

Supporting Online Chinese Narrative Writing Pedagogy through Metacognitive Writing Process and Approach: A Design-Based Research

(应用元认知写作过程和方法支持在线华文记叙文写作课程的设计本位研究)

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Abstract: This study investigated Chinese narrative writing among 50 secondary students in Singapore. It aimed to design and orchestrate a Chinese narrative writing pedagogy (CNWP) using metacognitive writing process and pedagogical approach of making thinking visible with technology. Both quantitative and qualitative data in Design-based Research (DBR), including writing performance, course feedback questionnaires, focus group interviews and teacher's reflections, were collected. The result indicated that CNWP significantly improved students' narrative writing performance. The Chinese language teacher and most students had positive attitudes toward CNWP, as it positively affected students' writing confidence, writing strategies, and metacognition. Using design-based research, this study has detailed the process of improving CNWP and provided effective pedagogical strategies for Chinese narrative writing.

摘要: 本研究通过对新加坡 50 位中学生记叙文在线中文写作情况的调查,旨在设计融入元认知写作过程和科技辅助的可见思维策略的记叙文中文写作课程。本次设计本位研究收集了量化和质化的研究数据,包括记叙文写作的表现、两次问卷调查、小组访谈以及教师反思。结果显示:该写作课程能够明显地改善学生的记叙文写作表现。中文教师和多数学生对该写作课程持有积极的态度,他们认为该课程对提升学生的写作自信、写作策略以及元认知有着积极的影响。本次设计本位研究阐明了在线写作课程改进的过程,同时也提供了一次设计本位研究课程发展的范例。

Keywords: Online Chinese language writing pedagogy, metacognitive writing process, making thinking visible, design-based research

关键词: 在线中文写作课程、元认知写作过程、使思维可见、设计本位研究

1. Introduction

Narrative writing is a compulsory writing component for all Secondary One students studying Chinese in Singapore (Tay et al., 2015). Narrative writing can allow students to express their stories creatively and help students explore different characters and settings (Tienken, 2003). Narrative writing can train logical thinking and the consistent presentation of students' thoughts (Walker, 2019). Narrative writing can make an important connection between a student's personal life and the school experience (Thoughtful learning, 2021).

As Chinese is taught as a second language (L2), writing a good narrative Chinese composition is not an easy task for most students (Tay et al., 2015). Students complain that narrative Chinese writing is difficult because they do not have enough words (Leong, 1999). However, some scholars proposed Singapore students' problems in writing are not only limited and incorrect use of vocabulary, but also insufficient writing strategies (Puah et al., 2013; Wong et al., 2011). Due to students' lack of enough writing strategies, even if students have sufficient relevant words, they still think it is difficult to describe a scene in a story and design the opening of a narrative composition. Zhang et al. (2016) investigated the use of strategies by Singapore lower secondary students in Chinese narrative writing. They found students with higher writing scores adopt more high-quality writing strategies. Therefore, for Chinese narrative writing, students must have both sufficient words and writing strategies.

Another reason why students struggle with narrative writing is that teachers usually do not emphasise students' writing skills and cognition processes, yet expect students to create acceptable products (Gu, 2004). Based on my observation, L2 Chinese teachers in Singapore only provide guidance and a model essay for students to imitate when teaching narrative composition. Even if students can imitate a model essay, it is still hard for them to use the skills learned to write on other topics. When the writing topic changes, students still do not know how or what to write. Due to insufficient use of planning, evaluation, and self-monitoring strategies in the writing processes, students are not aware of their thoughts and thinking processes (e.g., Hull et al., 2011), making it difficult for them to apply their writing skills to new writing tasks. Therefore, the metacognitive writing process is important to students' writing.

To be a good writer, one needs not only task-specific knowledge and skills, but also metacognitive awareness and knowledge (Panahandeh & Asl, 2014). Metacognition in writing involves planning, evaluating, and self-monitoring of writing (Chamot & O'Malley, 1994). Panahandeh and Asl (2014) further proposed a new metacognitive process of writing — including preparation, presentation, practice, evaluation, expansion — and investigated the effect of metacognitive strategies on argumentative writing accuracy for foreign language learners. They found metacognitive strategies have a positive effect on foreign language learners' writing performance. Therefore, it is necessary to use metacognitive strategies when teaching Chinese Second Language (CSL) writing, so students can make a plan for a task, monitor their thoughts, and regulate thinking processes for narrative writing.

Over the past decade, making thinking visible (MTV), a research-based pedagogical approach developed by scholars at Harvard University (Project Zero, 2016), has been widely applied to different aspects of language learning to facilitate the use of metacognitive strategies. MTV provides thinking tools to involve students in thinking activities through thinking routines that are short, easy-to-learn, mini-strategies that extend and deepen their thinking (Project Zero, 2016). The thinking routines help students plan their writing, self-monitoring their learning processes, and self-evaluate their progress. The thinking routines can enhance students' thinking and improve their learning (Ritchhart & Church, 2020).

