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The Effects of Using Story Map as Prompting and Instructional Strategies on Oral Retelling for Students with Mild Intellectual Disabilities

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Abstract

Improving oral narrative ability is one of the essential goals of speech and language therapy for children with intellectual disabilities (ID). This study aimed to investigate the effects of story map strategy on retelling for children with ID who had difficulties in oral narrative. Three 5th and 6th grade students with intellectual disabilities participated in the experiment. The multiple treatment design of single-subject research was adopted. Three conditions were manipulated, including (a) baseline: teaching with typical strategy and asking students to retell without story maps, (b) intervention B: teaching with typical strategy and asking students to retell with story maps, and (c) intervention C: teaching with story mapping strategies and asking students to retell with story maps. The accuracy of retelling, the total number of Chinese words (NW), and different Chinese words (NDW) were used as indicators to evaluate the performance of narrative. The results indicated that (a) the effect of using story map as a prompt is significant on increasing NW, but not on improving the accuracy of retelling and NDW of retelling, (b) the effect of adding story mapping teaching strategies during telling the story is significant on improving the accuracy of retelling and NW of retelling.

***Key words*:** story retell, story map, students with intellectual disabilities, narrative

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Introduction

Narrative ability is one of the required essential language competencies for children's daily activities. Children used oral narratives not only for communication in social and academic settings (Spencer, Kajian, Petersen, & Bilyk, 2013), but also for bridging the oral contextualized and literate decontextualized continuum (Westby, 2005). Furthermore, oral narrative facilitates the development of social skills and serves as an important role for success in school as well (Cameron, Hunt, & Linton, 1988; Fazio, Naremore, & Connell, 1996; Hughes, McGillivray, & Schmidek, 1997; Mehta, Foorman, Branum-Martin, & Taylor, 2005). However, previous studies showed that the retelling performance of students with intellectual disabilities (ID) was worse than their typical-developed peers in the length of narrative (Murfett, Powell, & Snow, 2008), complexity of sentence, and variety of vocabulary (Boudreau & Chapman, 2000; Kay-raining Bird, Cleave, White, Pike, & Helmkay, 2008). This evidence echoes that the deficits in cognitive and language functions restrict the ability of children to produce an oral narrative (Owens, 2010).

For the students with mild ID in the inclusive environment, oral narrative performance also would affect their participation in social interaction and academic activities. They are required to participate in interactions, in which they could retell the information with essential components, and share the information with their peers and teachers as well. Moreover, verbal retelling is also important for children with ID when they are required to report some specific events, e.g., an instance of abuse (Gentle, Milne, Powell, & Sharman, 2013). Though retelling skills are essential for student with ID for daily activities, including fictional story retelling, telling of a self-generated story, recounting of family tales, retelling of movie or TV shows, and recalling personal experiences (McCabe & Bliss, 2003; Owens, 2010), what instructional strategy can be used for improving story retelling skills of students with ID is still unclear. As a story grammar instruction approach based on Schema theory, story mapping strategies might be one of the possible solutions for improving story retelling skills of children with mild ID (Idol & Croll, 1987).

Using narrative text structure which consisted of setting, problem, goal, action, and outcome (Beck & McKeown, 1981), story mapping facilitates the acquisition of story structure and components by creating a visual framework which typically organized in graphic organizer form (Reutzel, 1985). Story mapping skills were taught to learners through phases of modeling, leading and testing (Idol, 1987). An instructor first modeled the mapping skills and learners were then required to practice the skills with prompts. Finally, learners filled the map

independently (Idol, 1987). The whole process is similar to that of concept mapping (Ciullo, Falcomata, Pfannenstiel, & Billingsley, 2015) or self-instruction (Montague, 2007).

The story mapping strategy has been applied widely, especially on students with learning disabilities (LD) (Idol, 1987), ID (Isikdogan & Kargin, 2010), attention deficit hyperactivity disorder (ADHD) (Derefinko, Hayden, Sibley, Duvall, Milich, & Lorch, 2014), and those with high-functioning autism (HFA) (Stringfield, Luscre, & Gast, 2011). Studies consistently showed the positive effect of story mapping strategy on reading comprehension (Boon, Paal, Hintz, & Cornelius-Freyre, 2015; Derefinko et al., 2014; Isikdogan & Kargin, 2010; Stringfield et al., 2011) and written retelling (Dimino, Gersten, Carnine, & Blake, 1990; Vallecorsa & deBettencourt, 1997). The effect of story mapping strategy on oral story retelling, on the other hand, was inconsistent. While a group-design experiment showed a positive effect on story retelling (Johnson, Graham, & Harris, 1997), several single-subject design studies showed mixed results (Gardill & Jitendra, 1999; Idol & Croll, 1987). Therefore, the effects of using story mapping on verbal story retelling for students with mild ID should be investigated.

