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Enhancing Children's Creativity: An Exploratory Study on Using the Internet and SCAMPER as Creative Writing Tools

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This paper reports on the study of the use of the Internet and SCAMPER in facilitating creative writing. A total of 60 children of primary school age participated voluntarily in a creative writing program. Over a period of one month, in groups, the children learned how to use the Internet and SCAMPER to enhance their creative writing. The findings showed that children who used the Internet demonstrated an improvement in their creative writing in terms of fluency and elaboration. On the other hand, children who used SCAMPER did not show any obvious improvements in their creative writing. Limitations of the study and suggestions for future research are also presented in this report.

INTRODUCTION

Enhancing creativity "The pupils who had been taught to think creatively had indeed improved their creative skills with only a relatively small investment in instructional time." (Sternberg & Lubart, 1995, p. 161)

"The students who received instruction in the inventing process developed a significantly greater number of inventions than students who received only one introductory lesson on invention." (Westberg, 1996, p. 261)

Most teachers and educators may agree that all children or pupils are potentially creative. Creativity is present in every person, at least as potentials (Cropley, 1997). Creativity can be regarded as a natural part of every person's mental process. Creativeness may vary from one person to another, but a totally uncreative person does not exist (Downing, 1997). Accordingly, teachers and educators may acknowledge that enhancing creativity rests on the proposition that characteristics necessary for creativity can be helped to unfold in an appropriately stimulating learning. Children's level of creativeness varies. Their creative potentials can be enhanced by deliberate encouragement, opportunity, and training, and can be traced back to a young age. As

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such, enhancing creativity can be carried out during everyday instructional time. The act of enhancing creativity has to be accompanied by continuous efforts.

Children's creativity Indeed, enhancing pupils' creativity has been regarded as an important responsibility of teachers (Tan, 2000). Teachers and educators should reflect upon factors that influence the trends in creativity development. It is claimed that behavior that hinders children's creativeness include insisting that they do things the "right way", asking them to be realistic and to stop imagining, making comparison among them, and discouraging their curiosity (Soh, 1997; Torrance, 1990). A non-evaluative environment is essential as it can help remove "right answer fixation" (Treffinger, 1983). Children's creativity can be encouraged by exposing them to a wide variety of stimulation, providing them opportunities to acquire information and materials and to combine and arrange them, giving children freedom to ask questions, disagree, experiment, and do things that adults may regard as mistakes, and allocating sufficient time to maintain children's spontaneity (Soh, 2001).

It is believed that as young as four to four and a half years old, children master a variety of learning skills through questioning, inquiring, searching, manipulating, experimenting, and playing (Torrance, 1969). During this period, they seem to display creative behavior. This creativeness among children seems to take off again gradually when they are in grades one to three (Torrance, 1964). If these observations are valid, children, in the course of growing up and socialization, seem to adopt conformist behavior more and thus, give less original responses. We may question: Does a child's creative competence benefit or suffer from group behavior (see Berk, 1999)?

Our study Our study investigated the use of the Internet and SCAMPER in enhancing children's (ages: 10 and 11 years) creative writing. The study took into consideration the learning culture and infrastructures of the existing schools. After 1997, schools in Singapore received assistance to improve their information technology infrastructures (Teo, 1997). Children were exposed to the use of the Internet during their instructional time. Around the same period, the call was released to initiate a nationwide approach to nurturing creativity (Goh, 1997). As a result, schools adopted new teaching strategies, such as encouraging the use of information technology (e.g., CD-Rom and the Internet) to facilitate creative learning and integrating creative tools such as SCAMPER (see below for description) to help children to be proficient and creative in writing.