A growing body of research has consistently found that online approaches positively impact writing learning (e.g., Li et al., 2012; Li & Chu, 2018). With the advancement of digital technology, various online tools have emerged to support language learning. Most research focuses on wiki-based collaborative learning in writing through peer assessment and writing approach by offering Singapore students procedures that help them give peer feedback and improve vocabulary, sentences, paragraph of micro-skills (Chin et al., 2015 & Wong et al., 2011). Yet, few studies examined how MTV activities can be used in online writing and evaluate its efficacy.

The purpose of this study is to visualize the metacognitive writing process by using online MTV activities. This paper reports a design-based research project conducted to address the aforementioned gaps. The study aimed to address the following two research questions:

- 1) How to design an online Chinese narrative writing module that reflects the metacognitive writing process?
- 2) How to support Chinese narrative writing through online MTV activities?

2. Literature Review

Metacognition and writing

Metacognition is commonly defined as individuals' ability to know their cognitive functions, monitor them while they operate, and control and adjust them according to the needs of the learning process (Mitsea & Drigas, 2019). Metacognitive strategies are important in L2 acquisition (e.g., Raoofi et al., 2014). Language learners who use metacognitive strategies are able to monitor their learning, and they know how and when to employ the most relevant strategies to accomplish a given task (Anthonysamy, 2021).

Metacognition in writing involves planning, evaluating, and self-monitoring of writing (Chamot & O'Malley, 1994). Goctu (2017) noted that planning might involve brainstorming some keywords and choosing the basic tense for the writing piece, evaluating is more effectively completed by peer-evaluation and self-evaluation, and self-monitoring involves controlling the writing process while writing the text. Panahandeh and Asl (2014) further expanded metacognitive strategies, which include preparation, presentation, practice, evaluation, and expansion.

Metacognitive strategies can not only enhance language learners' confidence, but also can improve language learners' performance. Stewart et al. (2015) demonstrated that metacognition during writing is influenced by emotional factors, such as anxiety and diffidence in writing. McMullen (2009) found metacognitive strategies can improve L2 learners writing skills, which can last for a lifetime. Wang et al. (2009) found metacognitive knowledge has been recognized as a significant attribute affecting the process as well as the product in SL writing. Goctu (2017) believed metacognitive instruction could enhance students' academic writing skills and their self-awareness in learning and train students to become self-regulated learners. While metacognitive strategies are important for L2 writing, Surat et al. (2014) found 18 secondary school students in Malaysia lacked metacognitive writing skills. They suggested metacognitive writing skills should be explicit using the planning technique, drafting introduction technique, and expanding the topic sentences.

Making thinking visible

Making thinking visible is a research-based pedagogical approach that looks into how to encourage learners' engagement, independence, and understanding (Peachey & Maley, 2015). The approach emphasizes three core practices: thinking routines, the documentation of student thinking, and reflective professional practice (Project Zero, 2016). Thinking routines are specific pedagogical activities that develop students' understanding and are most frequently used in teaching (Ritchhart et al., 2011). Thinking routines have a variety of thinking prompts, such as describing, interpreting, wondering, summarizing, and reflection. This study aims to use an easy-to-learn thinking routine to involve students so L2 students can reflect on their acquired knowledge for narrative writing.

Specifically, "I used to think, and now I think," one of the thinking routines, can help learners reflect on how their thinking has changed over time (Ritchhart et al., 2011). This routine can be used whenever students' initial thoughts, opinions, or beliefs are likely to have changed as a result of instruction or experience (Ritchhart, 2016).

The thinking routines have been applied in different disciplines. Papalazarou (2015) applied MTV in English language lessons where she encouraged students to think about thinking itself and develop their metacognitive skills. Similarly, MTV has also been applied in Science (Gholam, 2019). Students have the opportunity to explore how their thinking has changed over time. Teachers think "I used to think, now I think" is an effective routine that can be used as a formative assessment and even a summative assessment tool (Gholam, 2019). Yet, few studies examined how MTV activities can be used in online Chinese writing courses and evaluate its efficacy.

Therefore, this paper will use the thinking routine to allow students to reflect on their acquired knowledge and visualize their thinking process.

3. Method

3.1 Design-Based Research

Design-based research (DBR) is a methodology designed by and for educators who seek to increase the impact, transfer, and translation of education research into improved practice (Anderson & Shattuck, 2012). Reeves (2006) listed four sequential steps in design-based research: 1) analysis of practical problems, 2) development of solutions based on existing knowledge, 3) evaluation of the solution in practice, and 4) reflection on the design principles produced. The sequential steps of this DBR are listed in Figure 1.

