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Honors Project Title:

*The effects of story-mapping in enhancing ESL students' story
comprehension*

Declaration

I, Lam Sum Yee, declare that this research report represents my own work under the supervision of **Dr. Yu, Baohua**, and that it has not been submitted previously for examination to any tertiary institution.

(Lam Sum Yee)

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The effects of story-mapping in enhancing ESL students' story comprehension

Abstract

This study examined the effects of story-mapping in enhancing the story comprehension of elementary ESL students, and their views towards the strategy. Fourteen participants, who were primary three students from a local Hong Kong school, were guided to read stories using story-mapping in a reading program. Using a quasi-experimental one-group design, their comprehension performances were assessed by comprehension tests and interviews, and their views on story-mapping were collected by a survey. The test and interview results revealed that the participants had significantly better story comprehension when story-mapping was present, though the effect could not be maintained after the strategy was withdrawn. On the other hand, the survey indicated that the participants found the strategy effective in guiding their story comprehension, and had strong incentives in learning and using it. It was concluded that adopting story-mapping as a regular instructional practice can bring positive impacts on ESL students' story comprehension. In addition, it was found that the participants preferred more visual elements and autonomy in story-mapping practice. Further research is suggested on the design and implementation of story-mapping to offer pedagogical insights for the future implementation of the strategy in classroom.

Key words: story-mapping; story map; story comprehension; story schema; comprehension strategy; ESL learning

1. Background

1.1 Introduction

Story is an important source for children's literacy learning. It is among the very first text types children are exposed to. It is interesting, imaginative and can motivate children's literacy learning (Lynch-Brown, Tomlinson, & Short, 2011). In Hong Kong, story is one of the target learning text types of the primary literacy education. In the Curriculum Development Council (CDC) English Language Curriculum Guide (Primary 1-6) 2004, story is listed as one of the text types primary students should be exposed to and produce, and teachers should facilitate "conscious learning and explicit teaching" of it in classroom (Curriculum Development Council, 2004, p.16).

Story-mapping has been recommended as an effective instruction strategy in promoting students' story comprehension in English as a First Language (EFL) context (Baumann & Bergeron, 1993; Davis & McPherson, 1989; Idol, 1987) and in special education field (Boulineau, Fore, Hagan-Burke, & Burke, 2004; Li, 2007). Despite its success in EFL and special education classrooms, the empirical researches on story-mapping in ESL teaching are lacking. Therefore, the study aims to find out the effects of story-mapping on ESL students' story comprehension. In addition, students' views were obtained for a comprehensive evaluation of the strategy. By setting the study in Hong Kong, it hopes to inform the future practice of story instruction as well as to promote the use of story-mapping in Hong Kong English classroom.

1.2 Literature review

1.2.1 Story structure and comprehension

Stories typically have a schematic structure (Carrell, 1985; Mandler & Johnson, 1977). The basic story structure consists of five central narrative elements, namely characters, setting, problem, events, and ending. This structure, which succinctly captures the key components of stories, was incorporated in several studies that targeted on young readers (Ballard, 1988; Baumann & Bergeron, 1993; Idol, 1987) and proven to be beneficial to their story comprehension.

Table 1 The five central narrative elements

Narrative elements	Description
Characters	The people, animals or other creatures in a story
Setting	The time and place of a story
Problem	The obstacles faced by the main character(s) in the story
Events	The episodes happened in a story
Ending (Solution)	The way the problem was solved

According to the schema theory (Anderson, 1977), when the story structure is internalized into the readers' cognition, it becomes their story schemas which acts as prior knowledge to facilitate the comprehension of new stories. Studies have also demonstrated that readers appear to use knowledge of the structural features to understand and remember stories (Baumann & Bergeronm, 1993; Carrell, 1985; Mandler & Johnson, 1977), and to anticipate forthcoming information (Whaley, 1981). Compared to poor readers, good readers exhibit greater sensitivity to structural features of stories (Perfetti, Landi, & Oakhill, 2005). All these suggest the direct instruction of the story structure is possible and facilitative in enhancing children's comprehension.

1.2.2 Story-mapping and comprehension

Story-mapping is a graphic technique that visually outlines the story structure to allow learners to have a bird's eye view of the central narrative elements (Mandler & Johnson, 1977) (see Figure 1 for the story map used in this study). As a guiding framework, it supports readers' comprehension by helping their organization of story information and drawing connections between story components.

In classroom instruction, story-mapping can be a pre-reading strategy to elicit prior knowledge and facilitate discussion about a story. It can also be employed as a while- and post-reading strategy for readers to record important information and serves as a review after reading (Davis & McPherson, 1989). By analyzing stories with the strategy iteratively, it prompts readers to recognize and internalize the story structure and eventually lead to

the successful construction of their story schemas (Baumann & Bergeronm, 1993; Idol, 1987).

Figure 1 The story map of the study

The story map of _____

Characters	Setting
Problem (s)	
Events	
Ending	

Previous studies have shown that story-mapping can promote elementary level learners' story comprehension. Idol (1987) used story-mapping as a post-reading strategy to develop third- and fourth-grade poor readers' story comprehension ability. The experimental group participants were guided to co-construct group story maps with teacher at the beginning of the intervention, and at the later stage they were required to construct their maps individually, whereas the control group received similar instructions except story-mapping was absent. The results indicated that the experimental group had larger gain in reading tests compared to the control group, and their gains could be maintained after the intervention. Baumann & Bergeron (1993) investigated the effectiveness of story-mapping in enhancing 74 first-grade students' comprehension of central story elements in children's literature. The results revealed that the experimental groups who comprehended and composed stories with assistance of story maps, had better understandings of central narrative elements compared to the control groups who engaged in directed reading activities. Hartman (1986) taught average or above average sixth-grade students for four weeks with story maps created for basal reader stories, and Ballard (1988) employed a similar story map to instruct eighth graders in story structure. Both studies reported that the experimental-group students who received story map instruction outperformed the control group on a variety of dependent measures assessing story elements. Some studies have likewise provided evidences of story-mapping in improving students' story comprehension (Idol & Croll, 1985; Reutzel, 1984), moreover recent studies have postulated the strategy is also applicable for weak readers with learning disabilities (Boulineau et al., 2004; Li, 2007; Montague, Maddux, & Dereshiwsky, 1990; Vallecorsa & deBettencourt, 1997).

1.3 Research questions

The following research questions were addressed in the study:

1. What are the effects of story-mapping on the students' reading comprehension?
2. Do the effects maintain after the story-mapping instruction is withdrawn?
3. What are students' views towards story-mapping?

2. The study

2.1 Setting

The study was conducted in a Hong Kong primary school with Chinese as the Medium of Instruction in most of the subjects except English Language. In their English lessons, the students have little exposure to English stories and story comprehension strategies, as these lessons mainly focus on vocabulary and grammar acquisition.

