CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the methodology used in this research, discussing the setting, participants, instruments used and how the data were analyzed.

3.1 Setting

This study was done at an International School in Chiang Mai, Thailand, with 5 Year 3 students. Its curriculum is based on the British curriculum. This is equivalent to Grade 2 in the American school system. The classroom is set on a Content and Language Integrated Learning (CLIL) context, where English is the language of communication and instruction.

3.2 Participants

3.2.1 Students

Five students aged between seven and nine years old participated in the study, comprised of two girls and three boys, from Thailand, Japan and Korea. The purposive sampling was chosen by the homeroom teacher, with beginner ESL students who needed extra help in learning English.

3.3 Instruments

Six instruments were employed in this study. The instruments to enhance the divergent thinking skills were the needs analyses and the outline and learning activities. Four instruments for data collection were used: classroom observation, experts' evaluation of the end products, Instances Tests and the Teachers' Evaluation of Students' Creativity. All of the instruments were previously evaluated by either experts, school teachers and/or the thesis proposal committee members.

3.3.1 Instruments for the Enhancement of the Divergent Thinking Skills

The needs analyses were developed by the researcher in order to reflect creativity perspectives. They were based on previous research and important aspects of creativity. (Gedo, 1990; Helson, 1990; Keller-Mathers, 2011; Milgram, 1990; Csikszentmihalyi, 1990; Harrington, 1990; Simonton, 1990; Epstein, 1990; Amabile, 1990) They were used in order to develop the outline and learning activities, learner-centered activities and materials used throughout the study. They were administered with the parents, teachers and students in the forms of questionnaires, where outline and learning activities were then designed in order to meet the results.

3.3.1.1 Needs Analysis

Three needs analyses in form of questionnaires were developed by the researcher and administered prior to the study, one with the parents, one with the teachers and one with the students. They were developed based on the suggestions made by the literature and evaluated by the homeroom teacher at the international

school. They were analyzed and the results were used in the composition of the outline and learning activities, learner-centered activities and materials.

Parents

A needs analysis, containing two parts, was administered with the parents. The first part was in the form of an open-ended questionnaire, containing six questions, in order to find out more information about the students and to understand parents' views on creativity. The second part was in the form of a multiple choice questionnaire, containing eight questions, in order to find out how much creativity was encouraged at home, how much creativity parents' believed to be important at school, and what aspects of creativity they believed to be important (see Appendix B).

The first part of the needs analysis show that the five subjects in the study are from Thailand, Japan and Korea, where none of them have English as their first language. At home, they speak Thai, Japanese and Korean, with English being spoken at school, at friends' houses, in private English lessons, and public places. The parents said that the subjects are interested in sports, games, arts and science. All parents have expressed that creativity is needed in a child's education, arguing that the children should have a wide variety of experiences in the thinking fields; it is helpful for the children's understanding of other subjects; it is needed in order to challenge children and develop their problem solving skills, identity and ideas; and finally it is needed in order to bring fun into the classroom.

The overall results of the second part of the needs analysis given to the parents are reported orderly from question two to question eight and are presented in Tables 6 to 12 below.

Table 6 Frequency of Parents Encouragement of Students' Use of Imagination

How often is your child encouraged to use imagination?	FREQUENCY	PERCENTAGE
Less than 3 times per week	1	20%
3 – 5 times per week	3	60%
6 – 8 times per week	0	0%
9 – 10 times per week	0	0%
Over 10 times per week	1	20%

N = 5

From Table 6, it shows the frequency that parents encouraged their children to use their imagination. Most parents (F = 3) encouraged their children to use imagination three to five times per week, whereas other parents encouraged their children to be creative either less than three times per week (F = 1) or over ten times per week (F = 1). These results show that most parents do attempted to encourage their children to be creative. They reveal that the parents potentially had positive attitudes towards creativity.

Table 7 Parents' Encouragement of Students' Problem-Solving Skills

Do you encourage your child to find solution to their problems?	FREQUENCY	PERCENTAGE
Yes	3	60%
No	2	40%
If not, what do you do?		
I give them the solution.	1	50%
I do not encourage them.	1	50%

N = 5

As it can be seen from Table 7, over half of the parents answered "yes" (F = 3), they encouraged their children to find a solution to their problems; and the rest answered "no" (F = 2), they did not encourage their children to find a solution for their problem. From the parents that did not encourage their child to find solution to their problems, half gave them the solution (F = 1) and the other half simply did not encourage them (F = 1). This shows that most parents tried to support their children's use of creativity in real-life situations.

Table 8 Parents' Attitudes Towards Following the Norms

Is your child punished when not following the norms?	FREQUENCY	PERCENTAGE
Yes	3	60%
No	2	40%

N = 5

The results from Table 8somewhat contradicts some of the answers being encountered as far as parents' attitudes towards creativity. According to parents'

responses on whether or not their children were punished when not following the norms, most answered "yes", their children were punished when not following the norms (F = 3). the rest answered "no", their children were not punished when not following the norms (F = 2). This means that most parents wished their children to follow the rules and models set by society, rather than trying to apply new and innovative ideas.