Before testing the effect of story mapping strategy on oral retelling skills, some considerations should be addressed first. As mentioned above, students are required to learn to use story mapping technique in retelling a story. In spite of this, it may not easy to master the skill of story mapping. For instance, Idol and Croll (1987) reported four of the five participants with LD spent lots of instruction sessions to reach the criteria of story mapping skills in reading comprehension. In the previous studies regarding story mapping, however, the participants were first taught to learn story mapping skills and then required to complete target tasks without a story map. The process of practicing using a story map to complete task, oral retelling, was missing. Therefore, the effect of using story mapping as an instructional strategy should be investigated at first. In addition, providing pre-designed maps might be more effective than drawing a map in teaching reading comprehension (Ko, Chiang, Lin, & Chen, 2011). The effect of using a story map as a prompt when retelling a story should also be explored.

Based on the above analysis, the aim of this study was twofold: (1) to investigate whether the story retelling performance of children with mild ID could be facilitated by merely using story maps as a prompt during story retelling, (2) to determine if the effect of using story maps as a prompt with instructional strategies of story mapping on story retelling is greater than merely using story maps as a prompt.

Methodology

Participants and setting

Three participants with mild ID, Alan, Bob, and Carl, participated in the study after receiving their parents' consent. All participants were identified as ID by the local education agency (LEA). They had no diagnosis of hearing, visual, speech, and motor impairments. All participants were enrolled in inclusive classrooms and received special education and related services in resource classroom programs in their own schools based on their individualized educational program (IEP).

Participants' IQ ranged from 64 to 68. The standard score of the Peabody Picture Vocabulary Test showed poor receptive vocabulary capabilities. Meanwhile, the percentile rank (PR) of language comprehension and expression in Assessment of Language Disorders for Children in Elementary School (Lin & Lin, 1994) indicated that their language abilities were significantly lower than their typical peers. Demographic information for each participant was provided in Table 1.

The experiment was conducted in a resource classroom at each participant's school. Only the participant and the first author were in the instruction activities. The teachers and the parents were allowed to observe the instruction, but not to provide any prompt when a participant did story retelling.

Materials

1. Instructional materials

Thirty popular children's books that included text and illustration were selected for this study. The first author and an experienced special education teacher in Chinese language and Arts rated the fitness of the

Table 1

Participants' demographic information.

Participant	Gander	Age(Grade)	IQ[a]	PPVT-R[b]	Language ability
Alan	Male	11-0 (5)	68	72	Comprehension: PR < 1 Expression: PR = 5
Bob	Male	12-3 (6)	68	64	Comprehension: PR < 1 Expression: PR < 1
Carl	Male	11-10 (6)	64	55	Comprehension: PR = 2 Expression: PR = 2

Note. [a] Wechsler Intelligence Scale for Children-III with Taiwanese norm (WISC-III).

[b] Peabody Picture Vocabulary Test with Taiwanese norm.

[c] Assessment of Language Disorders for Children in Elementary School, a popular test used to test children's language capabilities from year 6 to 13 in Taiwan.

books. A total score ranged from 0 to 6 was given to each book based on the following three criteria: (a) the content of story could be used to fill a story map, (b) the content of story is readable for children with mild ID, and (c) the length of story is readable for child with mild ID. Eventually, twenty books were chosen.

All twenty stories were rewritten for controlling the difficulty and length to match the reading capability of grade 3 or below. The average length of the rewritten story was 165.5 Chinese words, ranging from 136 words to 204 words. The number of minimum terminable unit (T-unit: the shortest independent sentence and its dependent clause; Hunt, 1965) in a story ranged from 14 to 23, 17.9 on average. The readability of text in each story was confirmed in grade 2 or 3 by using Chinese Readability Index Explorer (Sung, Chen, Cha, Tseng, Chang, & Chang, 2015), on average 2.3 grades. These 20 stories were introduced to each participant randomly in each instruction session to reduce the sequence effect of material.

2. Story maps

The content of the story map was developed and evaluated in advance. The story maps were used both as a prompt in the period of retelling and an instructional material for teaching story mapping strategies. At first, the authors drew a framework of story maps which included all components of Idol's (1987) story map, which including setting, characters, problem, goal, action, and outcomes, except for that graphic symbols were added to aid remembering the meaning of the components on the map (see Figure 1). All elements of story text were marked and the corresponding story maps were created by the first author. Finally, a checklist for rating the completeness of the retelling was developed based on the content of each story map.

Variables and data collection

1. Independent variable

Strategies used in teaching activities were regarded as independent variables which were used in the following conditions: (a) teaching with typical strategy (teacher read the printed text-based story and explained the content to students) and asking students to retell without story maps; (b) teaching with typical strategy and asking students to retell with story maps; and (c) teaching with story mapping strategies and ask students to retell with story maps.

2. Dependent variables

The accuracy of retelling the content units for each story map was used as the primary index of retelling performance. The first author reviewed each transcription with the corresponding story map to count the number of correct content units mentioned in the transcription. The accuracy of retelling was calculated by dividing the number of correct content units in one transcription by the total number of content units, and then multiplied it by 100%.