2.2 Participants

Fourteen primary three students, ten boys and four girls aged eight to nine, were selected as participants. They were the investigator's students for the consideration of better teacher-student relationship to facilitate the teaching, learning and investigation of the study. They were chosen based on three criteria: 1) their availability in the time when the program was conducted; 2) their willingness to join the program; 3) their absence of any learning disabilities that might affect their comprehension. The group participated in a reading program with the goal of improving their story comprehension by the instruction of story-mapping.

2.3 The reading program

The program consists of fourteen lessons in total including the pre-, while- and post-intervention. The participants received two intervention lessons (thirty minutes per lesson) per week for reading a story.

Table 2 The reading program procedures

Phase		Story	Teaching Activities	Research Activities
Pre-intervention		<i>The Honest Woodcutter</i>		Pre-test
Intervention	Modelling	<i>Antsy and Grassy</i>	Guided story reading	
	Phase	<i>The New Frog</i>		

		<i>Prince</i>	Complete story maps as a class	
	Test Phase	<i>The Golden Fish</i>	Guided story reading	Intervention Test I
		<i>The Lion and the Mouse</i>	Complete story maps individually	Intervention Test II
		<i>The Fox and the Grapes</i>		Intervention Test III
		<i>The Magic Pot</i>		Intervention Test IV
	After Test Phase			Survey Intervention Interview
Post-intervention		<i>The Elephants and his Friends</i>		Post-test Post-intervention Interview

Adopting a model-test teaching paradigm, the program aimed to shape learner's behavior toward an independent level of comprehension. In Modelling Phase, the instructor went through the seven instructional steps in Table 3 to support student's comprehension via story-mapping. In Test Phase steps one to five were repeated, except in steps six and seven the students needed to complete their maps individually as the intervention tests. The two-phase intervention was designed to reduce the teacher's assistance as the program progresses and allow the learners to gradually internalize the story structure and build their story schemas.

Table 3 Learning procedures of reading class

Reading stages	Learning procedures	
	Modelling Phase	Testing Phase
Pre-reading	1. Determine the topic (and text structure) by reading the story title.	
	2. Scan the illustration(s) of the story (if any).	
	3. Predict the story content by referring to the central narrative elements in the story map.	
While-reading	4. Read the story with the class. 5. Discuss the central narrative elements via answering questions from the instructor and personal sharing.	
Post-reading	6. Complete the story map with the instructor.	6. Complete the story map individually.
	7. Keep the story map and review it with the instructor.	7. Submit the story map to the instructor and then review answers with the instructor.

2.4 Reading materials

The seven stories (See Table 2) were tailored from authentic folktales for two reasons. Firstly, the stories' length, lexical and syntactical complexity were reduced to match the existing language level of the participants. Secondly, the stories' content was modified. It was to avoid the participants from getting the correct answers in tests due to their previous encounters of the stories from other sources.

2.5 Instruments

The present study adopts a **quasi-experimental one-group** design. Three instruments including comprehension tests, survey and interviews were adopted to obtain quantitative and qualitative data.

2.5.1 Comprehension tests

To answer the research questions one and two, comprehension tests were administered to collect quantitative data of the participants' story comprehension performances, and the test results were compared to determine the effects of story-mapping.

The pre-test set the baselines of the participants' comprehension ability preceding the intervention, whereas the post-test assessed if their comprehension performance after the intervention. The design of the tests was based on Idol (1987) and Baumann & Bergeron (1993)'s work (See the pre-test in Appendix 1 and the post-test in Appendix 2). Each test was composed of two sessions. The multiple-choice questions session required the participants to pick the options which correctly described the characters, setting, problem and ending of the story, whereas in the scrambled text session they needed to sequence the scrambled story events in a correct order. All the comprehension responses were returned to and scored by the instructor, but the feedback was not given to the participants. The test conditions of both tests (i.e. the classroom setting, testing procedures, the length, lexical and syntactical complexity of reading texts in the pre-test and post-test) were kept as identical as possible.

In addition, four intervention tests (See an example intervention test in Appendix 3) were administered to track the participants' comprehension performance during the test phase of the intervention. In Idol (1987), students were asked to write the story elements to complete story map for testing purpose. The same practice, however, was observed to be difficult to be implemented as the participants generally struggled in spelling and resisted in writing a lot of words. Therefore, the story maps were altered to have multiple choice questions embedded. Participants were asked to circle the correct options instead of writing them out. This alternative practice lowered their psychological barrier for learning but at the same time kept the assessment focus on comprehension but not spelling.

2.5.2 Interviews

To answer the research question one and two, two semi-constructed interviews were administered to collect qualitative data. Intervention Interview was conducted at the end

of the intervention phase on the story *The Magic Pot*, whereas Post-intervention Interview was conducted on the story *The Elephant and his Friends* after the intervention phase. The interviews responses were compared to see if the students have better comprehension performance during the intervention, and if the effect could be maintained after the intervention was withdrawn.

Six participants were randomly sampled from the participants' pool for the interviews. For the better expression of ideas, the interviews were mainly conducted in Cantonese, and the transcripts were later translated into English for analysis. The interviews were designed based Baumann & Bergeron (1993)'s work. Two parts were included to assess the ability to understand and apply the story-mapping heuristic (See Appendix 4.1).

1. Oral retelling:

The interviewees were asked to retell the story events in the correct sequence with as much details as possible. Nonintrusive probes (e.g., "Can you think of anything else?") from the interviewers were used to elicit additional information.

2. Story map follow-up questions:

The interviewees were asked to name the narrative elements, and consequently identify the characters, setting, problem and ending of the story.

2.5.3 Surveys

To answer the research question three, a survey was administered to investigate the participants' views towards the story-mapping instruction (See Appendix 5 for the survey results and questions). The survey was composed of two questions types: Likert Scale questions and multiple choices questions. Due to the participants' weak English level, the survey was in bilingual of Chinese and English.

2.6 Scoring and Data Analyses

For the comprehension tests, one point was awarded to each correct response. The weighted averages of the tests results were then analyzed through T-Tests of SPSS. The alpha level of significance for all analyses was set at .05.

For the interviews, scores were given to quantify the interviewees' understanding of the central narrative elements of the stories in the oral retelling and story map following sessions. The maximum score for each interviewee is five points. For setting, problem and ending, one point was given for a correct and complete mention, 0.5 point was given for partially correct/ incomplete mention, and 0 score for incorrect /no mention. For characters and events, weighted average was used for calculation. (e.g. identifying one out of the four events correctly would be awarded 0.25 point). In addition, the oral retelling responses were manually analyzed and consolidated to reflect the interviewees' overall performances.

For the survey the relative frequencies of the responses of the questions were calculated for further analysis.

3. The results

3.1 Comprehension tests

3.1.1 An overview

Table 4 gives an overview of the comprehension test data by presenting the minimums, maximums, means and standard deviations.