The Internet: In the elementary schools, computer technology is used as a means to support the development of creativity (e.g., Dede, 1995). The use of the Internet in this paper refers particularly to the use of the Search Engine (e.g., Yahoo and Web-Crawler). We learned from the literature that computer technology can help children's learning and foster their creativity. Effectiveness of the use of the Internet in learning was reported in some studies with children. In the Internet-learning environment, participants of the study were active learners engaging in interactive learning (Avant, 1992). Interaction and feedback were instantaneous and effective. The teacher adopted the role of a facilitator, who interacted with the students at a personal level with appropriate questions and activities (Avant, 1992). It is thus certain that the development of flexibility and creativity can be improved through the use of computers (Clements, 1991).

SCAMPER: Originated by Osborn (1993) and later introduced to education by Eberle (1997) and Michalko (1991), SCAMPER is an acronym for Substitute,

Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse (see below for further description). The technique of using SCAMPER was taught to a group of fourth and eighth graders, and was found to positively affect students' performance (Westberg, 1996).

Research questions Our study regarded the use of the Internet and SCAMPER as creative tools for enhancing creativity in writing (in terms of fluency, flexibility, originality, and elaboration; adopted from Torrance, 1962, 1986, 1990) and improving written language performance (in terms of accuracy in grammar, richness of vocabulary, and complexity of sentence). We assumed in this study that creativity is domain specific (see Amabile, 1983) and hence, children should acquire skills to use the Internet and SCAMPER in the context of English writing lessons. Other assumptions underlying our study were:

1. All pupils have the potential to be creative (see Gardner, 1983).
2. Creativity is the resultant process of thinking that occurred within the individual.
3. The end product of creative abilities can be observed and measured.
4. Children are creative, although the level of creativeness varies (Beck, 1999).
5. Creativity can be increased by deliberate encouragement, opportunity, and training (Beck, 1999).

Consequently, our research questions were:

a) Can creativity in writing be promoted by creative learning tools?
b) Can language proficiency be enhanced by the use of creative learning tools?
c) Are there any gender differences in primary pupils' creativity in writing when they are introduced to creative learning tools?
d) Are there differences in writing performances across writing tasks?

METHOD

Our study was conducted in the year 2000, during the school vacation. A creative writing holiday program was designed for the purpose of this study. The program was targeted at pupils between the ages of ten to eleven years old (grade five). Pupils who participated in the program did so on a voluntarily basis (with parental consent). They returned to schools for four weekdays (Tuesdays) over a period of one month. During the four meetings (each lasting two hours), pupils were given the opportunity to make use of either the Internet or SCAMPER as tools to assist them in the process of writing their compositions.

Participants A total of 60 primary school pupils (33 female and 27 male) participated in the study. They were from grade five classes and had been formally streamed according to their academic performance at the end of grade four. Their scores for the English streaming examination fell within the range of Band 1 or 2 (between 75 to 92 marks). As such, they had an adequate level of language proficiency and ample competence in writing compositions.

The participants were assigned randomly into three groups: a) those who used the Internet (the Internet group), b) those who used SCAMPER (the SCAMPER group),

and c) the control group (see Table 1). As far as possible, the number of female and male pupils in each group was kept equal. The numbers in brackets were the actual number of pupils who participated throughout the program and whose compositions were used for the study. Some pupils dropped out of the program and their compositions were not included in the analysis.

Table 1
The Number of Participants According to Groups

	INTERNET	SCAMPER	CONTROL
Boys	9(8)	9 (6)	9(6)
Girls	11(9)	11 (9)	11(7)
Total	20(17)	20(15)	20(13)

The creative writing program The program was developed in line with the goals of the English language objectives as had been set for Singapore's elementary school children:

(1) Offering a variety of language learning experiences that were both teacher-planned and spontaneous;

(2) Encouraging active participation by pupils as a natural method of learning in such essential areas as speaking, reading, listening, and writing;

(3) Providing sufficient stimuli and opportunities for pupils to express themselves and to use language appropriate for a specific purpose and situation; and

(4) Encouraging the integration of language skills and thinking skills.