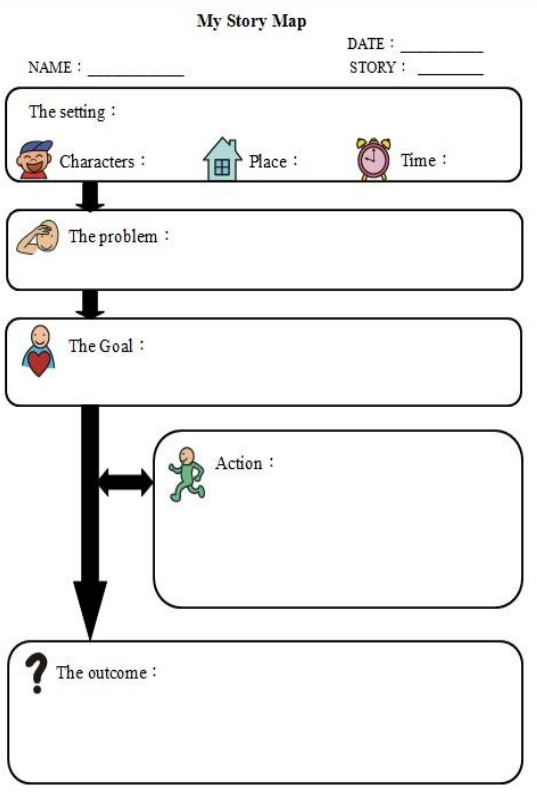

Figure 1　Story map used in this study.

The length of retelling was evaluated by the total number of Chinese words (NW) and different Chinese words (NDW). Word count did not include mazes in the sentences (Kay-Raining Bird et al., 2008). NW was calculated by counting all words in one transcription, and NDW was calculated by counting the different words in the same transcription.

In addition, typical peers' performance was also used as a reference standard. Two typical peers were invited to read four of the rewritten stories along. They then retold the story without story maps. The accuracy of retelling by the two typical peers was 84%. Meanwhile, the mean NW of the retelling was 199. The mean of NDW was 95.5.

3. Data collection

Voice retelling of story was audio-taped in each session. Each participant was asked to retell a story he learned as much detail as he could, without the story map in the baseline phase but with the story map in the intervention phases. No extra prompt was provided to assist the participant to memorize the information when retelling a story. The

first author, as the instructor in the experiment, only asked "Anything else?" when the participant seemed to stop retelling. The recorded data was transcribed verbatim by the first author. The mazes in the sentences were excluded for further counting the NW of the story and analyzing the completeness of the story, which was used as the accuracy of retelling.

Experimental design and procedure

This study used multiple treatment experiment with single-subject design (Tawney & Gast, 1984). A-B1-C1-B2-C2 design was conducted and replicated on three participants. Alternative treatment single-subject design (ATD) was not used in order to eliminate potential confusions when participants received three different conditions in the same phase.

1. Baseline

Typical strategies for teaching story telling was adopted in the baseline. At the beginning of the instruction, the instructor (first author) showed the cover page of a picture book and asked the participant to guess what kind of story would be told in this book. Then, the instructor read out the story to a participant and explained the story by showing the picture book according to the rewritten content of each story. After the instruction session, the participant was required to retell the story in as many details as he could without using the story map.

2. Intervention B

A typical teaching strategy was used in intervention B. Each story was taught in the same manner as baseline conditions. However, the story map with completed content of each component corresponded to the story taught in the session was provided when the participant was asked to retell the story.

3. Intervention C

Teaching with story mapping strategies was conducted in intervention C. Each story started in the same process, showing the cover page of the picture book and asking the participant to guess. The instructor then put a blank story map on the desk in front of the participant before telling the story. In addition to explaining the story in the same methods used in the previous phase A and B, the instructor used the steps of "modeling" in the story mapping method (Idol & Croll, 1987; Isikdogan & Kargin, 2010). The instructor stopped telling at a point where information arose that belonged to any of the story-map components and wrote the key word directly on the map. All the corresponded information was derived from the preset story map to make sure all the information was extracted correctly. Then the participant was allowed to use the story map as a prompt to retell the story just as he/she did in intervention B.

The above two Intervention phases, B and C, were introduced again (B2, C2). Due to only 20 stories were developed, the maximum number of session for each phase was 4.

Reliability

The inter-rater agreement was established to make sure that the story maps was correctly responded to the content of the story. Meanwhile, intra-rater reliability and inter-rater reliability were used to evaluate the data consistency in transcribing language samples and analyzing the accuracy of retelling.

1. Story map

The second author and a graduate student, who majored in communication disorders, checked the fitness of components of each story individually. The results of inter-rater agreement demonstrated that 100% agreement between the two raters for all components except the "goal" (90%).

2. Language sample transcription

To establish intra-rater reliability, the instructor (first author) transcribed the verbatim twice within a 2-week interval, and the verbatim transcripts were used to calculate intra-rater reliability. The mean intra-rater reliability was 100%.