The assumption is that story mapping is an effective strategy in enhancing student's story comprehension, and therefore the participants would have higher intervention test and post-test scores compared to the pre-test. Same as expected, the four intervention tests have higher means than that of the pre-test. The minimum score of the intervention tests is 38.46 in test 1, and it is higher than the minimum scores of the pre-test (which is 0), revealing that even the weakest student could achieve when the story-mapping was present. In contrast, the comparison of pre-test and post-test illustrates a minute difference in their means, and no differences in their minimums and maximums, which disagrees with the assumption.

Table 4 The minimums, maximums, means and standard deviations of comprehension tests

		Minimum	Maximum	Mean	Std. Deviation
Pretest		.00	100.00	55.0000	36.10881
Intervention	test1	38.46	100.00	75.8250	21.09000
	test2	50.00	100.00	80.7143	19.79288
	test3	44.44	100.00	84.1279	18.34250
	test4	45.45	100.00	94.1557	14.53221
posttest		.00	100.00	55.5557	36.98094

3.1.2 Comparison by tests

To determine if the mean differences were significant among the tests, paired samples t-tests were conducted and the results are shown in Table 5.

Pair 1 and 2: Pre-test vs intervention tests/post-test vs intervention tests

Pair 1 displays a significant difference between the pre-test and the intervention tests ($t(13) = -3.84, p = .002$). Similarly, Pair 2 reveals a significant difference between the post-test with the intervention ($t(13) = -4.022, p = .001$). The data suggests story-mapping resulted in the participant's better story comprehension during the intervention.

Pair 3: Pre-test vs post-test

The third pair reveals no significant difference between the pre-test and post-test ($t(13) = -.069, p = .946$), though the participants' performance had very slight average increase of .56 score. It indicates the effect of story-mapping did not maintain after the intervention was withdrawn.

Table 5 The paired samples test results of pre-test, post-test and intervention tests

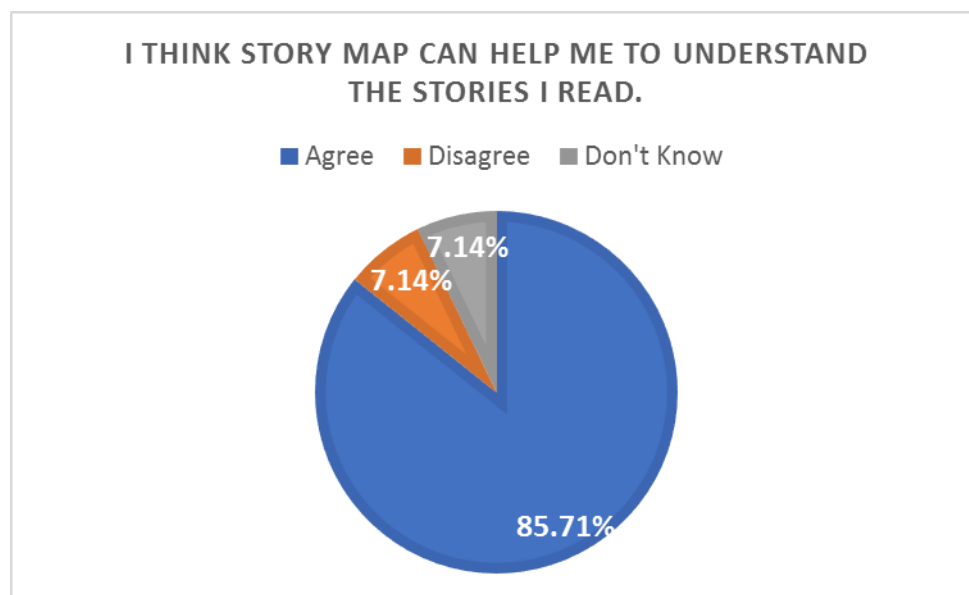
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	pretest – intervention	-28.70571	27.97453	7.47651	-3.839	13	.002
Pair 2	posttest – intervention	-28.15000	26.18550	6.99837	-4.022	13	.001
Pair 3	pretest – posttest	-.55571	30.17827	8.06548	-.069	13	.946

3.2 Survey

The effectiveness of story-mapping

The majority of participants agreed story mapping was an effective strategy in guiding their story reading throughout the program. As illustrated in Figure 2, 85.71% of them agreed to the statement ‘I think story map can help me to understand the stories I read’, while less than 20% picked ‘Disagree’ (7.14%) and ‘Don’t know’ (7.14%).

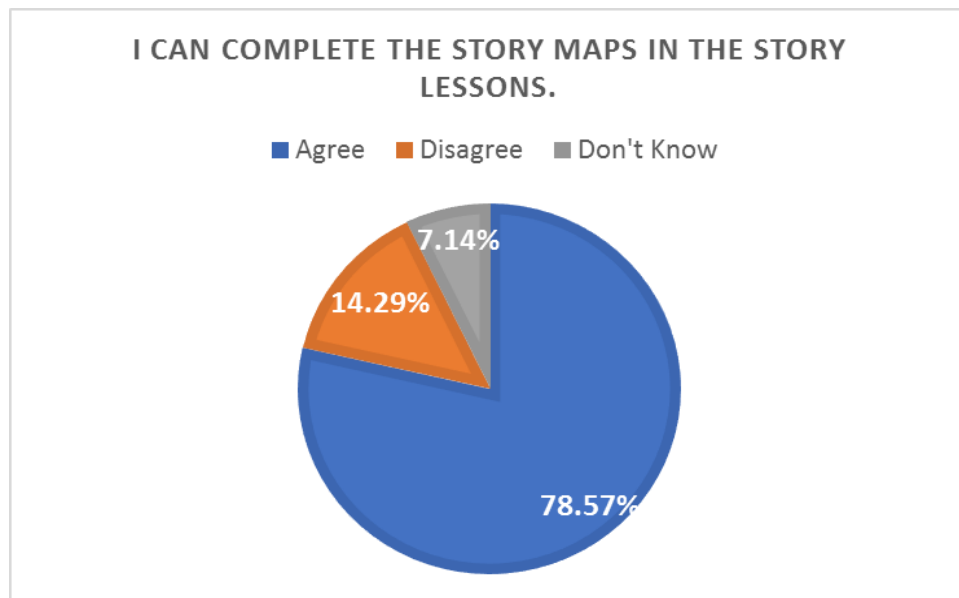
Figure 2 The responses to ‘I think story map can help me to understand the stories I read’



The difficulty of story-mapping

Figure 3 shows that 78.57% of the participants agreed the statement that ‘I can complete the story maps in the story lessons’, while only 14.29 % disagreed and 7.14% responded ‘Don’t know’. It implies that the story mapping practice in the program was manageable for most of the participants.

Figure 3 The responses to ‘I can complete the story maps in the story lessons.’



Participants' incentive of using story map as a future strategy

The participants demonstrated a strong incentive of using story map as a future strategy. As seen in Figure 4, 78.57% of them agreed to the statement 'I will try to use story map in reading a story in the future'. In Figure 5, 71.43% showed their interests in participating in a similar program as they agreed to the statement 'I want to join similar story telling classes in the future', and it was a quite positive evaluation of the present program.

Figure 4 The responses to 'I will try to use story map in reading a story in the future.'

