprehension and self-directed learning abilities.	4.20	0.45	High
5.2 Lesson plans has the value of further promotion.	4.20	0.84	High

According to **Table 3**, the validity evaluation of SDL level, while Items 2, 3, 4, 8, 9, 13, and 14 were at a high questionnaire overall was at a high level ($\bar{X} = 4.39$, S.D. = 0.55). When considering the individual components, it was found that Items 1, 5, 7, 11, 12, and 15 were at the highest level. In summary, the evaluation reflects that the SDL questionnaire possesses strong construct validity, as most items achieved high or highest satisfaction levels.

Table 3. Results of evaluating SDL questionnaire.

Evaluation Contents	Appropriateness		
	\bar{X}	S.D.	Level
Learning Autonomy			
1. I can effectively manage my study time.	4.60	0.55	Highest
2. I adjust my study plan according to my progress.	4.20	0.84	High
3. I choose appropriate learning methods based on the content.	4.20	0.45	High
Goal Setting			
4. I have clear learning goals.	4.20	0.45	High
5. I am willing to work hard to achieve my learning goals.	4.60	0.55	Highest
6. I adjust my study plan based on self-evaluation.	4.40	0.55	
Self-Motivation			
7. I am passionate about learning.	4.80	0.45	Highest
8. I can overcome difficulties and setbacks in learning.	4.20	0.45	High
9. I gain satisfaction and a sense of accomplishment from learning.	4.20	0.45	High

Table 3. Cont.

Evaluation Contents	Appropriateness		
	\bar{X}	S.D.	Level
Self-Evaluation			
10. I regularly reflect on my learning effectiveness.	4.20	0.85	High
11. I can accurately assess my learning progress.	4.60	0.55	Highest
12. I can identify my learning strengths and weaknesses through self-evaluation.	4.60	0.55	Highest
Resource Identification and Utilization			
13. I use different resources to help me learn.	4.00	0.71	High
14. I regularly review and reinforce what I have learned.	4.20	0.45	High
15. I can stay focused while studying.	4.80	0.45	Highest

As shown in **Table 4**, the dependent samples t-test was conducted in order to find whether there was a significant difference in using CSRI on enhancing reading comprehension ability. The t-value is very high (21.66), which indicates a very strong effect. The p -value is less than 0.01 ($p < 0.01$), meaning the improvement is statistically significant.

Table 4. Results of comparing the difference between total scores and mean scores of pre-test and post-test of pilot.

Achievement	n	Total Scores	\bar{X}	S.D.	t	p -value
Pre-test	30	511	17.03	2.88	21.66	0.000
Post-test	30	640	21.33	3.42		

As displayed in **Table 5**, the mean score increased from 30.13 to 41.17, suggesting improvement in performance after the intervention. The t -value is 6.582. The p -value is

less than 0.01 ($p < 0.01$), meaning that there is a statistically significant improvement in scores from pre-test and post-test. This strongly supports the effectiveness of the intervention in enhancing participants' performance SDL abilities.

Table 5. Results of the difference between students' SDL abilities before and after learning through CSRI.

Achievement	n	\bar{X}	S.D.	t	p -value
Pre-test	30	30.13	6.41	6.582	0.000
Post-test	30	41.17	6.67		

**Significant difference at 0.01.

From **Table 6**, the researchers adopted and revised the CSRI lesson plans according to the teaching reflections. The revised CSRI lesson plans were employed in the next phase.

Table 6. Results of problems and improvement of CSRI lesson plans.

Item	Problems	Improvement of CSRI Lesson Plans
Teaching Time Allocation	Wrap-Up phases were often rushed due to inefficient transitions and extended discussions.	Use a visual agenda, set time checkpoints, and allow flexible timing for dense topics.
Classroom Management	Unclear or informal role assignments led to off-task behavior and uneven participation.	Model and reinforce roles through check-ins, smaller groups, and leadership rotation.
Students' Engagement	Passive participation occurred in mixed-ability groups or with sensitive topics.	Assign inclusive mini-tasks, offer anonymous input options, and balance group roles.
Measurement and Evaluation	Overreliance on vague self-reflections and noise hindered effective assessment.	Add guided prompts, comprehension quizzes, and use peer/audio-based observations.