For establishing inter-rater reliability (usually represented as inter-rater agreement), a graduate student, who is in the master's program of speech-language pathology and experienced in transcribing language samples, independently transcribed 20% of the randomly assigned verbatim transcripts. The mean inter-rater agreement between the instructor and graduate student was 100%.

3. Accuracy of retelling

To establish intra-rater reliability, the instructor rated each verbatim transcript twice within a 2-week interval. The mean intra-rater consistency was 100%. For establishing inter-rater agreement, the graduate student independently rated 20% of the randomly assigned verbatim transcripts. The inter-rater agreements ranged from 83% to 100% in different components (word of 100%, location of 100%, reason of 92%, goal of 100%, action of 83%, result of 92%).

Data analysis

The data were graphed and a visual analysis method was used to inspect the change of data across phases (Tawney & Gast, 1984). The percentage of non-overlapping data points (PND) across intervention B and baseline (B-A), Intervention C and intervention B (C-B) were calculated to indicate the effect size of interventions (Scruggs & Mastropieri, 1998). The PND should be higher than 70% to demonstrate the effective difference between two phases. The effect of treatment is unreliable if PND is lower than 50%, and it is questionable if the effectiveness of PND is between 50% and 70% (Scruggs & Mastropieri, 1998).

Results

Accuracy of retelling

Participants' performance of retelling was indicated by their accuracy of the story

components described in story retelling. The results are shown in Figure 2.

1. Alan

In the baseline phase, the accuracy of retelling is ranged from 45% to 55% with a mean of 50%. After providing a story mapping as the prompt when retelling (B1), the percentage raised slightly, with a mean percentage of 53%. The percentage ranged from 50% to 70% with an average of 60% in phase C1. The percentage did not decrease in phase B2. The mean of percentage was 65%, ranged from 60% to 70%. In addition, the percentage increased obviously when teaching with story mapping was added again in phase C2. The percentages were all 80%. Alan's accuracy of retelling performed in C2 was almost as good as his typical peers who performed 83% accuracy.

As for PND (as Table 2 indicated), the effect is only obvious both between phase C1 and B1 (PND = 75%) and phase C2 and B2 (PND = 100%), but no effect between phase B1 and A1 (PND = 33%) and phase B2 and C1 (PND = 0%). The results demonstrated that the accuracy of Alan's retelling was not improved by providing story maps as a prompt; however, the accuracy was significantly enhanced when story mapping strategy was used in the teaching process.

2. Bob

As shown in Figure 2, Bob described only about half of the components (47%, ranged from 40% to 50%) in the story in the baseline. The percentage even decreased at the first two sessions in B1; however, it increased to 60% after the third session. Considering the sharp increase from 45% to 60% after two sessions, the phase was extended to the fifth session. Unfortunately, there is no improvement. The mean of percentage of the whole phase is 54% while the mean for the last three sessions was 60%.

Bob's accuracy improved when teaching with story mapping was used in C1. The mean is 68%, ranged from 65% to 75%. Meanwhile, the trend of the performance was decreased sharply when the story map teaching was withdrawn in B2, from 70% to 60%. Finally, the accuracy increased again

Table 2

PND between phases in accuracy, NW, and NDW for participants.

Participant	Accuracy				NW				NDW			
	B1-A1	C1-B1	B2-C1	C2-B2	B1-A1	C1-B1	B2-C1	C2-B2	B1-A1	C1-B1	B2-C1	C2-B2
Alan	33	75	0	100	100	75	33	67	67	50	67	33
Bob	60	100	0	67	60	0	0	100	60	0	0	67
Carl	40	100	100*	75	100	0	67*	100	80	33	67*	50

*: performance decreased when C1 was introduced.