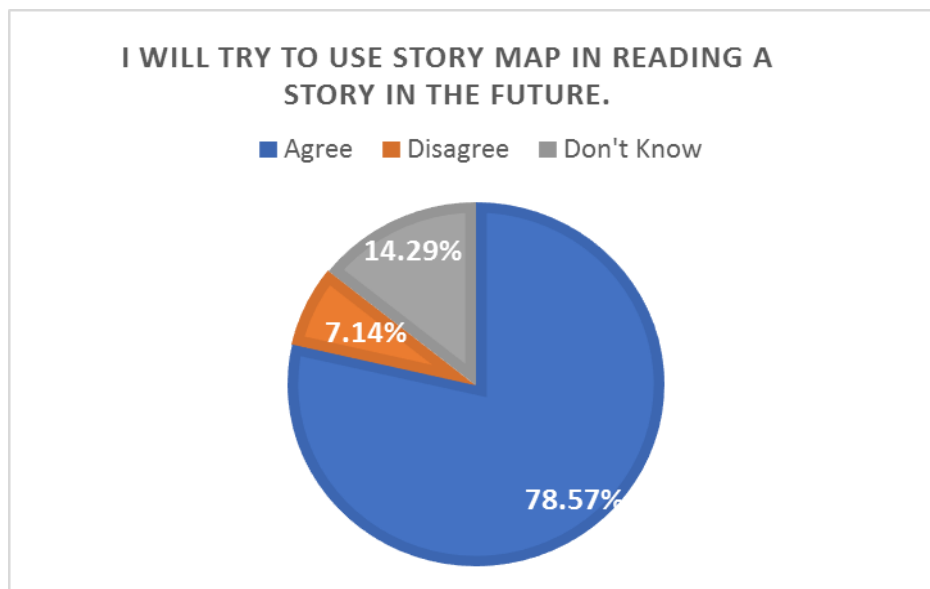
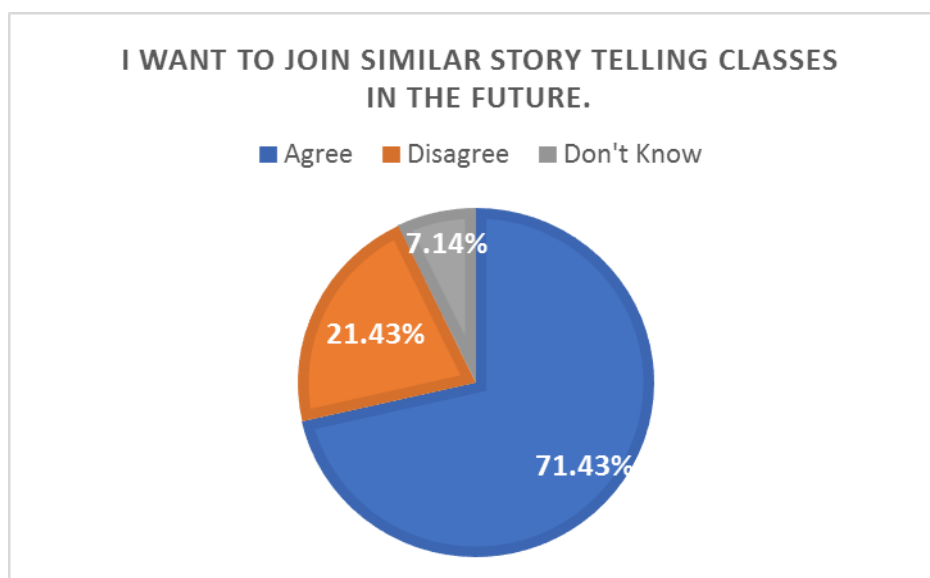


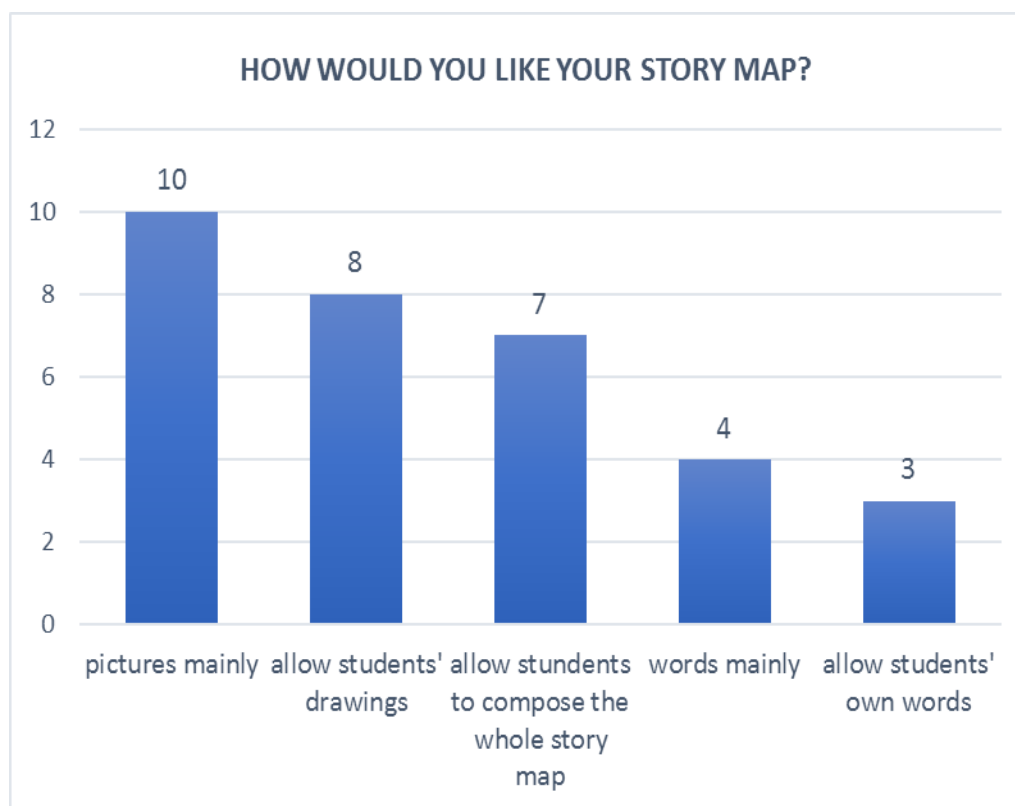
Figure 5 The responses to 'I want to join similar story telling classes in the future.'



Improvement of the story map

It was observed the participants seemed to enjoy the illustrations in stories, and they were eager to draw pictures and write their ideas on the story maps. Therefore, the participants were asked to select their preferred elements of story map. The result indicates that they preferred visual elements the most, secondly their autonomy in creating the story map, and words the least. As seen in Figure 6, the options with descending number of preference are ‘pictures mainly’, ‘allows students’ drawing’, ‘allow students to compose the whole story map’, ‘words mainly’, and ‘allow students’ own words’.

Figure 6 The responses to ‘How would you like your story map?’