Four themes from grade five textbooks were selected for the study. They were "Supernatural", "Outer Space Adventure", "Courageous People", and "Inventors and Inventions". The themes were selected as they were taught in the first semester and pupils showed interest in learning activities related to these themes. Furthermore, the themes provided a wide scope for original ideas and creative writing. Lesson plans were designed for each theme. Different sets of instructions were integrated to the lesson plans for the Internet, SCAMPER, and control groups (Refer to Figures 1 and 2 for a sample of the lesson plan and the writing activity).

Instrumentation Instructional Procedures: All participants attended briefing sessions one week prior to the actual program. The briefing session for the participants in the SCAMPER group included an introductory session to using SCAMPER, reported below.

The instructor wrote the letters SCAMPER on a whiteboard, and associated each letter with words or phrases such as "S" stands for "substitute" and "P" stands for "put to other uses" (see Figure 3). She informed the participants that they could use SCAMPER to improve or construct original and interesting compositions. For a single composition, she advised the participants to select one or two, instead of all, processes of SCAMPER. The participant A, for instance might wish to focus on "substituting" and "eliminating" certain elements in her composition. The participant B might want to work on "combining" and "modifying" certain aspects of his compo-

Creative Writing Lesson 1 : Act of Courage Target group : Primary 5 pupils Duration : 2 hours	Lesson schedule Internet group : 8.30-10.30 am SCAMPER group : 11-1.00 p.m Control group : 1.30 -3.30 p.m
Introduction (10 min) Teacher introduces the theme 'Act of Courage' and share some of her personal experiences, scenes from movies and books. Get pupils to participate and exchange ideas and responses. Have a book display on titles with similar theme. Paste some posters of heroes - include comic heroes. Inform pupils that an act of courage can come in any form - it may just be a small deed.	
Hands-on (1hr) Pupils are given 1 hr for this.	
Internet group Pupils are brought to the computer lab. Each pupil has their own personal computer to access. Get pupils to start surfing from **http//:www.yahoo.com** or **http//:www.webcrawler.com**. Teacher monitor the sites that pupils surf and suggests some key words e.g., *courage, heroes, courageous act, heroic*. Get pupils to read and copy down important points from the sites. The instructions for the control group applied.	SCAMPER group Same as the control group except the following: Pupils are given a piece of paper each with the acronym SCAMPER. They are to fill up each acronym *e.g., how can they substitute the hero in the story Helen Keller, etc.* Teacher assists pupils who are less competence in using SCAMPER.	Control group Teacher discusses theme verbally. Gets pupils to give some words, phrases related to the theme. Writes them on the board. Gets pupils to suggest some possible story lines. Teacher provides a list of possible words to be used on the board. Go through some possible introductions, content and conclusions that pupils may use in their stories.
Written Exercise (50 min) Pupils are given A4 papers and the writing exercise handout. They are to write their compositions independently. Teacher walks around to assist pupils in spelling, etc. Collects the compositions at the end of the session.	

Figure 1. A Sample of Lesson Plan

sition. Thereafter, the participants were invited to a short question and answer session to clarify doubts and misconceptions related to SCAMPER.

Theme 1: Courageous act

Here is something to get you going. This piece was written by a pupil of your age. You may want to read the passage first before you start on the writing exercise.

Helen Keller

Helen Keller was an American girl born in 1880. Unfortunately when she was only nineteen months old, she became very ill. As a result of the high fever and long illness, she lost her sight and hearing. It was a very terrible lost for the poor girl.

When Helen was six years old, her doctor confirmed that she could never regain her sight and hearing again. However, her parents refused to give up hope. They sought help from famous doctors everywhere. Helen on the other hand became very frustrated and disappointed. She refused to behave and became very wild. Other children did not dare come near her. Even her servants and tutors were afraid of her. Hence, there was no way for Helen to learn to speak for she heard nothing, saw nothing and could not understand anything.

Luckily for Helen, a few years later a teacher named Anne Sullivan came to live with the family. With kindness and endless patience, she helped Helen learn the meanings of words by the sense of touch. When Ann Sullivan wanted Helen to learn the word doll, she would give Helen a doll and on the child's palm, she would write the word 'doll' with her own finger. In this slow and painstaking way, Helen came to know many words.