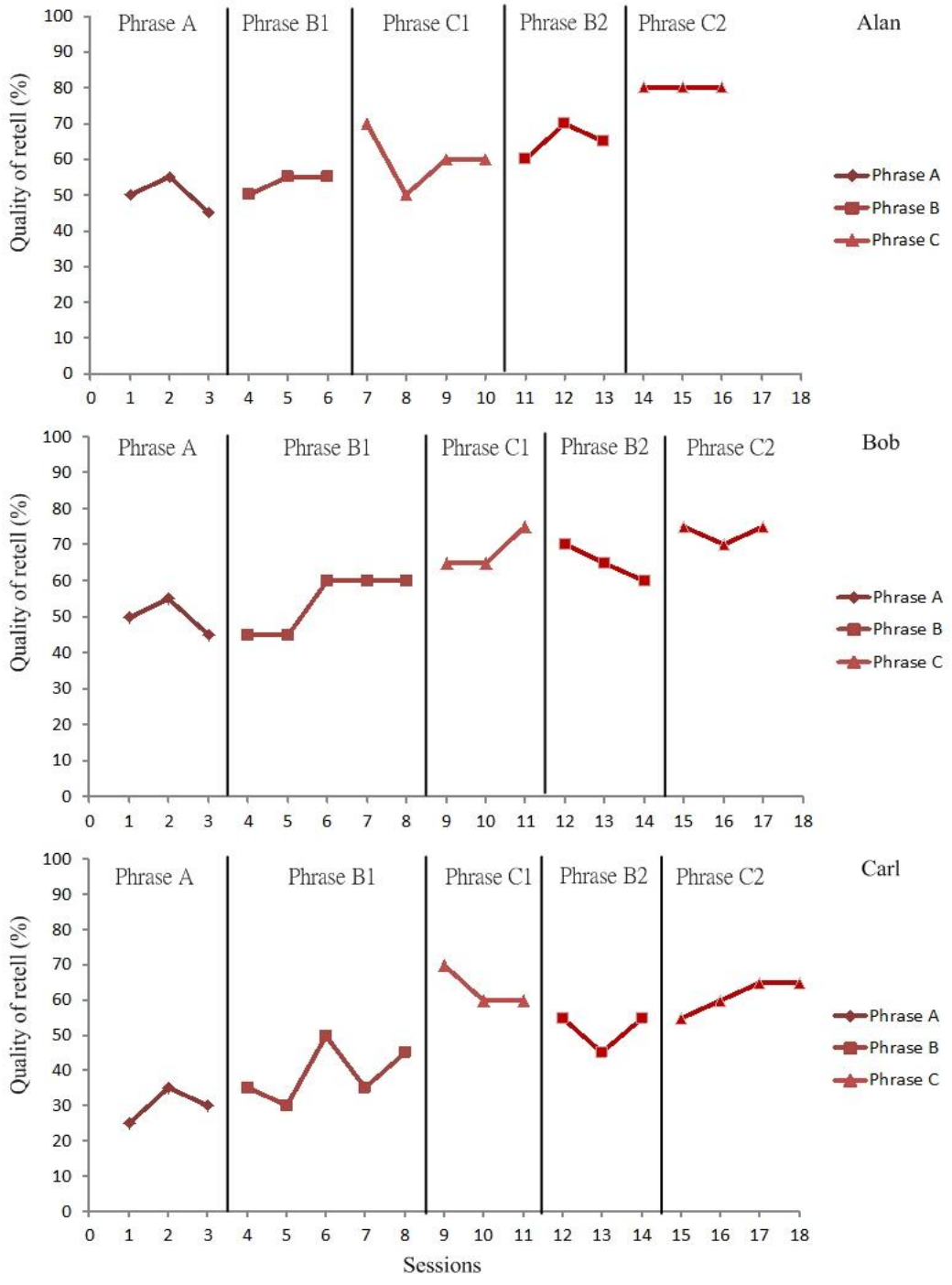

Figure 2　The accuracy of retelling for the three participants during the experiment.

when teaching with story mapping in C2, with a mean of 73%. The accuracy of retelling for Bob was also close to his typical peers. The effect size (as Table 2 indicated) was large only between phase C1 and B1 (PND = 100%).

3. Carl

The accuracy ranged from 25% to 35%, with a mean percentage of 30% in the baseline. Carl's performance was improved in phase B1, with a mean percentage of 39%. At the beginning of phase C1, Carl showed an immediate and substantial improvement on the percentage of retelling the essential components, with an average of 63%, which represented an increase of 24% in level compared to phase B1. The percentage was then dropped in phase B2, ranged from 45% to 55%. His performance was recovered in phase C2, with a mean of 61%. Although Carl's performance was still much lower than his typical peers, the accuracy in phase A was doubled when compared to phase C2.

As Table 2 indicated, the difference between phases was obvious only when story mapping teaching was added (PND = 100% for phase C1/B1; PND = 75% for phase C2/B2). Meanwhile, Carl is the only one whose performance was significantly dropped when story mapping teaching was pulled out (PND = 100% for phase B2/C1).

Length of retell

NW and NDW were used to indicate the length of retelling. The results of NW and NDW for the three participants are demonstrated in Figure 3.

1. Alan

The NW of retelling in baseline ranged from 51 to 63 words, 57 on average. The NW increased in phase B1 with a mean of 70.7 words, ranging from 69 to 73. Alan showed an immediate increment in the length of retelling at the beginning of the phase C1. Although an extremely low number of words was found because he was hurry to participate in an interested activity, the average NW was 101.8. The NW in phase B2 was stable with a mean of 103.7, ranging from 99 to 111. The NW increased sharply once the story mapping strategy was introduced again in phase C2, with 126.0 words on average.

As Table 2 shown, the treatment is effective between phase B1 and A (PND = 100%), and phase C1 and B1 (PND = 75%) as well.