3.3 Interviews

3.3.1 Oral retelling

The oral retelling aimed to assess the interviewees' ability in understanding the events in the stories. In Table 9, it reveals that the interviewees could more accurately retell the major events of the story with average score of 0.92 in Intervention Interview, but it dropped to 0.42 in Post-intervention Interview. In addition, in Intervention Interview the oral retellings were generally more coherent and sequential, and the interviewees could give more detailed elaborations with little prompting. It indicated they had better understanding of the story. For example, consider the retelling of the participant Tang on the story the *Magic Pot* in her Intervention Interview (See the full transcript in Appendix 4.2.1):

Tang: *A farmer... some diggers come and dig the ground. He dug something, something like a mud pot, then he didn't want to dig anything else. Then he slept under a tree. Then when he woke up, he saw a lot of spades.*

Interviewer: *And then what happened?*

Tang: *He put a mango to it. Then someone passed by. The king wanted the pot very much. He was greedy and wanted a lot of money. He asked [the farmer] if he can give the pot to him, [the farmer] said no. The king accidentally fell into the pot and became many kings, and then the kings killed one another. And then none of them were left.*

When story-mapping was absent, the interviewees seemed to be more confused about the story, and their retold version were not completely accurate. The below is the retelling of the same student Tang on the story *The Elephant and his Friends* when the strategy was **absent** (See the full transcript in Appendix 4.3.1), which was an inaccurate account of the story:

Tang: *Ah...Elephant's friends. The story talked about the elephants' friends, they were the monkey, the rabbit, ah...and the frog and the tiger. And where they met.*

Interviewer: *Does it tell you anything else?*

Tang: *Yes. There is.*

Interviewer: *What else happened?*

Tang: *There was a quarrel.*

Interviewer: *Um... A quarrel. Who had the quarrel*

Tang: *The elephant, and he had quarrels with: his friends.*

3.3.2 Story map following questions

The result shows that generally the participants had a better grasp of the story elements of the story they read during the intervention. In Table 9, the students had higher average identification score of 4.5 when story mapping was present, compared to 3.17 when the strategy was withdrawn, and the difference was shown as significant ($t(5) = 3.03, p = .029$) in a paired T-test.

Table 9 The participants' scores in identifying the central narrative elements

	Intervention Interview	Post-intervention Interview
Characters	1	1
Setting	0.75	0.75
Problem	0.83	0.5
Events	0.92	0.42
Ending	1	0.5
Identification score (Max.5)	4.5	3.17

4. Findings and discussion

4.1 The effectiveness of story-mapping on ESL students

Regarding the research question one, both tests and interviews indicated that the participants performed significantly better when the strategy was present. Thus, it appears the hypothesis that story mapping as an effective strategy in enhancing ESL students' story comprehension has been empirically confirmed in this study.

For the research question two, however, the effects of story mapping couldn't be maintained when the strategy was. This differs from the findings of Idol (1987) that students' performance was maintained after the intervention. One possible explanation is the short program length limited the learning time of the strategy. The participants, aged eight to nine, were at the age when they started to marked development of a more elaborated and sophisticated story schemas (Mandler & Johnson, 1977; Whaley, 1981). At this initial stage of development, it would be beneficial for allowing the participants more time to construct their story schemas. But the current program only lasted for 14 weeks with the instruction of 7 stories, whereas 21 stories were instructed in Idol (1987). It can be assumed that Idol's longer program facilitated the participants' maintenance of their comprehension performance. Another justification is that the stories' vocabulary was indirectly introduced during intervention, which might facilitate the students' story comprehension during this phrase. But this factor had been intentionally minimized as vocabulary wasn't a teaching focus of the invention.

4.2 Story-mapping as a comprehension strategy for young readers

For the research question three, the participants generally hold positive views towards story-mapping. The majority of them agreed that story map in the study was a manageable and effective comprehension strategy, and have strong incentives in participating in similar reading programs. The explicit instruction of story structure, as recommended by scholars, offers an excellent point of access narratives for young learners (Carrell, 1985; Mandler & Johnson, 1977). The story map captures the core elements of story texts in achieving its communication in the real world, and it gives a structure for the learners to build their

knowledge of the text type on (Carrell, 1985). Without any structure or framework, learning stories with numerous variations will be immensely difficult, if not impossible.

However, it may be questioned that whether the learning of textual structure, which is a high-level comprehension skill, should be an instructional focus for young novice readers. The participants' school teachers of the current study, for instance, focused on word and sentence level comprehension in regular English lessons. It is undisputed that the learning the bottom-up strategies of extracting meanings from words and sentences is beneficial to the comprehension development of young readers. Nevertheless, it is dangerous to assume that learning bottom-up approaches only can sufficiently support students' comprehension needs. Instead of viewing a text as separated word and sentence molecules, analyzing a text as a whole enables learners to view the relations between the components, and how they are connected and organized coherent to achieve a communicative purpose (Carrell, 1985; Perfetti, Landi, & Oakhill, 2005). This allows the students to have the complete and meaningful understanding of the text, and it motivates both learning and an attraction to reading.

4.3 The future practice of story-mapping

One theme that hasn't been quite discussed in story-mapping researches is the design of story map. It was found the participants prefer visual elements and autonomy in the story-mapping practice. But the current design story map, alike those in the reviewed studies, is prescriptive and composed of words mainly, and to a small extent involves the readers' active engagement.

The readers' active engagement has been indicated to be important in promoting their comprehension performance (Gibson & Levin, 1975). Based on this principle, the inclusion of pictures, either by students or teacher, into the story map can motivate the students to use the strategy and benefit their learning. But the balance of words and illustrations needed to be carefully calibrated. The practice of text reading, which is the goal of comprehension, shouldn't be compromised for the sheer enjoyment of pictures. For young readers, the teacher can encourage them to using drawings as well as words to

represent their ideas. As the students make progress, the teacher can put more emphasis on words. By allowing more flexibility in the representation of their ideas, readers' engagement in both reading and learning of reading can be promoted. It is suggested that future researches can be conducted on the design and practice of story map for better reader engagement.

5. Limitations

The first constrain is the limited scope. As there was only one researcher, the study remained small-scaled and employed fourteen students who were from the same class. A larger-scale study with different levels of students and more experimental group would have produced more generalizable results. The second constrain is the limited time of the study. The whole research must be completed within the four months of the researcher's teaching practicum, and the instruction lessons must fit the school's schedule. These shortened the time available for the program and resulted in insufficient time for students to internalize the learning of the strategy. Also, the insufficient time limited the number measurements that could be applied in to get more accurate results. For instance, several pre- and post-comprehension tests can more accurately test and track students' reading performance. To address this limitation, the researcher applied different quantitative and qualitative measurements in hoping to get more comprehensive results from the study.

6. Pedagogical implications

The study demonstrates that story map can bring positive impacts on students' story learning. To maximize its effect, teachers should use story map persistently and flexibly. The strategy can be incorporated into regular classroom instruction as to guide student to repeatedly analyze stories and build their story schema over time. In addition, the story mapping practice can be modulated with more visual elements and student autonomy to engage students actively in the comprehension process and for a sustained learning.