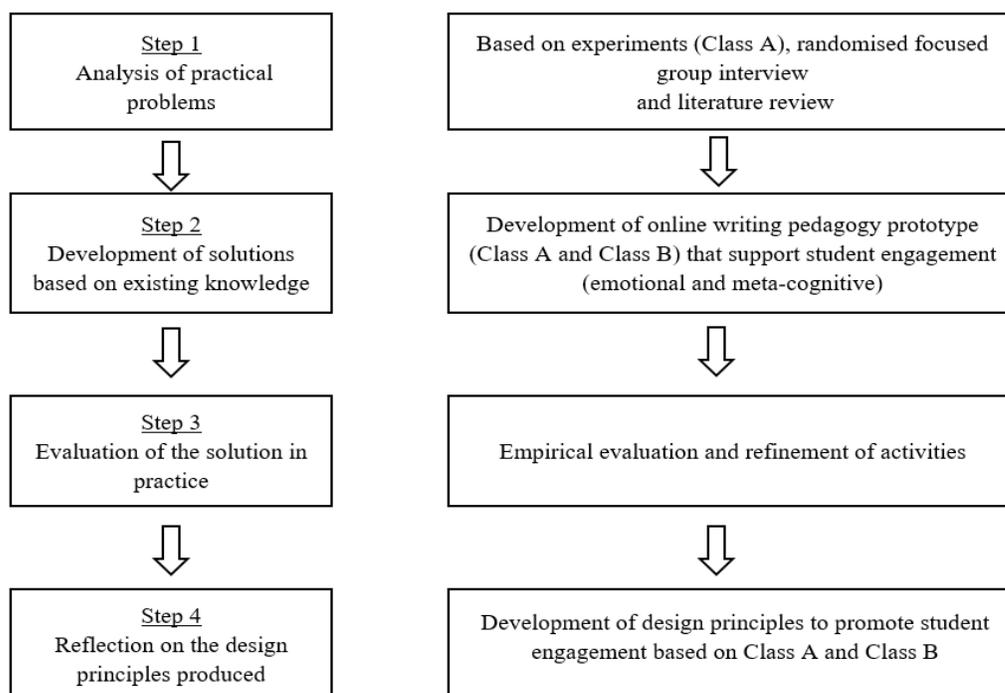


Figure 1 The four-step design-based process of the study

In Step 1, this study articulates practical problems based on an experiment (Class A) and a randomised focus group interview, and investigates new findings in the field of metacognitive strategies and MTV pedagogical approaches for narrative writing. In Step 2, based on the outcome of Step 1, this study applies the online writing teaching and learning pedagogy prototype (Class A and Class B) that supports students' engagement and increases their writing confidence. In Step 3, this study evaluates the effectiveness of the pedagogy applied in Step 2 as a potential solution to the problem. In Step 4, this study reflects on the entire project and summarizes principles for designing effective online writing pedagogy.

3.2 Participants

Participants in Phase 1 and Phase 2 included 23 students in Class A (the seventh grade class in 2020), with an average age of 13 years. Participants in Phase 3 included 27

students in Class B (the seventh grade class in 2021) with an average age of 13 years. All participants gave their informed consent prior to data collection.

The school was a government school and imposed Singapore's central curriculum, in which the Chinese language is a compulsory subject taught for three and one-half hours each week. At the time of the study, the students had studied the Chinese language for six years (from first to sixth grade).

The lead author taught both Class A and B and was the facilitator of this study. The main role of teaching was to design an online writing pedagogy that would guide students to use online platforms for their narrative writing. An additional role was to record and collect research data to improve the teaching pedagogy.

3.3 Data Sources

In Phase 1, the instruments included teachers' reflections and a student focus group interview to analyze practical problems based on an experiment from Class A in Step 1 (see Figure 1). As the phase aimed to explore practical problems, data were not collected on students' writing performance. In Phase 2, the instruments included students' writing performance, feedback questionnaire, and focus group interview. In Phase 3, the instruments included students' writing performance and a feedback questionnaire.

Table 1 Pedagogy information of Class A and Class B

Study	Course topic	Skills for topic	Duration	Data collection	Phase
Class A	Descriptive technique in narrative writing	Describe sight, hearing, smell, taste, and touch.	70 min	Focus group interview, Teachers' reflection	Phase 1
Class A	The opening of Chinese narrative writing	Using the protagonist's name, appearance description, character portrayal, creating a basis to organize a Chinese narrative writing.	70 min	Students' writing performance and feedback questionnaire Focus group interview	Phase 2
Class B	The opening of Chinese narrative writing	Using the protagonist's name, appearance description, character portrayal, creating a basis to organize a Chinese narrative writing.	70 min	Students' writing performance and feedback questionnaire	Phase 3

For the writing performance, students were asked to write the opening of a narrative composition to bring out its theme, using the protagonist's name, appearance description,

character portrayal, creating a basis to organize a Chinese narrative writing. (see Table 1). Each item was worth 2.5 points, for a possible total of 10 points for writing performance in Phases 2 and 3.