4.2. The Comparison of Students' Reading Comprehension Achievements Before and After CSRI Implementation

From **Table 7**, it was revealed that the mean score of the experimental group was 17.40 (SD = 3.22), while the mean score of the control group was 17.47 (SD = 3.47). The t -value was 0.073, and the p -value was 0.942 ($p > 0.05$). Since the p -value is significantly greater than 0.05, it indicates there is no statistically significant difference between the pre-test scores of the experimental group and the control group. This suggests that both groups had similar levels of English proficiency before intervention.

Based on **Table 8**, it was found that an independent samples t -test was conducted to compare the post-test English scores between the experimental group ($M = 25.80$, $SD = 3.82$) and the control group ($M = 20.08$, $SD = 3.99$), each with 30 participants. The results revealed a highly significant difference between the two groups, $t = 8.43$, $p < 0.001$. The very low p -value confirms that this difference is highly significant and unlikely due to chance. This indicates that students in the experimental group, who received CSRI, performed significantly better than those in the control group under conventional instruction.

Table 7. Results of difference of pre-test English scores between the experimental group and the control group.

Achievement	n	Total Scores	\bar{X}	S.D.	t	p -value
Pre-test of Experimental Group	30	522	17.40	3.22	0.073	0.942
Pre-test of Control Group	30	724	17.47	3.47		

Table 8. Results of difference of post-test English scores between the experimental group and the control group.

Achievement	n	Total Scores	\bar{X}	S.D.	t	p -value
Pre-test of Experimental Group	30	774	25.80	3.82	8.43	0.000
Pre-test of Control Group	30	624	20.08	3.99		

4.3. The Comparison of SDL Achievements Before and After CSRI Implementation

As shown in **Table 9**, the control group ($M = 30.13$, $SD = 6.41$) and the experimental group ($M = 29.00$, $SD = 15.48$) showed a small mean difference of 1.13 points. The result of the paired samples t -test indicated that the difference was not statistically significant, $t = 0.371$, $p = 0.714$. These results confirm that the SDL abilities of two groups

were equivalent in ability before the intervention, supporting the assumption of baseline comparability between groups.

A paired samples t -test was conducted to evaluate the difference in students' SDL abilities before and after CSRI intervention within the experimental group. The results of the difference of students' SDL abilities before and after CSRI intervention were shown in **Table 10**.

Table 9. Results of comparing the difference of students' SDL abilities between the experimental group and the control group before intervention.

Achievement	n	\bar{X}	S.D.	t	p -value
Pre-test of Experimental Group	30	29.00	15.48	0.371	0.714
Pre-test of Control Group	30	30.13	6.41		

Table 10. Results of comparing the difference of students' SDL abilities between the experimental group after CSRI intervention and the control group without CSRI intervention.

Achievement	n	\bar{X}	S.D.	<i>t</i>	<i>p</i> -value
Pre-test of Experimental Group	30	59.43	7.71	9.081	0.000
Pre-test of Control Group	30	45.30	2.52		

As shown in **Table 10**, the experimental group ($M = 59.43$, $SD = 7.713$) scored significantly higher than the control group ($M = 45.30$, $SD = 2.52$) with a mean difference of 14.13. The difference was statistically significant, $t(29) = 9.081$, $p < 0.001$, indicating a robust effect of the training intervention. Furthermore, the effect size, as measured by Cohen's d (1.658), was very large, confirming the practical significance of the training program. Therefore, it can be concluded that the training was highly effective in improving the participants' performance in the experimental group compared to the control group.