7. Conclusion

The study has filled in the current research gap by demonstrating that story-mapping can facilitate elementary ESL students' story comprehension. However, persistent and regular practices of the strategy is required for internalization of the story schema and improvement of student's story comprehension. On the other hand, the paper has discussed the theory behind the strategy, and it is argued that the explicit instruction of story structure via story mapping offers an excellent point of access narratives for young learners. For the future practice of story-mapping, it is proposed that the current story map design can be flexibility adopted for students' active engagement in the story comprehension. Future researches are suggested in this topic to offer more pedagogical insights for implementing the strategy in classroom.

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Appendices

Appendix 1: Pre-test question set

Read '*The Honest Woodcutter*' and answer the following questions in 15 mins.

The Honest Woodcutter

There is a woodcutter who lives in a forest. The woodcutter cuts wood from trees. He does not have a lot of money, but he is happy.

One morning the woodcutter takes his axe to cut trees near a river. He says, "The trees here are so tall! But I can cut them down with my axe!". He raises his axe high in the air.



"Ah!" shouts the woodcutter as his axe falls into the river. The woodcutter is sad and starts to cry, "That is my only axe! How can I cut trees now?"

Suddenly there is someone is coming out from the river. The woodcutter stops crying and asks, "Who are you?"

"I am a river fairy. I can bring back your axe." The river fairy says.

After a while, the river fairy comes out with a *silver* axe in his hands. "Is this your axe?" he asks the woodcutter. The woodcutter really likes the silver axe. But he knows it is not his. He says: "Thank you. But it is not mine."



The fairy goes back into the river. This time, the river fairy comes out with a *gold* axe. "Is this your axe?" he asks the woodcutter. The woodcutter likes the gold axe very much. But he knows it is not his. He says: "Thank you. But it is not mine."



At last, the fairy comes out with an *old* axe. The woodcutter said: "It's mine! Thank you!"



The fairy smiles and says, " You only take the axe that belongs to you. You are an honest man and now you can have the silver, gold and old axes."

Session one: Multiple-choice questions

Read the questions and tick ✓ the right ☐. (4 pts)

1. Who are in the story? (1 pt)

- ☐ a bird and a woodcutter
- ☐ a dog and a woodcutter
- ☐ a woodcutter and a river fairy
- ☐ a woodcutter and his wife

2. Where does the woodcutter loses his axe? (1 pt)

- ☐ In the sea
- ☐ In a river
- ☐ In a forest
- ☐ In a park

3. What does the woodcutter want? (1 pt)

- ☐ He wants his old axe
- ☐ He wants a silver axe
- ☐ He wants a golden axe
- ☐ He wants a new axe

Does the woodcutter gets what he wants? (1 pt)

- ☐ Yes. A dog brings him a golden axe.
- ☐ Yes. The river fairy gives him his old axe.
- ☐ No. The river fairy takes away all his axes.
- ☐ No. His wife asks him to forget about his axe.

Session two: Scrambled text question

Put A- E into a correct order. (5 pts)

5. The correct order of the story is: ____ → ____ → ____ → ____ → ____

- A) The river fairy gives the woodcutter a golden axe
- B) The river fairy gives the woodcutter a silver, golden and old axes
- C) The river fairy gives the woodcutter a silver axe
- D) The river fairy gives the woodcutter an old axe
- E) The woodcutter lost his axe in a river

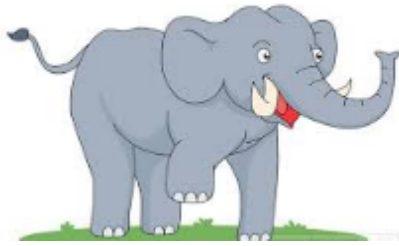
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Appendix 2: Post-test question set

Read '*The Elephant and his Friends*' and answer the following questions in 20 mins.

The Elephant and his Friends

Once upon a time, an elephant was looking for a friend in a forest.



He saw a monkey near a tree playing with his friends.

The elephant asked, "Will you be my friend, monkey?" The monkey was scared. "You are too big, and you cannot climb the trees like me. You cannot be my friend", said the monkey.



Then the elephant found a rabbit on the grass.

The elephant asked the rabbit, "Will you be my friend, rabbit?" The rabbit didn't like the elephant. The rabbit said, "You are grey in colour, but I am white. You cannot be my friend".



Then the elephant met a frog.

He asked the frog, "Will you be my friend, frog?" The frog said, "You are cannot sing like me. You cannot jump like me. I am sorry, but you cannot be my friend".



The elephant was sad because no one wanted to be his friends.

The next day, all the animals in the forest were running in fear. There was a tiger eating the animals. The elephant went to the tiger and said, "Please, do not eat these kind animals."



The tiger didn't listen and wanted to eat the elephant instead. The brave elephant kicked the tiger and scared him away. He saved the animals.

All the animals are happy to see the tiger to be scared away. And they felt sorry that they didn't be the friends with the brave and kind elephant. They said, "Thank you, elephant! You are our brave hero and our best friend".

Session one: Multiple-choice questions

Read the questions and tick ✓ the right ☐. (4 pts)

1. Who are in the story? (1 pt)

- ☐ an elephant, a dog, a rabbit, a frog and a monkey
- ☐ an elephant, a tiger, a rabbit, a frog and a monkey
- ☐ an elephant, a tiger, a rabbit, a frog and a cat
- ☐ an elephant, a tiger, a rabbit, a bear and a monkey

2. Where are the animals? (1 pt)

- ☐ In the sea
- ☐ In a field
- ☐ In a forest
- ☐ In a park

3. What did the elephant want? (1 pt)

☐ He wanted to climb a tree.

☐ He wanted some food.

☐ He wanted to sing.

☐ He wanted a friend.

4. Did the elephant get what he wanted? (1 pt)

☐ Yes. He gave food to the animals and they became friends.

☐ Yes. He saved the animals and they became friends.

☐ No. The animals thought the elephant was too big to be their friends.

☐ No. The tiger ate the elephant.

Session two: Scrambled text questions

Put A- E into a correct order. (5 pts)

5. The correct order of the story is: ____→____→____→____→____

A) All the animals want to be friends with the elephant.

B) The elephant asked the monkey to be his friend.

C) The elephant scared the tiger away and saved the animals.

D) The elephant asked the frog to be his friend.