The NDW ranged from 34 to 41 words (mean of 38.0) in the baseline. The NDW increased slightly in phase B1, ranged from 37 to 44 words (mean of 41.3). The situations were similar in the next phase C1 (mean of 45.8). The NDW increased sharply in the last two sessions in phase B2 that make the high average NDW (mean of 56.7). Meanwhile, the average NDW increased to 65.3 in phase C2.

Although the numbers increased, the effect of treatment was not solid based on PND (as Table 2 indicated). The effects were

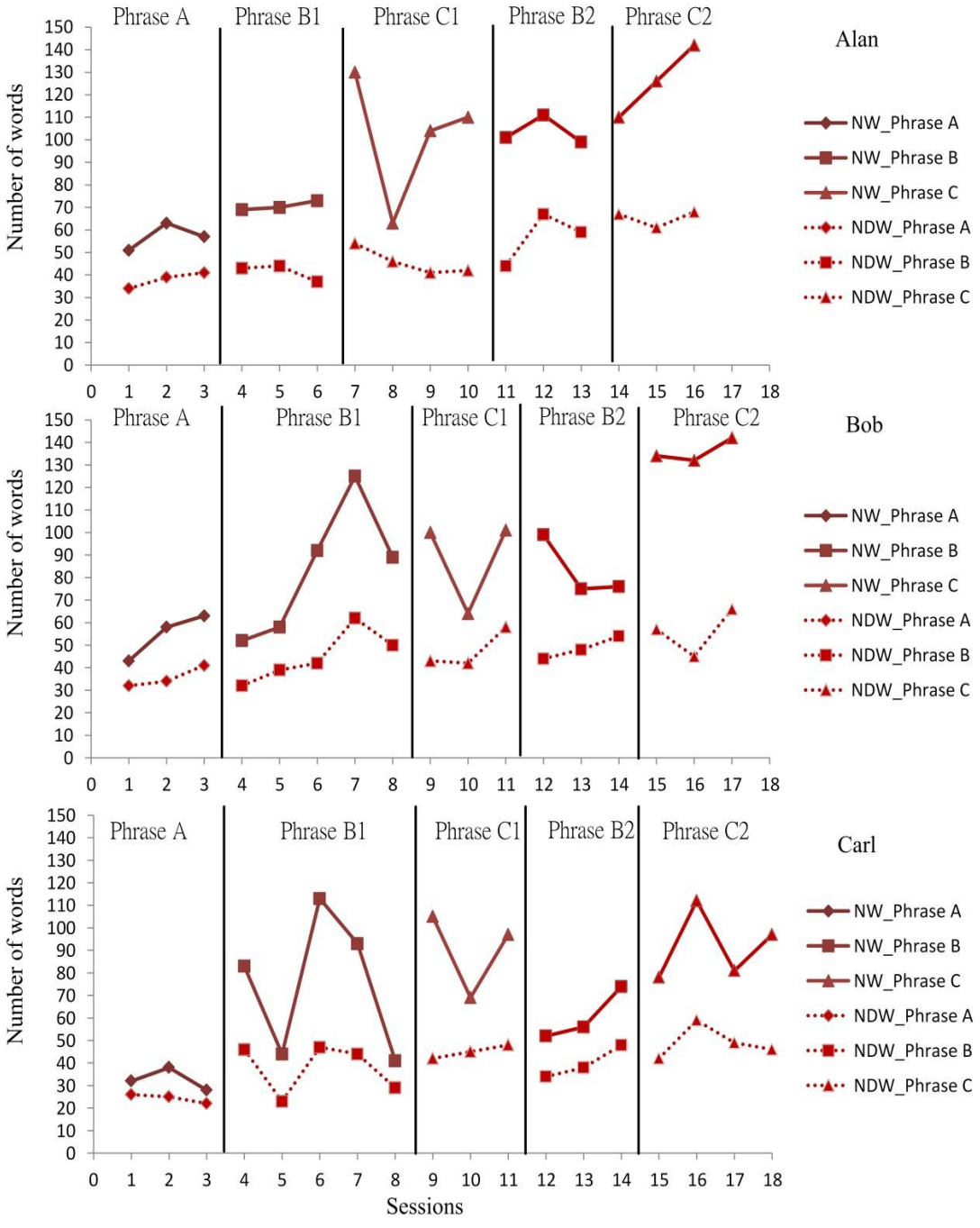

Figure 3　The total number of words and the total different words of retelling for the three participants during the experiment.

not significant between phase B1 and A (PND = 67%), phase C1 and B1 (PND = 50%), phase B2 and C1 (PND = 67%), and phase C2 and B2 (PND = 33%). However, the Pearson Product-Moment Correlation indicated a high relationship both between the accuracy and NW (r = .897, p < .0001) and the accuracy and NDW (r = .874, p < .0001).