Ann Sullivan reminded Helen to build up her courage and confidence. She constantly told Helen to be brave and have trust in herself. Gradually Helen began to change. Being able to learn gave her confidence and before long Helen could read books in Braille and write simple letters to her friends.

Writing Exercise 1

Now it's your turn to write a story about an Act of Courage. It may be something that you have experienced or seen… or you may want to write on something that is totally fictitious. Use your imagination and create a story of your own.

What is your definition of an act of courage? Remember you may write about anything you wish as long as it coincides with the theme Courageous Act.

Some helping words to get you going:
heroic lion- hearted fearless panicky incident horrified culprit threatening stout- hearted knight in shining armour memorable experience petrified won a medal

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Figure 2. A Sample of Writing Task

Subsequently the participants listened to a familiar story, 'Three Little Pigs.' Questions related to the story were posed such as (a) who were the main characters in the story? (b) what happened to the big bad wolf? (antagonist) (c) what happened to the three little pigs (protagonists), and (d) what happened in the end? (resolution) Then,

SCAMPER	
Substitute	What might you do instead? What could you do as well or better?
Combine	What might work well together? What could be added together?
Adapt	What could be adjusted to suit a purpose or condition? How could you make it fit?
Modify, magnify, minify	What would happen if you change the form or quality? Could you make it larger, greater, stronger etc.?
Put to other uses	How could you use it for a different purpose? What are some new ways to apply it?
Eliminate	What could you subtract or take away? What could you do without?
Reverse	What would you have if you reversed it? Could you change the parts, order, or layout sequence?

Figure 3. A Summary of What SCAMPER Is

the participants were requested to use SCAMPER to improvise the story. They brainstormed ideas with their group members and worked on their drafts. Thereafter, the groups presented the improved versions of the 'Three Little Pigs'. The stories varied as some groups eliminated part of the contents of the story (e.g., the 'chimney', as such the wolf could not enter the house through the chimney), while others chose to modify the contents of the story (e.g., the wolf to be a 'vegetarian wolf', as such he was not interested one eating the pigs).

In a group, the participants attempted to a second task, i.e., to improvise a widely known nursery rhyme 'Three Blind Mice.' Next, some participants used SCAMPER to alter the lyrics of songs of their choices (e.g., 'Somewhere Over the Rainbow', a theme song from The Wizard of Oz).

The briefing session for the Internet group incorporated a hands-on session. All participants had prior experience in searching information from the Internet. As such, the main task of the instructor was to make sure that the participants identified the relevant keywords. The participants were advised to spend only one hour searching the relevant information, after that they were encouraged to discuss and brainstorm with their group members ideas related to the theme. Thereafter, they composed compositions individually in fifty minutes.

A briefing meeting was also held with the control group. The control group wrote their compositions without referring to any specific creative tools. They had group brainstorming (first hour) and individual writing (50 minutes).

The actual program involved four two-hour meetings spread over one month. The participants, except the control group, were guided to use a creative writing tool, SCAMPER or Internet, to write their compositions. In each meeting, the participants were guided to the themes (e.g., Supernatural and Courageous People) of the compositions. In the first one-hour, the participants worked in groups of four or five; they brainstormed words and phrases related to the themes. They were encouraged to suggest possible storylines. A list of words was given to assist the participants' writing. In the second hour, the participants were recommended to write their essay individually for about fifty minutes individually on an A4 size paper with a minimal number of 150 words. The participants were given writing materials such as flipchart papers, transparencies, markers, and crayons.