5. Discussion

5.1. CSRI on Enhancing Chinese University Students' Reading Comprehension and SDL Abilities

The research results on the current state of Chinese university students' reading comprehension and SDL abilities revealed that both competencies are presently at a low level. This finding underscores a significant instructional gap in current English language teaching practices at the tertiary level in China. Furthermore, the learning needs identified among university lecturers center on three critical areas: the ability to design and implement CSRI, the capacity to evaluate and analyze teaching effectiveness, and the competence to reform and innovate pedagogical approaches. These identified needs reflect the pressing necessity for targeted professional development and curriculum redesign that align with evidence-based instructional models.

The research findings serve as a valuable reference point for guiding the design, refinement, and implementation of CSRI models aimed at improving reading comprehension and SDL abilities. These outcomes are consistent with prior studies that highlight the effectiveness of structured strategy instruction and learner autonomy as essential components of successful language education^[21,29]. In par-

ticular, CSRI's emphasis on student-centered, interactive, and scaffolded learning activities supports the development of both cognitive and metacognitive strategies crucial for academic reading.

Moreover, this research aligns with the framework of Anwar^[30] on digital teaching competencies, which stresses the need for instructors to adapt to diverse learner profiles by fostering conceptual engagement, facilitating collaborative learning, and integrating strategic instruction. By adopting a CSRI-based approach, educators are better equipped to meet the evolving demands of 21st-century learners through structured yet flexible instructional models. Such models not only address immediate gaps in reading and SDL but also contribute to long-term educational reform by cultivating independent, strategic learners capable of thriving in complex academic environments.

In conclusion, the findings emphasize the dual need for curriculum innovation and teacher professional development to enhance the efficacy of reading instruction. CSRI, as a structured and evidence-informed pedagogy, holds substantial promise in bridging the current gaps in reading comprehension and SDL among Chinese university students, thereby contributing meaningfully to the broader goals of language education reform and learner empowerment.

5.2. The Effect of CSRI on Enhancing Chinese University Students' Reading Comprehension Abilities

A purposive instructional implementation was carried out among Chinese university students using CSRI. This structured pedagogical model emphasized student collaboration, strategic comprehension activities. The results revealed a substantial improvement in students' reading comprehension abilities. Specifically, the mean score on the post-test rose to 25.80 out of 40, compared to a pre-test mean of 17.40—an increase that was not only educational-

ly meaningful but also statistically significant. This performance gain suggests that CSRI effectively addresses common challenges faced by EFL learners, such as decoding complex texts, identifying main ideas, and integrating information across paragraphs. The data strongly support the assertion that CSRI fosters deeper reading engagement and comprehension accuracy among university-level students.

These findings are consistent with those of Nosratinia and Fateh^[31], whose integrative review of literature highlighted the multi-faceted benefits of Collaborative Strategic Reading (CSR). Their analysis indicated that CSR improves not only reading comprehension but also enhances content mastery, language acquisition, and collaborative learning in EFL contexts. In particular, the collaborative elements of CSR promote active peer interaction, which contributes to enhanced conceptual understanding and increased motivation among learners.

Furthermore, the success of CSRI implementation in this study aligns with the conclusions of Bermillo and Merito^[32], who underscore the critical role of applying instructional strategies in real-world educational settings. Their research emphasizes that the effectiveness of any instructional method lies not merely in theoretical design but in its ability to generate observable improvements in student outcomes. In this case, the practical application of CSRI led to tangible academic gains, validating the model's efficacy in supporting reading comprehension development among EFL learners.

The present study contributes to the growing body of evidence advocating for the integration of structured, strategy-based instructional models in language education. By combining strategy instruction with cooperative learning, CSRI empowers students to take an active role in their reading processes, resulting in improved comprehension outcomes. This reinforces the importance of aligning instructional interventions with learner-centered methodologies that are empirically grounded and contextually responsive.

In conclusion, the post-intervention results affirm the educational value of CSRI in enhancing students' reading comprehension abilities. The statistically significant gains observed not only confirm the approach's effectiveness but also support its broader application in EFL instruction, particularly within higher education settings seeking to im-

prove academic literacy and autonomous learning.