3.4 Instruments

This study adopted two feedback questionnaires; the first in Phase 2 and the second in Phase 3. The contents of the two questionnaires were different. The first questionnaire was a modified version of Li's and Chu's (2018) questionnaire, the Cronbach's alpha value for which indicated overall reliability of 0.88. The feedback questionnaire in Phase 3 was modified based on responses to the feedback questionnaire in Phase 2. Both questionnaires used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) to measure students' attitudes towards and perceptions of Chinese narrative writing pedagogy (CNWP).

The first questionnaire (Phase 2) explored whether the teaching content was of interest to students, as teaching content that satisfies students' learning interest merits further research. It also investigated teachers' role in online learning. The questionnaire included four dimensions: Meaning of learning content consisted of five items (Cronbach's alpha= 0.84); e.g., "The 'Introducing the theme directly' (直接点题) method can help me better understand how to write an essay." Effectiveness of the learning platform consisted of five items (Cronbach's alpha= 0.66); e.g., "The content of the videos on SLS attracts my attention." Learning strategies consisted of five items (Cronbach's alpha=0.60); e.g., "The 'I used to think, now I think' thinking routine helps me to reflect on and understand how my thinking has changed." The role of the teacher consisted of three items (Cronbach's alpha= 0.39); e.g., "Although learning writing skills is conducted through SLS, it is still important for the teacher to provide additional explanation and guidance."

The second questionnaire (Phase 3) explored the effectiveness of CNWP, the role of online learning tools, and the impact of metacognitive strategies. The questionnaire included three dimensions. The online learning process consisted of five items; e.g., "The polling activity allows me to recall what I have learnt on the methods of writing essay introductions" and "Through fill-in-the-blanks questions, I am able to understand the specific content required for the "introducing the theme directly" (直接点题) method, such as the name, appearance, and personality traits of the characters in my essay." Learning strategies consisted of five items; e.g., "For the editing task, checking my work after completing the task helps ensure that I do not miss out on any points" and "Self-reflection allows me to see the changes I have made in writing essay introductions." Effectiveness of the learning platform consisted of five items; e.g., "This exercise increased my confidence in writing" and "The use of SLS makes learning writing skills less stressful." The second questionnaire removed items on the role of the teacher because that role was improved in CNWP.

To gather more in-depth insights on the focused group interview, face-to-face interviews were conducted with four students from Phase 1 and Phase 2. Student interviewees were randomly selected, and their participation was voluntary. Each interview lasted approximately 20 minutes. All interviews were recorded and transcribed. The

interviewees were asked to share their experiences with using an online learning approach to write the opening of a narrative in Chinese, give feedback on the benefits and difficulties of the online pedagogy, and describe their attitude toward using it. The interviews were structured around the following questions: 1) What do you think is the difference between such a lesson and a normal writing lesson? 2) What do you think are the advantages of these online questions? 3) What do you think are the drawbacks of such an online lesson?

4. Design-Based Learning Application

Step 1: Analysis of practice problems

The concept of the metacognitive writing process is incorporated into this pedagogy. Metacognition in writing involves the planning, evaluating, and self-monitoring of one's writing (Chamot & O'Malley, 1994). Panahandeh and Asl (2014) further proposed a new metacognitive process of writing that consists of five steps: preparation, presentation, practice, evaluation, and expansion. First, preparation could help students identify what they knew about the contents and what gaps in their prior knowledge should be addressed. Second, the metacognitive strategies in writing were presented and explained to students. Third, students had the opportunity to practice new strategies with authentic writing activities and to begin to plan their writings according to the self-planning strategy. Fourth, students needed to check the level of their writing through self-evaluation so they could well understand what they had learned about new strategies, skills and what needed to be reviewed. Fifth, students had opportunities to transfer new strategies to a different context. This paper applies this metacognitive strategy procedure to online narrative writing pedagogy.

In Phase 1, this study designed Chinese Narrative Writing Pedagogy 1 (see Table 2) for 23 students in Class A and focused on descriptive techniques using an online learning platform. The pedagogy teaching tools consists of seven steps, i.e., take a poll, introduction concept, self-reflection, in-depth concept, planning before writing, observation before writing and paragraph writing, each of which uses different online learning tools, such as taking a poll to learn about students' prior knowledge, watching a video to draw students' attention. The facilitator provided instructions only, without explanation. Each student followed the instruction and completed this pedagogy in 70 minutes, using his/her laptop.