2. Bob

Bob produced 54.7 words on average when retelling a story in the baseline, with a range from 43 to 63 words. The NW increased sharply when story mapping was introduced as a prompt in retelling a story (mean of 83.2), which ranged from 52 to 125 words. Contrary to what was expected, the NW was not increased when the story map teaching strategy was added in phase C1. The NW ranged from 64 to 101 words, with a mean of 88.3 words. In phase B2, NW ranged from 77 to 99 words, with a mean of 83.3 words. However, with the onset of the phase C2, Bob demonstrated an immediate and substantial improvement on NW, with an average of 136.0 words. The only effective treatment was C2 and B2 (PND = 100%), while the other treatment effects were significant (B1/A of 60%, C1/B1 of 0%, B2/C1 of 0%).

Bob's NDW was increased when story mapping was introduced as a prompt in retelling, but the effect of treatment was not significant. The mean of NDW was 35.7 in the baseline, with a range from 32 to 41. The NDW, which dropped at first in the phase B1 and increased considerably after three sessions, had a high mean of NDW and a range (mean of 45.0, range from 32 to 62). The averages NDW in phase C1 and B2 were similar (C1 of 47.7, B2 of 48.7), both slightly lower than that in C2 (56.0). Although NDW increased across phases, as Table 2 shown, the effect of treatment was not solid based on PND (B1/A of 60%, C2/B2 of 67%, C1/B1 of 0%, B2/C1 of 0%). Meanwhile, the Pearson Product-Moment Correlation showed a positive relationship both between accuracy and NW (r = .822, p = .000) and accuracy and NDW (r = .943, p = .001).

3. Carl

Carl produced less than 40 words in baseline, with a mean of 32.7. The NW in phase B1 varied, ranging from 41 to 113 words (mean of 74.8). The situation in phase B1 was similar to phase C1, which ranged from 69 to 105 words (mean of 90.3). The NW dropped down when map teaching strategies were withdrawn in phase B2 at first, then increased slightly, with a range from 52 to 74 words (mean of 60.7). With the onset of the phase C2, Carl demonstrated a solid improvement on the length of retelling at once, with an average of 92.0 words. As Table 2 indicated, The treatment was effective both between phase B1 and A (PND = 100%) and C2 and B2 (PND = 100%), while the effect was not significant

between phase B2 and C1 (PND = 67%) and phase C1 and B1 (PND = 0%).

Carl's NDW in baseline was only 24.3 on average. At the beginning of phase B1, his NDW unstably enhanced with a range from 23 to 47. The NDW was slightly improved when story mapping was added in phase C1. Similar pattern demonstrated in the next two phases (B2 and C2). However, as Table 2 shown, the PND showed that the effect only existed between phase B1 and A (PND = 80%).

In addition, like Alan and Bob, the NDW-NW ratio was highest in baseline (mean = .75). Meanwhile, the average ratio of B1 (.53) to B2 (.66) was higher than C1 (.52) to C2 (.54). Only the C2-B2 ration demonstrated significant effects (PND = 100%). However, the Pearson Product-Moment Correlation showed a positive relationship between accuracy and NW (r = .662, p = .003), accuracy and NDW (r = .703, p = .001).

Discussions

This study investigated the effect of not only using story maps as a prompt in retelling, but also the effect of using story maps as both a teaching strategy and a prompt in retelling for children with mild intellectual disabilities (ID). Effect of quality and quantity of retelling story on students, including the accuracy of elements of the story, the total number of words (NW) and the total number of different words (NDW), were adopted as indicators to evaluate the effects of the interventions.

As the results showed, there were improvements in the accuracy of retelling, however, the effect of using story maps as a prompt to facilitate the improvement of accuracy of retelling was not solid due to the small effect size. In contrast, the effect of combining story mapping as both a teaching strategy and a prompt demonstrated a significant improvement for all three participants. Unlike merely use story map as a prompt, the results of the analysis for accuracy of retelling gave the positive answer for using a combined approach.

Furthermore, with the second introduction of combined programs (phase C2), the accuracy of retelling with story maps was almost as good as their peers. The performance of Alan and Bob were close to the peers, while Carl's was doubled even though was still below the average of his peers without ID. This also confirmed that children with mild ID could retell a story with story maps as a prompt almost as good as their typical peers after teaching with story mapping strategy.

Nevertheless, some issues should be further clarified. First, the current study did not show the effect of using story maps as a prompt on the accuracy of story retelling. The possible reason might be that children with mild ID were not able to organize the components on the story map to generate the

story schema by themselves. It meant that these students could not automatically activate the schema provided by a story map with teaching. However, they could learn to use it as a prompt after some instruction according to that one of three participants' performance decreased significantly when compared phase B2 and C1. Obviously, the first intervention of story mapping teaching provided some effect on using a story map when retelling the story and made them not go back to the level they performed in the first intervention B1. However, the reasons should be explored in the future study.

In addition, since the current study provided story maps during story retelling, the performance of retelling a story independently after the story told with story mapping teaching was not answered. However, as the authors mentioned in introduction section, the effect of story maps serves as visual prompts and teaching strategies should be investigated at first. The current study confirmed that the story map could not enhance the accuracy of retelling effectively without teaching. Therefore, the further study should investigate the effect of story mapping teaching without providing the story map as visual prompt during story retelling.