Assessment Procedures: Two instruments were designed for assessing the compositions. The first instrument was the Language Creativity Score Sheet (refer to Figure 4) which consisted of seven components. The first four components were for assessing creativity - originality, fluency, flexibility, and elaboration. The other three were

COMPONENT	COMPO1	COMPO2	COMPO3	COMPO4	TOTAL
1.Originality					
2.Fluency					
3.Flexibility					
4. Elaboration					
5. Richness of vocabulary					
6. Complexity of sentences					
7. Accuracy in grammar					
TOTAL SCORE					

Remarks:
1. Originality - depending on originality of ideas and story line.
2. Fluency - depending on the development of ideas. Interconnectedness.
3. Flexibility - depending on the scope of the composition. Flexibility in processing ideas.
4. Elaboration - level of elaboration of initial ideas. Expansion of story line.
5. Richness of vocabulary - depending on the extensiveness of words used. Appropriate use of suitable words.
6. Complexity of sentences - depending on complexity of sentence structure. Development of sentences.
7. Accuracy in grammar - Include items such as tenses, syntax, spelling, and punctuation.

* Language Creativity Score Sheet is to be used together with Language Creativity Rating Scale.

Figure 4. Language Creativity Score Sheet

components related to language proficiency, which were in this case, essential for assessing language mastery. They covered richness in vocabulary, complexity in sentences, and accuracy in grammar.

The second instrument was the Creativity Rating Scale (refer to Figure 5). The 5-point rating scale was designed to ensure reliability in mark allocation and to facilitate the marking process. The two instruments were prepared based on studies conducted by E.P Torrance (1986, 1990), Sternberg (1995a, 1995b, 1998) and Soh (1997). The total score for a composition exercise was 35 marks. The marker recorded down the allocation of marks in the Language Creativity Score Sheet.