Table 2 Chinese Narrative Writing Pedagogy 1(CNWP1)-a descriptive technique

Metacognitive writing process	Teaching procedure	Teaching content	Teaching tool	Teaching strategy
Preparation	Take a poll (I)	Find out the previous descriptive technique (student-centered learning)	Take a poll	Students' prior knowledge

Presentation	Introduction concept (II)	Introduction new descriptive technique (teacher-centred learning)	Watch a video about the introduction concept	Paying attention
Evaluation	Self-reflection (III)	Realize what you have learned (student-centered learning)	Thinking routine “I used to think, Now I think...”	Setting goals and objectives Self-evaluation
Presentation And Practice	In-depth concept (IV)	Explain new descriptive technique and ask the question (teacher-centred learning)	Fill in the blanks	Finding out about language learning and organising
Practice	Planning before writing(V)	Make a plan to choose any of the new descriptive techniques (student-centered learning)	Multiple choice	Planning for a language task
Practice	Observation before writing (VI)	Understanding story scene from the video (student-centered learning)	Thinking routine “See think wonder”	Self-monitoring
Expansion	Paragraph writing (VII)	Using a new descriptive technique to describe the story scene in one paragraph. (student-centered learning)	Freewriting	Seeking practice opportunities

In the CNWP1 process, students first recall the description techniques used, such as action description and language description, by voting. Second, teachers play a video of a course resource produced by the Singapore Ministry of Education on what portrait descriptions are. The procedure (II) can not only make students initially understand what they have learnt, but also attract students’ attention through watching one video. Third, students use the thinking routine (i.e., I used to think..., now I think...) to reflect on what they have learnt and how their thinking has shifted and changed over time. Fourth, the facilitator explains five sense descriptive technique and asks questions. Students answer the questions by filling the online blanks; to emphasize the five senses, description techniques are made up (i.e., describe sight, hearing, smell, taste, and touch). Fifth, students choose new descriptive techniques through completing online multiple-choice tools. Sixth, students watch a three-minute animated video about airport farewells provided by the Singapore Ministry of Education and deeply comprehend the video content through

answering See-Think-Wonder questions, which is an MTV thinking routine. Last, students use five-sense descriptive techniques to write a one-paragraph story about airport farewells through online free writing.

After CNWP 1, the lead author conducted a focus group interview to collect feedback from four students from Class A. Responding to the first interview question (“What do you think is the difference between such lesson and normal writing lesson?”), most interviewees stated they believed the lesson could help their Chinese writing. Specifically, CNWP 1 differed from normal writing lessons in that teachers first asked different types of questions that helped students understand how to write, rather than having them immediately begin writing. Oxford (1990) showed that students employ metacognitive strategies to help them coordinate their learning process by centring, arranging, planning, and evaluating their learning. In terms of the second interview question (“What do you think are the advantages of these online questions?”), students thought taking a poll could summarise the knowledge learned before the lesson, while pre-writing (see Table 2) could help them plan the writing process through multiple online choices. In their responses to the third interview question (“What do you think are the drawbacks of such online lesson?”), some students said they needed more scaffolding on self-reflection to answer the question.

Teacher reflection showed the same pattern: students could not understand how to write about their thought changes after learning without explanation from the teacher. Project Zero (2019) suggested teachers should explain to students that the purpose of this activity is to help them reflect on their thinking about the topic and to identify how their ideas have changed over time. In addition, the teacher’s reflections showed that providing too many reflection sessions in one lesson period weakened the main learning target. An effective lesson required students to aim for the target, deepen their understanding (Moss and Brookhart, 2012), and reflect on the main learning target.

Step 2: Development of solutions based on existing knowledge

Based on the outcome of Step 1 (i.e., analysis of practical problems), there are three areas for improvement: cognitive processing, the learning target, and the pre-writing activities. The change from Step 1 to Step 2 consisted of moving self-reflection to after the writing task and editing, keeping one thinking routine related learning target, and adding an editing task before the writing task to follow metacognitive strategies for learning (Oxford, 1990), focus more on the learning target (Moss & Brookhart, 2012), and increase students’ writing confidence (Balta, 2018). By reflecting on the teaching process, we found that when self-reflection occurred before students had developed an in-depth understanding of the concepts, students were not well prepared to answer the questions (Panahandeh & Asl, 2014).

Additionally, to more intuitively reflect the changes before and after students’ writing, a pre-test and post-test were added before and after the class. The curriculum process was adjusted from CNWP 1 to CNWP 2, as seen in Figure 2.