This study regarded story mapping as a type of teaching strategy, instead of teaching students to learn story mapping strategy in the previous studies (e.g., Gardill & Jitendra, 1999; Idol & Carol, 1987; Johnson, Graham, & Harris, 1997; Vallecorsa & deBettencourt, 1997). Therefore, the authors do not know if the children with mild ID could learn the skills of filling out the story map.

The results of the analysis for NW of retelling indicated that while participants with ID produced longer story than baseline by providing story maps as a prompt during story retelling, participants produced even longer stories when the intervention combined both story mapping teaching and story map prompting. The results found in the current study were not consistent with the previous studies (Gardill & Jitendra, 1999; Idol & Caroll, 1987). In their studies the improvement of the NW of retelling did not consistently increase. Only 2 of 6 participants with learning disabilities produced longer oral retelling in Gardill and Jitendra's study (1999), while 3 of 5 participants with LD improved in Idol and Croll's study (1987). In addition, based on effect size, two of three participants demonstrated the significant effect when story map was provided, and two of three participants showed the significant effect when the intervention combined both story mapping teaching and story map prompting.

Two factors might explain the inconsistency. First, instead of telling and explaining the story by the instructor, the previous studies required the participants to read the material verbally (Idol & Caroll, 1987) or listen to an instructor reading a story aloud without explanation (Gardill &

Jitendra, 1999). The second factor might be that the participants retold stories without story maps in the previous studies. The factors might be confirmed when the effect was significant with the onset of the introduction of story mapping as a prompt.

The total NDW represents the richness of vocabulary used in retelling a story. Although NDW increased when story mapping was introduced in phase B1, only one participant had a significant effect. Meanwhile, the NDW did not improve significantly across the interventions that was expectable because the current study did not focus on vocabulary teaching.

Based on the results of correlation analysis, the positive correlations between the accuracy and length (NW), and the accuracy and NDW were confirmed. The results indicated that the participants could retell more detailed information if he could retell a longer story with more different words.

Conclusions and suggestions

The research questions of the current study were answered based on the above results and discussions. First, the effects of using story map as a prompt is significant on increasing the quantity (NW and NDW), but not on improving the accuracy of retelling. Secondly, compared with using story maps as a prompt only during story retelling, the effect of adding story mapping teaching strategies during retelling the story is significant on improving the accuracy of retelling and NW of retelling. Therefore, using story maps as a prompt could only encourage children with mild intellectual disabilities to tell more. However, only combined story mapping teaching and story maps as a prompt could improve the accuracy and length of retelling.

Some limitations of this investigation also should be mentioned. The experiment was scheduled to fit the participants' school schedule. Therefore, students sometimes hurried to the schools' mandated activities that made them not focus on retelling the story. The situation led few significantly low data points, which was not possible to be avoided in this study. In addition, randomized group design ideally is more proper for investigating the effect of specific intervention. Since this is an exploratory study aimed to explore the issue in a small sample, these limitations must be taken into consideration as they greatly influence the study's internal validity.

In addition, this study revised 20 picture storybooks to fit grade 3 level to exclude the impact of the difficulty of text on oral retelling. The lower grade story might be a proper start for exploring the effect of the interventions in this study. However, the results of this study could only explain the effect of story retelling. Therefore, the grade appropriated story or other retelling genres

such as personal experience or fiction story retelling should be investigated in the future.

Further research is needed to address a number of other issues related to the concerns of this study. For example, this investigation provided neither the results of retelling without story maps nor the maintained effect of children's performance. It would be useful to investigate what happens when all intervention is withdrawn.

Finally, the abilities of retelling are also essential for the adolescents or adults with intellectual disabilities especially when they are in the workplace. It is also worth investigating the effect of story maps and story mapping teaching on retelling in these populations.

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故事圖作爲提示和教學策略對促進輕度智能障礙學生口語重述成效之研究

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摘要

改善口語敘事能力是智能障礙兒童語言治療的重要目標之一。本研究旨在探討故事圖策略對有口語敘事困難之智能障礙學生的重述表現之成效。本研究以三位五、六年級的智能障礙學生爲對象，利用單一受試研究法的多處理設計，操弄三種條件，分別是：基線期(A)——以一般方式教學並讓學生在沒有故事圖提示下重述；介入期(B)——以一般方式教學並讓學生在有故事圖提示下重述；介入期(C)——以故事構圖策略教學並讓學生有故事圖提示下重述。本研究採重述正確率、總詞彙數、相異詞彙數作爲敘事表現的指標。研究結果指出，只使用故事圖提示下，總詞彙數有顯著的提升，但未能改善重述的正確率。而以故事構圖策略來教學並提供故事圖提示，則能顯著的改善重述的正確率和總詞彙數。研究者並依研究發現對未來研究提出相關建議。

關鍵字：故事重述、故事圖、輕度智能障礙、敘事

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