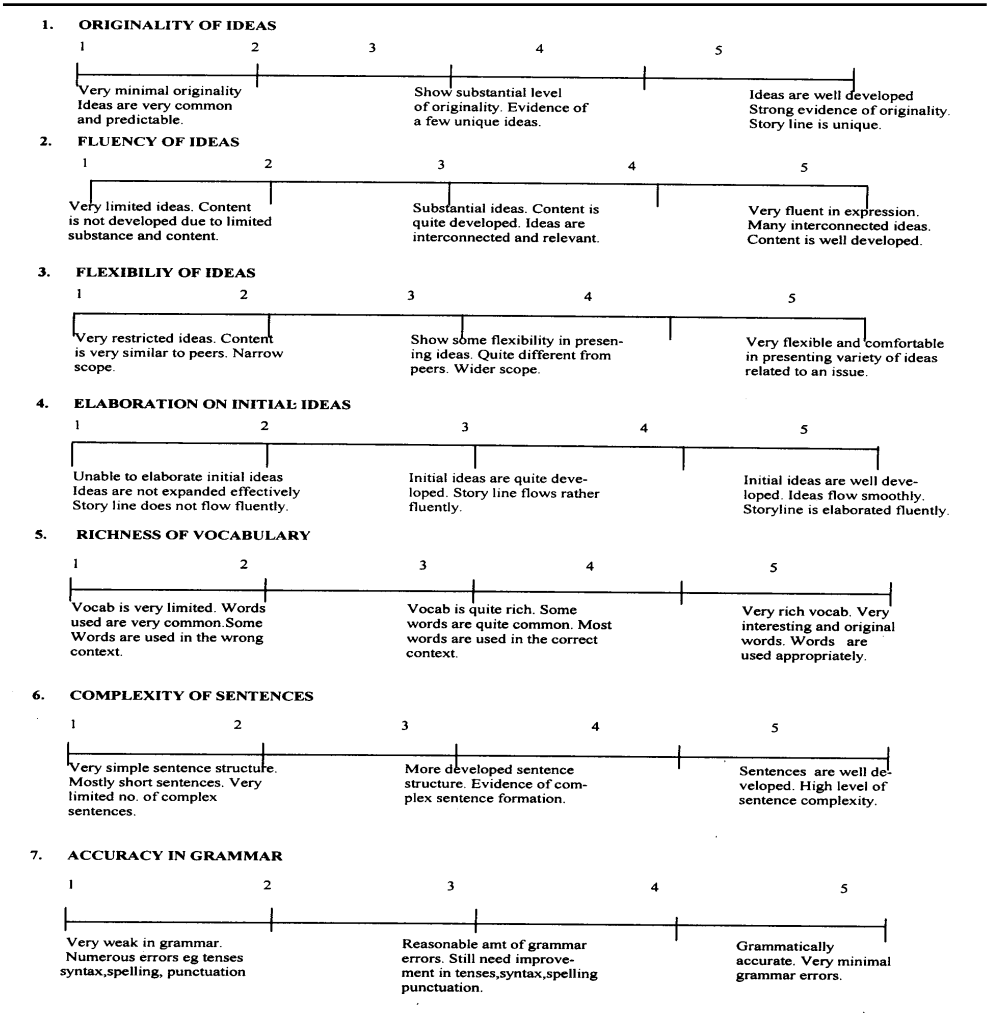

Figure 5. Language Creativity Rating Scale

RESULTS

General Descriptive statistics such as means and standard deviations and the Cronbach Alpha's values were computed for the creativity components and language proficiency components. For the creativity components (using Cronbach Alpha's values), *fluency* had the highest value at 0.84, followed by *elaboration* at 0.80, *flexibility* at 0.64, and *originality* at 0.59. For the language proficiency components, the results of Alpha reliability were: 0.78 for accuracy in grammar, 0.77 for complexity of sentences, and 0.69 for richness of vocabulary.

From the means of the creativity measures (based on the compositions), the participants scored the highest for originality, followed by elaboration, fluency and flexibility (see Table 2). In terms of the language component, the participants scored the highest means for grammar accuracy followed by vocabulary richness and sentence complexity (see Table 3).

Table 2

Mean Standard Deviation and Correlation of Creativity Measures (for Four Compositions and for All Participants)

	M	S.D	CORRELATION COEFFICIENTS			
			Originality	Flexibility	Fluency	Elaboration
Originality	13.91	1.99	1.00	.64	.83	.64
Flexibility	13.09	2.25		1.00	.50	.85
Fluency	13.44	1.77			1.00	.53
Elaboration	13.65	1.93				1.00

Note: All correlation coefficients are statistically significant (df 43, p<.01, two-tailed)

Table 3

Mean Standard Deviation and Correlations of Language Proficiency Measures (for Four Compositions and for All Participants)

	M	S.D	CORRELATION COEFFICIENTS		
			Vocabulary Richness	Sentence Complexity	Grammar Accuracy
Vocabulary Richness	12.51	1.38	1.00	.73	.49
Sentence Complexity	12.04	1.09		1.00	.55
Grammar Accuracy	13.09	1.77			1.00

Note: All correlation coefficients are statistically significant (df 43, p<.01, two-tailed)

Pearson product-moments correlations (two-tailed) were calculated for the creativity sub-components and language proficiency components (see Tables 2 and 3). All components correlated significantly at the $p < .01$ level, ranging between .49 and .85.

Multivariate analysis was computed (see Table 4). Pair-wise comparisons indicated that pupils in the Internet group did relatively better in *fluency* as compared to

those in SCAMPER and the control group. Pupils in the Internet group also did better in terms of *elaboration* as compared to those in the control group, although the difference between them and the SCAMPER group was not significant.

Table 4
Mean Comparisons for Creativity Measures

		INTERNET(I) N=17	SCAMPER (S) N=15	CONTROL (C) N=13	F	P	PAIR-WISE COMPARISONS (BONFERRONI)
Originality	M	13.65	14.27	13.85	.386	.683	I=S=C
	SD	2.37	1.94	1.52			
Fluency	M	14.24	12.87	11.85	5.02	.011	I>S=C
	SD	2.25	2.13	1.72			
Flexibility	M	12.88	14.00	13.54	1.67	.200	I=S=C
	SD	1.99	1.93	0.97			
Elaboration	M	13.65	12.87	11.69	3.93	.027	I=S, I>C, S=C
	SD	1.93	2.07	1.60			

Wilk's Lamda = .502, F = 4.010 ' df 8 : 78, p = .001

Pair-wise comparisons indicated that there was no significant difference in language performance among the three groups (see Table 5).