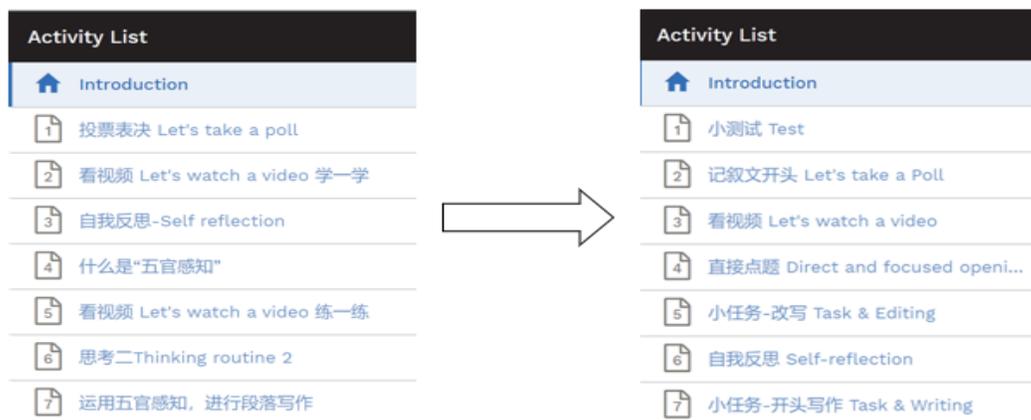


Figure 2 Curriculum changes from CNWP1 on the left to CNWP2 on the right

Step 3: Evaluation of the solution in practice

After the development in Step 2, CNWP 2 (see Table 3) and instructional materials were put into practice in the same school, first in Class A (23) and then in Class B (27) after half a year. Class A was the seventh-grade class in 2020; Class B was the seventh-grade class in 2021. Both classes of students took the same level of Chinese language courses. The writing content of CNWP 1 and CNWP 2 was different. CNWP 1 focused on descriptive technique and CNWP 2 on the opening paragraph of a narrative composition. The purpose of changing the teaching content was to increase the effectiveness of using the metacognitive writing process and pedagogical approach.

Table 3 Chinese Narrative Writing Pedagogy 2 (CNWP2)-opening paragraph

Metacognitive writing process	Teaching procedure	Teaching content	Teaching tool	Teaching strategy
Preparation	Pre-test (I)	Test students' performance. (student-centered learning)	Freewriting	Identify differences between students' learning before and after the intervention
Preparation	Take a poll (II)	Find out the previous writing experience for the opening paragraph. (student-centered learning)	Take a poll	Students' prior knowledge

Presentation	Introduction concept (III)	Introduction how to directly opening paragraph. (student-centered learning)	Watch a video about the introduction concept.	Paying attention Setting goals and objectives
Practice	In-depth concept (IV)	Answer the online question (student-centered learning)	Fill in the blanks	Finding out about language learning and organising
Practice	Planning before writing (V)	Make a plan to complete opening paragraph. Edit the first paragraph of an article. (student-centered learning)	Multiple-choice freewriting	Planning for a language task and complete a small task.
Evaluation	Self-reflection (VI)	Realize what you have learned (student-centered learning)	Thinking routine “I used to think, Now I think...”	Review goals and objectives Self-evaluation
Expansion	Post-test (VII)	Test students' performance (student-centered learning)	Freewriting	Seeking practice opportunities

Note: The grey highlights of the table indicate the modification of CNWP2

To evaluate CNWP 2 in Class A, this study assessed students' writing performance and attitudes, which will be detailed below.

1) Class A writing performance in CNWP 2

This study conducted the Pre-test and Post-test 1 for Class A in CNWP 2. After two weeks, students completed two new topic writing tasks as Post-test 2 and Post-test 3. The title of Post-test 2 was “my new neighbor,” while the title of Post-test 3 was “one of my elementary school teachers.” This study adopted descriptive statistical methods and compared students' performance on writing tasks four times, as shown in Table 4. Student's ages ranged from 13 to 14 years. The data from Pre-test (Mean=4.89, SD=3.24), Post-test 1 (Mean=6.30, SD=3.68), Post-test 2 (Mean=7.93, SD=1.94), Post-test 3 (Mean=7.82, SD=2.53) showed an increasing trend in students' writing performance.

Table 4 Students' writing performance phase II (class A)

S/N	Pre-test	Post-test 1	Post-test 2	Post-test 3
Mean	4.89	6.30	7.93	7.82
SD	3.24	3.68	1.94	2.53

The unpaired t-test results from the pre-test ($M = 4.89$, $SD = 3.24$) and post-test 3 ($M = 7.82$, $SD = 2.53$) students' writing performance indicate that the implementation of CNWP2 resulted in a significant improvement in narrative writing, $t(22) = 4.45$, $p = .0001$. Likewise, by focus group interview, most students believed that the online writing pedagogy was easy to understand and could help their Chinese narrative writing.

2) Class A students' attitude towards CNWP2

The feedback questionnaire in Phase II investigated Class A students' attitudes towards CNWP 2, as shown in Table 5.

Table 5 The first questionnaire in phase II

Questions	Mean	SD	Reliability
Subscale 1: Meaning of learning content	4.16	0.74	0.71
Subscale 2: Effectiveness of learning platform	3.75	0.88	0.68
Subscale 3: Learning Strategies	3.97	0.73	0.65
Subscale 4: The role of the teacher	4.02	0.93	0.80

The mean values and standard deviations of the questionnaire data were as follows: Meaning of learning content (Mean=4.16, SD=0.74, Cronbach's alpha=0.71); Effectiveness of learning platform (Mean=3.75, SD=0.88, Cronbach's alpha=0.68); Learning Strategies (Mean=3.97, SD=0.73, Cronbach's alpha=0.65); The role of the teacher (Mean=4.02, SD=0.93, Cronbach's alpha=0.80).