5.3. Investigating SDL Abilities after Learning through CSRI

The experimental group participated in a series of structured evaluations using a validated SDL questionnaire administered before and after the implementation of CSRI. The results indicated a substantial and statistically significant improvement in students' SDL scores, demonstrating that CSRI had a positive impact on the development of learners' autonomous learning behaviors. The pre- and post-intervention data confirmed that students in the experimental group, who engaged in CSRI-based instruction, exhibited significantly higher SDL abilities compared to their peers in the control group who received conventional instruction.

This outcome directly supports the pedagogical foundations of CSRI, which emphasizes fostering student autonomy, promoting reflective thinking, and encouraging the strategic use of learning resources. Through its structured phases—Preview, Click and Clunk, Get the Gist, and Wrap-Up—CSRI cultivates essential skills such as goal-setting, comprehension monitoring, information synthesis, and peer collaboration. These components not only contribute to reading comprehension but also foster the learner's capacity for self-regulation, independent inquiry, and academic resilience.

The significant enhancement of SDL abilities among students in the CSRI group validates the instructional model's dual impact: improving cognitive outcomes related to reading while simultaneously nurturing critical metacognitive and self-regulatory skills. This dual impact aligns with the findings of Abidin and Riswanto^[33], who emphasized that CSR enhances learners' metacognitive awareness and promotes autonomous learning by guiding students to actively monitor their understanding and learning processes. Their research highlights how strategic instruction empowers students to become more reflective, intentional, and self-reliant learners.

Similarly, Zhao and Lertlit^[34] provided empirical evidence demonstrating that self-directed learning is positively correlated with improved reading outcomes and heightened autonomy among university-level students. Their study reinforces the core philosophy of CSRI, which seeks to create

a sustainable, student-centered learning environment that supports long-term academic growth beyond the classroom. The improvement in SDL observed in this study suggests that CSRI does not merely offer a short-term instructional advantage but contributes meaningfully to the cultivation of lifelong learning habits.

Moreover, the success of CSRI in enhancing SDL aligns with broader educational goals in contemporary pedagogy, which advocate for the development of learners who are capable of taking initiative, managing their own learning paths, and adapting to complex academic and real-world challenges. In an age of rapid information growth and evolving professional demands, these qualities are essential for student success in both academic and professional contexts.

In conclusion, the findings confirm that CSRI serves as a powerful instructional approach that enhances not only reading comprehension but also students' SDL abilities. By integrating strategy-based instruction with cooperative learning structures, CSRI fosters an educational environment where learners actively engage in and take ownership of their learning. These results contribute to the growing body of research affirming the value of CSRI as a transformative framework for promoting both academic achievement and learner autonomy in EFL contexts.

6. Limitations and Future Research

This study yielded promising results regarding the effectiveness of CSRI in enhancing Chinese university students' reading comprehension and SDL abilities. However, several limitations must be acknowledged. The study was conducted with a localized sample of 30 participants from a single university in China, which limits the generalizability of the findings. Additionally, the research was implemented over a short time frame, meaning the long-term sustainability and impact of CSRI remains uncertain. These contextual and methodological constraints suggest that the outcomes, while significant, should be interpreted with caution.

To strengthen the evidence base and practical applicability of CSRI, the study recommends several directions for future research. First, broader sampling across multiple universities and regions should be pursued to increase external validity and explore regional differences in instructional

effectiveness. Second, the development of modular CSRI curricula is encouraged, allowing educators to adapt content and pacing to meet the diverse needs of learners. Third, interdisciplinary integration of CSRI into other subject areas such as science, history, and social studies is proposed, with a view to creating a digital repository of CSRI lesson plans and case studies to support cross-curricular teaching.

Furthermore, future studies should employ longitudinal designs and incorporate mixed-method evaluations to track the sustained impact of CSRI on student outcomes. Tools such as student learning portfolios and digital learning management systems could provide real-time analytics to support instructional refinement and individualized feedback. Overall, these recommended expansions and innovations are essential for ensuring the continued development, adaptability, and scalability of CSRI as a strategic instructional framework within China's higher education system.