Table 5
Mean Comparisons for Language Proficiency Measures

		INTERNET (I) N=17	SCAMPER (S) N=15	CONTROL (C) N=13	TOTAL N=45	F	P	PAIR-WISE COMPARISONS (BONFERRONI)
Richness	M	12.65	12.67	12.15	12.51	.606	.550	I=S=C
	S.D	1.54	1.63	.68	1.38			
Complexity	M	12.12	12.07	11.92	12.04	.118	.889	I=S=C
	S.D	.99	1.58	.28	1.09			
Accuracy	M	13.41	12.67	13.15	13.09	.710	.497	I=S=C
	S.D	1.77	2.06	1.41	1.77			

Wilks'Lambda .913, F = .622, df 6:80, p = .712

Gender Comparison between gender groups showed that there was no sex difference between the female and male participants' creativity performance in writing.

Performances across themes Participants using the Internet, in general, had the highest mean for the total score of the four compositions followed by their counterparts in the SCAMPER and control group. There was no significant difference in their performances across themes throughout the creativity-writing program.

DISCUSSION

Our study began with a positive stand, iterating the importance of enhancing children's creativity. From the results of our study, we see that children's creativity can indeed be enhanced through the use of invented techniques such as SCAMPER, and through the appropriate use of the Internet. The children participated in our study voluntarily. They were given a choice to take part or to opt out from a special holiday program on creative writing. With the consent of their parents, the participants did not face unnecessary stress induced from the extra learning program. Such a choice empowered the participants to decide if their participation was worthwhile or not.

Some participants dropped out, but nearly all of the children completed the course and the tasks. We can conclude subsequently that choice-given participation benefits the spirit of constructing a stimulating learning environment for fostering creativity.

One salient finding of the study was that the participants scored higher (means) for creativity components (Table 2) than for the language proficiency components (Table 3). We also learned from the study that the participants benefited from the use of the Internet as a creative tool in enhancing the fluency and elaboration components of creativity in writing (see Table 4). On the contrary, the use of the Internet and SCAMPER as creative tools did not seem to have any drastic impact on the participants' basic writing proficiency (Table 5).

Participants in the control group performed as well as those in the experimental groups in all three sub-components of language proficiency – richness in vocabulary, accuracy in grammar, and complexity of sentences. This might be due to two reasons. (1) The Internet and SCAMPER served more as creative tools for generating ideas as compared to 'language tools', to improve their language proficiency. (2) In their eagerness to surf as many sites as possible, the participants who were in the Internet group did not actually focus on the linguistic proficiency of the articles that they had documented and read. In fact, they were more eager to look for interesting ideas and new facts. Similar explanations apply to the use of SCAMPER.

The participants in the SCAMPER group were more focused on following the 'step-by-step' strategy of generating ideas (based on the acronym given) as compared to checking their language accuracy.

We present two reasons to explain the above mentioned findings.

First, the participants involved in the study were not native speakers. The English language is used as a language of instruction in Singapore, but it is not the home language for most of our participants. Hence, they may need more coaching to improve their writing skills. As such, the duration of one month might not have been sufficient for them to display any salient improvement in language proficiency. Future study should examine if explicit instructions on language proficiency will improve children's performance in this aspect in a creative writing program.