3) Class A focus group interview in CNWP2

After the implementation of CNWP2, the lead author conducted the focus group interview to collect feedback from four randomly selected students from Class A. Based on the second interview question, students believed that taking a poll (Part I) could summarise the knowledge learned before this lesson, pre-writing (Part V) could monitor the writing process using online multiple choices, and self-reflection (Part VI) could help them visualise the thought process. From the third interview question, the students thought they needed more learning concept comments (Parts III & IV) to answer the question and could not complete this part without further explanation from the facilitator.

4) CNWP2 to CNWP3

Based on Class A's learning outcomes in CNWP2, this study put CNWP 3 into practice for Class B. Based on the outcome of the descriptive statistical analysis and the focus group interview for CNWP2, one area for improvement was identified: the role of teacher. Accordingly, this study made adjustments to Part III and Part IV (see Table 6). For example, in the CNWP3 concept introduction process, this study changed from students watching an animated video to teachers introducing concepts based on an animated video. In terms of in-depth concepts, the teacher guide students to emphasise key points from online questions so they can deeply comprehend new writing knowledge.

Table 6 Chinese Narrative Writing Pedagogy 3--opening paragraph

Metacognitive writing process	Teaching procedure	Teaching content	Teaching tool	Teaching strategy
Preparation	Pre-test (I)	Test students' performance. (student-centered learning)	Freewriting	Identify differences between students' learning before and after the intervention
Preparation	Take a poll (II)	Find out the previous writing experience for the opening paragraph. (student-centered learning)	Take a poll	Students' prior knowledge
Presentation	Introduction concept (III)	Introduction how to directly opening paragraph. (teacher-centered learning)	Watch an animated video about the introduction concept	Paying attention Setting goals and objectives
Presentation And Practice	In-depth concept (IV)	Explain how to directly opening paragraph and ask the question. (teacher-centered learning)	Fill in the blanks	Finding out about language learning and organising
Practice	Planning before writing (V)	Make a plan to complete opening paragraph. Edit the first paragraph of an article. (student-centered learning)	Multiple-choice freewriting	Planning for a language task and complete a small task.
Evaluation	Self-reflection (VI)	Realize what you have learned (student-centered learning)	Thinking routine "I used to think, Now I think..."	Review goals and objectives Self-evaluation
Expansion	Post-test (VII)	Test students' performance (student-centered learning)	Freewriting	Seeking practice opportunities

Note: The grey highlights of the table indicate the modification of CNWP3

5) Class B writing performance in CNWP3

This study conducted the Pre-test and Post-test 1 for Class B in CNWP3. After two weeks, students completed two new writing topic tasks as Post-test 2 and Post-test 3. The title of Post-test 2 was “my new neighbor.” The title of Post-test 3 was “one of my elementary school teachers.” This study adopted descriptive statistical methods and compared students’ performance on writing tasks four times, as shown in Table 7. Students’ ages ranged from 13 to 14 years. The results of the Pre-test (Mean=3.80, SD=2.44), Post-test 1 (Mean=6.94, SD=3.13), Post-test 2 (Mean=7.04, SD=2.20), Post-test 3 (Mean=7.78, SD=1.74) showed an increasing trend in students’ writing performance.

Table 7 Students’ writing performance phase III

S/N	Pre-test	Post-test 1	Post-test 2	Post-test 3
Mean	3.80	6.94	7.04	7.78
SD	2.44	3.13	2.20	1.74

The unpaired t-test results from the pre-test ($M = 3.80$, $SD = 2.44$) and post-test 3 ($M = 7.78$, $SD = 1.74$) students’ writing performance indicate that the application of CNWP3 resulted in an improvement in narrative writing, $t(26) = 4.32$, $p = .000$.

6) Class B students’ attitude towards CNWP2

The feedback questionnaire in Phase III investigated Class B students’ attitudes towards CNWP2, as shown in Table 8. The second questionnaire was modified based on feedback on the first questionnaire.

Table 8 The second questionnaire in phase III

Questions	Mean	SD	Reliability
Subscale 1: Online learning process	4.06	0.66	0.73
Subscale 2: Learning Strategies	3.86	0.71	0.68
Subscale 3: Effectiveness of learning platform	4.10	0.80	0.83

The means values and standard deviations for the questionnaire data were as follows: online learning process (Mean=4.06, SD=0.66, Cronbach’s alpha=0.73), learning Strategies (Mean=3.86, SD=0.71, Cronbach’s alpha=0.68), effectiveness of learning platform (Mean=4.10, SD=0.80, Cronbach’s alpha=0.83).