E) The elephant asked the rabbit to be his friend

Total score	/
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Appendix 3: An intervention test sample: The Magic Pot

The story map of The Magic Pot (Circle the correct answers)

<u>Characters</u> <div style="text-align: center;">the Queen</div> <div style="text-align: center;">the golden fish</div> <div style="text-align: center;">Gopi</div> <div style="text-align: center;">the King</div> <div style="text-align: center;">the wood cutter</div>	<u>Setting</u> <div style="text-align: center;">Time</div> <div style="text-align: center;">now/once upon a time</div> <div style="text-align: center;">Place(s)</div> <div style="text-align: center;">village/ a big house/sea</div>
<u>Problem (s)</u> The King was _____ and wanted to use the magic pot to make a lot of gold.	
<u>Events</u> <div style="text-align: center;">_____ → _____ → _____ → _____ → _____ → _____</div> <p>A. One hundred kings killed themselves and no one had the magic pot.</p> <p>B. Gopi found a magic pot.</p> <p>C. Gopi put one spade into the pot and it became one hundred spades.</p> <p>D. The King wanted to see the pot but he fell into it (the pot).</p> <p>E. Gopi put one mango into the pot and it became one hundred pots.</p>	
<u>Ending (s)</u> The king slept/ died / ran and no one had the magic pot.	

Appendix 4: Interview information

Appendix 4.1: Interview script/recording sheet

Name of interviewee:

Name of interviewer:

Date:

In this interview, I will ask you some questions. These questions are set to find out how much you understand the story in the test, and how you read stories. If you want to stop the interview, please let me know anytime. Do you have any questions?

Before the interview, I will give you five mins to read the story in the test again.

(After five minutes)

Now listen to the question and try to answer all of them.

Part one: Oral telling (1-2 mins)

Can you tell me what happened in the story?

Part two: The story map following-up questions (5 mins):

Can you tell me the five things (narrative elements) that appear in stories? Can you tell me what they mean?

Can you find out all the five things in this story? Show me one by one.

(If the interviewee cannot point out the five narrative elements, using the below questions to guide them in answering:

- What is/are the character(s) of the story?
- What is the setting of the story?
- What are the event?
- What is the problem and who has it?
- What is the solution and how was it solved?)

Appendix 4.2: Intervention Scripts of two interviewees

Appendix 4.2.1 Intervention Interview Script --Tang

Interviewer: Lam Sum Yee

Interviewee: Flora Tang

Date of Interview: December 20, 2017

Start Time of Interview: 11:30 am

End Time of Interview: 11: 45 am

Location of Interview: Room 601, Baptist Rainbow School

Interview Topic: The use of story map to comprehend English stories

00:00 Lam: Flora, can you tell me what happened in the story?

00:06 Tang: A farmer... some diggers come and dig the ground. He dug something, something like a mud pot, then he didn't want to dig anything else. Then he slept under a tree. Then when he woke up, he saw a lot of spades.

00:46 Lam: And then what happened?

00:47 Tang: He put a mango to it. Then someone passed by. The king wanted the pot very much. He was greedy and wanted a lot of money. He asked [the farmer] if he can give the pot to him, [the farmer] said no. The king accidentally fell into the pot and became many kings, and then the kings killed one another. And then none of them were left.

01:14 Lam: That is great! You can clearly tell me what happen!

01:16 Tang: And then...and then he put it into the ground., and then...it was gone.

01:26 Lam: Can you tell me the characters in the story?

01:30 Tang: There was a farmer, [and then?] and then King.

01:39 Lam: Very good. I almost forgot, can you tell me the five elements of a story?

01:45 Tang: Characters, setting, problem, cause, events, ending.

01:51 Lam: Good, you had told me about characters, can you tell me the setting of the story?

01:58 Tang: It seems the setting is a farm and a village.

02:05 Lam: What about the time?

02:08 Tang: The time is like in the morning. It is the time for his digging.

02:11 Lam: You have talked about what happened in the story. Can you tell me who had the problem?

02:21 Tang: Then farmer.

02:28 Lam: The farmer had the problem. What was his problem then?

02:31 Tang: His problem was, would it be his greediness?

02:38 Lam: Was it the farmer who was greedy?

02:40 Tang: He didn't want to be greedy.

02:43 Lam: He didn't want to be greedy. But who was the real greedy person in the story?

02:45 Tang: The king.

02:47 Lam: If you think the King is greedy, at the end had he solved this problem? What was the ending of the story?

03:00 Tang: The ending is that they killed one another.

03: 01 Lam: Do you think it is a good ending?

03:03 Tang: No.

03:04 Lam: Will you be as greedy as the king?

03:06 Tang: No.

03:07 Lam: You won't be that greedy, right? [Tang nodded her head]. Good thank you.

Appendix 4.2.2 Intervention Interview Script --Chan

Interviewer: Lam Sum Yee

Interviewee: Martin Chan

Date of Interview: December 20, 2017

Start Time of Interview: 10:15 am

End Time of Interview: 10:40 am

Location of Interview: Room 601, Baptist Rainbow School

Interview Topic: The use of story map to comprehend English stories

00:00 Lam: Can you tell me what happened in the story?

00:04 Chan: There was a farmer who dug the mud and he found a pot. And then he thought it may be a magic pot. And then he put an axe into it. And then he... [he put an axe into it]. And then he had a sleep and rest. Next when he woke up he found one hundred axes. And then he found out it is a magic pot. And then he put a mango into it, and then he rested again, and then there were one hundred mangoes. Next, there was a king who wanted to put a coin into it. But he fell into the pot himself, and then there were one hundred kings. And then they fought among themselves. And they were all dead.

01:11 Lam: Very good. It is very clear. Can you tell me the five elements of a story?

01:16 Chan: Um...what was that called? It was...characters, place, problem, and I cannot remember, and ending. That's all!

01:52 Lam: No, there are questions left. Can you tell me who are the characters?

01:55 Chan: Who are the characters?

01:57 Lam: Yes, who are the characters?

01:59 Chan: The farmer and the king. It shouldn't be one, it should be one hundred of them. One hundred and two.

02:04 Lam: Yeah that's right. And who has... please tell me the time and place of the story.

02:13 Chan: The time is once upon a time, and I don't know about the place.

02:17 Lam: Okay. Please tell me who has the problem

02:24 Chan: The...the farmer.

02:28 Lam: What problem did the farmer have then? Anything he wanted but might need to work on it?

02:35 Chan: He wanted... I forgot. I only knew how I can fold a paper toy.

02:42 Lam: Okay. What is the ending of the story?

02:47 Chan: The ending is all the king died. The farmer kept the pot himself.

02:55 Lam: Do you think the king has any problem?

02:58 Chan: Yes. He was super greedy.

03:03 Lam: Good. Thank you.

Appendix 4.3. Intervention Scripts of two interviewees

Appendix 4.3.1 Intervention Interview Script --Tang

Interviewer: Lam Sum Yee

Interviewee: Flora Tang

Date of Interview: January 23, 2017

Start Time of Interview: 11:30 am

End Time of Interview: 11:45 am

Location of Interview: Room 601, Baptist Rainbow School

Interview Topic: The use of story map to comprehend English stories

00:00 Lam: Today we are going to interview...with Tang. Now I will let her say her name and her class. What is your name and your class?

00:12 Tang I'm Flora Tang and I'm from 3A.

00:15 Lam: Now Miss Lam is going to give you a few minutes to look at the passage, alright? And when you're done please tell me so. Then I will ask you some questions about your understanding on the passage, they are very simple, alright? Now you can first read the passage.