Second, students may perceive their meetings in a non-classroom setting as an opportunity to learn a new technique, SCAMPER, rather than to improve grammatical accuracy. In a non-threatening and 'assessment-friendly' environment, they might have enjoyed coming out with ideas that can attract their peer's attention. Hence, they would have spent less time doing routine-like checking of grammar and sentence structures. Furthermore, there were no specific instructions related to editing and submitting drafts, a procedure which is commonly done in local language classrooms. This might have further contributed to the shift on focus from ensuring language proficiency, to learning a creative technique. The choice of focus could be influenced by the limited time of 50 minutes for each piece of writing. Within the time constraint, the students had to decide to focus either on idea generation or language perfection, but not both. Future study should look at the effect of duration on the integration and assimilation of the use of learning tools on creative performances and/or on language proficiency.

Like most studies conducted in Singapore, the present study did not show a significant difference in results between male and female participants (Table 6). This implies that the learning environment and philosophy of the Singapore education system provide a rather gender-neutral learning opportunity for pupils. Free interac-

tion and exchange of ideas and comments which the pupils had in the non-threatening classroom environment might have affected their thinking, generation of ideas and subsequently, their writing. If the participants were segregated into all boy and all girl groups, then the results derived from the study might probably be different.

There seemed to be no improving pattern in the creative performance among the participants. Participants' performance did not vary much over the span of the four weeks. This could be due to the fact that the participants attempted different themes over the four weeks. The duration of the study, i.e., one month, might not have been sufficient time for any obvious trends to appear.

Finally, the design of the study could be improved if it is extended to include primary pupils of other levels, as well as secondary school students. The study may yield different findings if the participants were allowed to complete the given tasks in a non-classroom-setting environment (e.g., home) and with a longer time frame.

Recommendations Students would benefit tremendously if creative teaching techniques were explicitly included in lessons on learning to write composition. From the findings of our study, we suggest that the Internet, which all schools in Singapore have access to, should be recommended as a creative tool for idea expansion (elaboration) and fluency (association of ideas). The use of SCAMPER should be made more common than it is at the current time. Teachers and pupils can adopt the assessment criteria of this study in evaluating their writing performances (e.g., project work and composition). In addition, it would be a wise step to make explicit the criteria of assessing creativity, and to include them into the marking scheme.

To increase the familiarity of the use of SCAMPER, teachers should be invited to workshops and be coached by specialists. Our survey on teachers (n = 56, age: 20-50 years) who attended a half-day workshop on "Infusing Creativity in Everyday Teaching" (Soh, 2002) showed that teachers had limited knowledge and experience in using SCAMPER (Dianaros, & Tan, 2002). The use of SCAMPER was introduced to a group of participants (n = 20, age: 20-35 years) at the end of a series (ten sessions, two hours each) of creativity sessions in a general elective module. The participants were receptive, and were open to the new creative technique. Within an hour after they had engaged in getting to know the SCAMPER technique, the group used it to modify nursery rhymes. The technique had been introduced in a friendly environment. The instructor read a story and invited participants to imagine and experience the steps. At the end of the one-hour session, in groups of four to six, they read or sang rhymes together. The session ended with laughter and smiles (Dianaros & Tan, 2003). The two examples show that positive emotions and learning environment can encourage the reception of a new creative technique. As a matter of fact, prior to exposure to SCAMPER, the participants underwent four sessions on understanding positive emotions. They were open to each other and to new experiences. Future studies should look into how positive learning environments and positive emotions can facilitate teachers and children's positive receptions of SCAMPER and other creative techniques.

CONCLUDING REMARKS

Writing provides an excellent opportunity for the assessment of creativity. At the same time, it provides an avenue for the teacher to develop and foster children's creativity. In the Singaporean context, writing is necessary as it encourages and at the

same time provides a platform for students whose home language is not English to express their views and ideas freely in their adopted language of instruction. Our study involved children in grade five, who should thus be in their less creative phase (see Torrance, 1964; Torrance, 1969). We also facilitated group learning environments for the children to learn to express creatively (see Berk, 1999). Our findings showed that positive classroom climate and physical environment seemed to have acted as incentives in the promotion of creativity. From the possible positive outcomes of children's creative writing performance we can further embark on effective ways to expose children to learn and use creative tools.

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