Step 4: Reflection on the design principles produced

Based on metacognitive writing process theory and both quantitative and qualitative data collected in the study, a Chinese narrative writing pedagogy was developed and revised. This study concludes five design principles to support students’ online narrative writing.

a) Principle 1: Use polls to recall students’ prior writing knowledge

In Principle 1, polls are used to inform the design of a pre-writing online pedagogy. Prior writing knowledge plays a vital role in students' academic achievement and should be considered in course designing and planning (Tawalbeh & Al-zuoud, 2013). Point-and-click multiple-choice questions are recommended to assess students' prior knowledge of a subject and identify common misconceptions to find an appropriate entry point for introducing a new topic (Zhu, 2007). Similarly, taking a poll is recommended because it can recall students' prior writing experience and stimulate their interest. More importantly, teachers can quickly gauge students' knowledge level.

- b) Principle 2: Use authentic and contextualised videos with teachers' comments to introduce writing concepts and skills.

In Principle 2, having students watch interesting animated videos is recommended to attract their attention and introduce writing concepts and skills, as video quality directly or indirectly impacts online learning (Akçayır & Akçayır, 2018). However, based on the findings, merely providing videos may not help to learn, which is consistent with Zheng, Lin, and Kwon (2020) where they found that having outside links or multimedia materials may distract students in online courses. Therefore, teachers need to explain how the videos are connected to the learning objectives after playing them. The role of the teacher is of great importance and cannot be neglected. Therefore, teachers' guidance is integrated with videos.

- c) Principle 3: Using fill-in-the-blank questions as an organizer of opening narrative writing.

In Principle 3, teachers can produce fill-in-the-blank questions to address the components of knowledge separately. It is easy to find keywords to help students understand the writing content. For instance, students could not know how to start the opening of a narrative essay, nor with what. In CNWP 3, students can comprehend the essentials of writing in fill-in-the-blank form, such as using the protagonist's name, appearance description, and character portrayal, creating the basis to organize a narrative writing opening.

- d) Principle 4: Using multiple-choice tools to plan writing.

In Principle 4, this study suggests that using multiple-choice planning tools allows students to complete the writing plan more quickly and makes it easier to check whether the writing task has been properly completed. Students (L2) face many struggles in completing their writing (L1); some learners have difficulty even getting started (Al-Gharabally, 2015). Teo et al. (2014) proposed dividing complex tasks into different steps to reduce students' learning anxiety. Compared with a writing outline, using multiple-choice tools to plan writing can increase students' confidence in writing and enable them to access the writing process more easily.

- e) Principle 5: Using making-thinking-visible routines to facilitate self-evaluation.

In Principle 5, this study recommends using "I used to think... Now I think..." to guide students to reflect on what they have learnt. Through designing their thinking

routines, students can reflect on what they have learnt and visualise their thought processes (Cheng et al., 2019). However, teachers should provide more specific hints to help students answer the question. Teachers should explain to students that the purpose of this activity is to help them reflect on their thinking about the topic and identify how their ideas have changed over time. For example, “I want to write what it is that you used to think about description techniques” or “I want you to think about how your ideas about description techniques have changed as a result of what we’ve been studying” (Project zero, 2019).

5. Conclusions and Limitations

This design-based research has explored ways to support students by using an online learning approach to make thinking visible for Chinese narrative writing. Through CNWP 1 to CNWP 3, a series of design principles were developed to inform the design and implementation of instructional activities for Chinese narrative writing and assess their efficacy. For example, through the teacher’s observation, if we provided too many reflection tools, students would not focus on learning (Moss & Brookhart, 2012). This study suggests that teachers should choose a suitable thinking tool to help students reflect on what they have learnt. Watching videos is not enough for students to understand writing skills (Zheng et al., 2020). This study suggests that teachers provide more comments to explain the video content and connect it to the lesson objectives.

The role of the teacher is of great importance and cannot be neglected in an online learning community (Maor, 2003). The teacher directs and redirects the learners’ attention toward key concepts and ideas (Bolhuis & Voeten, 2001). Like a good tour guide, a good teacher does not want anyone to miss out on the journey’s highlights. In traditional writing lessons, the teacher asks students to draft a writing outline (Al-Gharabally, 2015), and students must spend time completing it. This study suggests that using multiple-choice tools to plan their writing can increase students’ confidence.

This study has several limitations that must be acknowledged and makes some recommendations for future research. First, this study was conducted in a single secondary school in Singapore, so caution should be exercised when applying this research outcome in other educational contexts. Further research is required to test the design principles in different contexts (e.g., Chinese narrative writing in primary schools and junior colleges). Second, this study did not focus on specific student characteristics (e.g., gender, anxiety about Chinese writing). Further research is required to design principles to meet special student learning needs. Third, this study only focused on descriptive techniques and opening a composition for Chinese narrative writing. Further research should address writing a full Chinese narrative composition on an online platform.

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