02:11 Lam: Done? Now I will ask you some questions. Can you tell me what happened in the story? Please give as much details as possible.

02:16 Tang: Ah...

02:20 Lam: You can have a look on the passage (Show Tang the paper with the passage) What happened in the story? You can just tell me roughly.

02:32 Tang: Ah...Elephant's friends. The story talks about the elephants' friends, they are the monkey, the rabbit, ah...and the frog and the tiger. It tells about where they met.

02:56 Lam: Does it tell you any other things?

02:59 Tang: Yes. There are.

03:02 Lam: What else happened?

03:03 Tang: There was a quarrel.

03:07 Lam: Um... A quarrel. Who had the quarrel?

03:09 Tang: With the elephant, and he had quarrels with his friends.

03:17 Lam: Can you tell me the five elements of a story?

03:23 Tang: Characters (in Chinese).

03:24 Lam: Can you please tell me in English?

03:27 Tang: Um...

03:28 Lam: Could you repeat the first element?

03:31 Tang: I don't really know.

03:34 Lam: You just mentioned...

03:35 Tang: Characters.

03:34 Lam: And what else?

03:37 Tang: And... events.

03:40 Lam: Yes, and events. Can you tell me the English word for this?

03:43 Tang: I don't know how to say it.

03: 44 Lam: Would like to give it a try?

03:45 Tang: Ending , and um... and I cannot really remember.

04:00 Lam: It's alright. Could you please tell me the characters in the story?

04:16 Tang: There was a tiger, a frog, and an elephant. The elephant was the main character.

04:27 Lam: And what else?

04:48 Tang: And the rabbit and the monkey.

04:30 Lam: You've mentioned the story has an ending. What is an ending?

04:33 Tang: Ending is the result in the story.

04:36 Lam: What is the ending of the story?

04:38 Tang: At the end, they will become friends.

04:40 Lam: Other characters and ending, you've also mentioned about...

04:45 Tang: Problem.

04:46 Lam: Problem and events. Who has the problem?

04:50 Tang: The elephant.

04:51 Lam: What is his problem?

04:53 Tang: The elephant doesn't know how he should face the animals, and how he should say sorry with the animals.

04:58 Lam: Say sorry? Is it how he should say sorry to the animals? Okay. Please tell me... you mentioned events...what are the events in the story?

05:06 Tang: They...They...I don't know if it is right...

05:23 Lam: It's alright. You can just say what you know.

05:27 Tang: It's like....one day, they went to somewhere to play, and all of the sudden there is a dispute.

05:43 Lam: Thank you.

4.3.2 Post- intervention Interview Script --Chan

Interviewer: Lam Sum Yee

Interviewee: Martin Chan

Beal Date of Interview: 23 January 2017

Start Time of Interview: 10:15 am

End Time of Interview: 10:40 am

Location of Interview: Room 601, Baptist Rainbow School

Interview Topic: The use of story map to comprehend English stories

00:00 Lam: Now please tell me your name and your class.

00:03 Chan: I'm 3A Martin Chan.

00:16 Lam: Now Miss Lam is going to give you a few minutes to read the story, and then I am going to ask you a couple of questions, alright?

03:00 Lam: Now Miss lam is going to ask you some simple questions, alright? Can you tell me roughly what the story is about?

03:08 Chan: Ah...I don't really understand them all. I just know...I just know that what I wrote.

03:16 Lam: No, I mean please tell me what happened in the story? Who are in then story?

03:21 Chan: Oh. There are an elephant, a monkey, a rabbit, a frog, and a tiger. And then there are some sort of things among them. In the forest.

03:35 Lam: What did the animals do?

03:37 Chan: Um...They are exchanging some ideas...I don't really understand.

03:34 Lam: Okay. Now please tell me what are the five elements of a story?

03:48 Chan: The five elements?

03:49 Lam: I've taught those to you before.

03:51 Chan: Characters, and then settings, and problem, and events, and ending.

04:11 Lam: Now tell me who the characters are in the story?

04:20 Chan: The elephant, and the monkey, and the rabbit, and then monkey. And tiger.

04:35 Lam: And then you say setting. Where is the setting?

04:37 Chan: Setting is about the time, and the place.

04:46 Lam: Then where did the story happen?

04:48 Chan: In the forest.

04:49 Lam: And the time is?

04:50 Chan: Once upon a time.

04:53 Lam: Very good. Next please tell me about the problem. Can you tell me who has the problem?

05:00 Chan: Who has the problem?

05:02 Lam: You can point it out to me.

05:05 Chan: Um...the monkey, or the elephant, or the rabbit, I don't know.

05:16 Lam: Okay you don't know...Can you tell me at the end of the story you mentioned that it is called an ending, what happened at the end of this story?

05:22 Chan: Ending... they went back to their own homes.

05:28 Lam: Well done and thank you! You may go back into the room now.

Appendix 5: Survey information
Appendix 5.1: The survey results

Questions	Agree	Disagree	Don't know
	Number of responses (percentage)		
1. I can complete the story maps in the story lessons.	11(78.57%)	2(14.29%)	1(7.14%)
2. I think story map can help me to understand the stories I read.	12(85.71%)	1(7.14%)	1(7.14%)
3. I want to join similar story telling classes in the future.	10(71.43%)	3(21.43%)	1(7.14%)
4. I will try to use story map in reading a story in future.	11(78.57%)	1(7.14%)	2(14.29%)
5. How would you like your story map? (students can select option(s) that they agree)	<p>pictures mainly (10,71.43%)</p> <p>allow students' drawings (8, 57.14%)</p> <p>allow students to compose the whole story map (7,50 %)</p> <p>words mainly (4, 28.57%)</p> <p>allow students' own words (3, 21.43%)</p>		

Appendix 5.2: The survey questions

Name: _____ Date: _____

Dear students, congratulations you have finished ten story map lessons. Please fill in the following questionnaire to expression your opinions on the lessons.

同學們，你們已經完成了所有的故事課堂。請完成以下的簡單問卷表達你對課堂的意見。

Please tick (✓) **one** option that you think is correct for each statement. 請剔(✓)你認為對的選擇。(每句只選一項)

	Agree 同意	Disagree 不同意	I don't know 不知道
1. I can complete the story maps in the story lessons. 我能完成課堂上故事圖。			
2. I think story map can help me to remember the stories I read. 我覺得做故事圖能幫助我記得故事。			
3. I want to join similar story telling classes in the future. 我會想將來參加類似的故事班。			
4. I will try to use story map in reading a story in future. 我將來會嘗試用故事圖去讀故事			

5. How would you like 你喜歡怎樣的故事圖？(✓以下的方格(可選多於一項))

☐ 以文字為主(words mainly) ☐ 自己畫圖畫 (allow student's drawings) ☐ 以圖畫為主 (Pictures mainly)

☐ 自己寫字 (allow student's own words) ☐ 自己畫整個故事圖 (allow students to compose the whole story map)