7. Conclusions and Implications of the Study

7.1. Conclusions

This study concluded that CSRI is a highly effective pedagogical approach for improving both reading comprehension and SDL abilities among Chinese university students. The CSRI model was developed through a rigorous process that incorporated theoretical synthesis, needs analysis, expert validation, and pilot testing. The instructional materials, including lesson plans, reading comprehension tests, and SDL questionnaires, were systematically designed and demonstrated high content validity and reliability.

The implementation of CSRI led to statistically significant improvements in students' reading comprehension, as shown by the large increase in post-test scores compared to the pre-test. Similarly, SDL abilities across five core dimensions—learning autonomy, goal setting, self-motivation, self-evaluation, and resource utilization—showed substantial gains in the experimental group. Students who received CSRI-based instruction reported enhanced ability to apply reading strategies, manage their learning, and reflect on their academic progress.

These findings suggest that CSRI not only improves

academic performance but also cultivates learner autonomy and motivation. The overall evidence supports CSRI as a student-centered and contextually adaptable model that holds promise for broader application in English as a Foreign Language (EFL) programs across China.

7.2. Implications of the Study

The findings of this study offer several important implications for educational research and instructional practice, particularly in the context of enhancing reading comprehension and SDL abilities among Chinese university students. First, the successful development and implementation of CSRI highlight the effectiveness of integrating metacognitive strategies—such as Preview, Click & Clunk, Get the Gist, and Wrap-Up—within a collaborative learning framework. These structured strategies have been shown to significantly improve students' cognitive engagement, autonomy, and academic performance. Therefore, CSRI is a highly practical and research-based approach that aligns with the evolving demands of higher education.

The study emphasizes the relevance of CSRI in supporting national education goals related to learner-centered pedagogy, lifelong learning, and strategic literacy development. Given its demonstrated adaptability and effectiveness, the model is well-positioned for broader application across English reading curricula in Chinese universities. It addresses not only academic skill gaps but also promotes reflective and autonomous learning—core competencies required in today's knowledge-based economy.

The CSRI model presents a replicable and scalable framework that can be adapted to various institutional contexts and learner profiles. The high levels of student satisfaction and expert validation suggest that the model meets both pedagogical and contextual needs. As such, policymakers, curriculum designers, and educators are encouraged to integrate CSRI into national instructional practices to promote equitable and sustainable improvements in English language education.

Although the study's outcomes are promising, the research acknowledges the early-stage nature of CSRI development and implementation in China. Further refinement and systematic application are needed to explore its full potential. The study contributes to bridging the gap between theory and practice, offering a concrete instructional solu-

tion for enhancing student learning outcomes in university EFL settings. It underscores the strategic role of structured, student-centered interventions in fostering academic success and developing lifelong learning habits.

Author Contributions

Conceptualization, Y.W.; methodology, Y.W.; software, Y.W.; validation, Y.W.; formal analysis, Y.W.; investigation, Y.W.; resources, A.N.; data curation, N.P.; writing—original draft preparation, Y.W.; writing—review and editing, A.N.; visualization, N.P. All authors have reviewed and consented to the published version of the manuscript.

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Institutional Review Board Statement

The present study did not necessitate ethical approval from the authors' institutions, as it does not involve human or animal subjects. However, the Certificate of Exemption was issued to the researcher. Moreover, the Participation Letter of Information and Consent, dated 1 March 2025, was issued to obtain the research participants' voluntary consent to participate in this study. In this regard, they consented to partake in the research and signed the Participation Letter of Information and Consent.

Informed Consent Statement

Not applicable.

Data Availability Statement

The article published in this journal is available on the Buriram Rajabhat University website in Thailand at <https://hs.bru.ac.th/> and www.bru.ac.th.

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Conflicts of Interest

The authors declare no conflict of interest.

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