Table 9 Parents' Allowance of Students' Exploration of Materials

Does your child have a place to do works that might involve 'making a mess'?	FREQUENCY	PERCENTAGE
Yes	5	100%
No	0	0%

N = 5

Table 9 shows that all parents (F = 5) had a place in their living environment where their child could work without worrying about "making a mess". This means that their children were allowed to work on things where their creativity could be fostered, such as paintings, collages, play dough/clay, etc.

Table 10Parents' Acceptance of Students' Unique Works

Sometimes children come up with different drawings, paintings, crafts, etc. that are not considered to be beautiful or of a high standard. If your child composes/makes/paints/comes up with something different (that perhaps does not conform to the norms of society), what is your reaction?	YES	NO
	Frequency	Frequency
I tell him/her that he/she can do better next time.	2 (40%)	3 (60%)
I appreciate the uniqueness of the work.	4 (80%)	1 (20%)
I worry about my child.	0 (0%)	5 (100%)
I encourage my child to keep up with the good work.	1 (20%)	4 (80%)
I am interested in my child's work and try to engage.	2 (40%)	3 (60%)
I tell my child to stop doing useless things.	0 (0%)	5 (100%)
I tell my child to go back and redo it.	1 (20%)	4 (80%)
I praise the hard work my child has put into it.	1 (20%)	4 (80%)

N=5

Table 10 shows interesting results regarding parents' attitudes towards their child's work, which sometimes might not be considered of high standards by the society. 80% of the parents argued that if that was the case, they appreciated the uniqueness of the work (F = 4), 40% of the parents argued that they were interested in

the work and tried to engage (F = 2), however, 40% of the parents said they would tell their children they can do better next time (F = 2), and 20% of the parents praised the hard work their child had put into it (F = 1), 20% encouraged their child to keep up with the good work (F = 1), and 20%told their child to go back and redo it (F = 1). 0% the parents worried about their children (F = 0) or told them to stop doing useless things (F = 0). Therefore, although as seen on table 8, most parents punished their children for not following the norms (F = 3), most of them still appreciated, praised and tried to engage with it.

Table 11Parents' Expectations of Creativity in Education

How much creativity do you expect to be implemented in your child's education?	FREQUENCY	PERCENTAGE
No creativity should be implemented at all (0% creativity)	0	0%
Some creativity should be implemented (10-20% of creativity)	0	0%
Half of the education should be based on creativity (around 50%)	3	60%
A lot of creativity should be implemented (around 75% creativity)	2	40%
Education should be based on creativity (100% creativity)	0	0%

N = 5

It can be seen from Table 11 that 60% of the parents (F = 3) believe that the education system should be roughly 50% based on creativity, while 40% of the

parents (F = 2) believe that the education system should be roughly 75% based on creativity.

Table 12 Parents' View on Aspects of Creativity

Which aspects of creativity do you think are important?	FREQUENCY	PERCENTAGE
Innovation (new ideas)	5	100%
Uniqueness (unique ideas)	0	0%
Recognition (valued by others)	0	0%

N = 5

As we can see from Table 12, 100% of the parents (F = 5) believed that innovation (new ideas) was an important aspect of creativity, while none of the parents (F = 0) believed that neither uniqueness (unique ideas) nor recognition (valued by others) were important. Interestingly, although they did not believe that they were important for creativity to be valued by others, most of them, as seen on Table 9, punished their child for not following the norms. These results are also contrastive to the results shown on Table 10, where 80% of the parents appreciated the uniqueness of the work their children produces, but in Table 12 none of them believed that uniqueness was an important aspect of creativity. This shows that although parents generally appreciate the uniqueness of their children's work, they do not believe that it is an important part of the creative skill.

It can be concluded that students came from different cultural backgrounds, where English was not their first language. They only used English at school and public settings. All parents agreed that creativity was needed in their children's

education, because it helped them to understand other subjects and encouraged the problem-solving skills, leading to more effective language learning. Most of the parents (F = 4) encouraged their children to be creative less than five times per week, which shows that children had low encouragement for creativity at home. Most parents claimed to encourage their children to find solution to their problems (F = 3). Those who did not, either gave their children the solution or simply did not encourage them at all. Giving the child the solution for the problems is not beneficial in language learning, as the child will not strive for thinking in the target language, instead, the child will await for the language input from others. Regarding the attitude towards the punishment, most parents punished their child when not following the norms (F=3), which shows that parents were not opened to new ideas and concepts. However, all of them had a place at home where their children could experience with different things and were able to "make a mess" if needed. Regarding the parents' acceptance in works that were perhaps not accepted or seen as beautiful, 40% of the parents told their children that they could do better next time; 80% appreciated the uniqueness of the work; none of them worried about their children or asked them to stop doing useless things; 20% encouraged them to keep the good work; 20% told their children to go back and redo it; and 20% praised the hard work their children had put into it. This shows that although parents seem to want to appreciate their children's work, they are somewhat inclined to want their children to follow the norms instead of coming up with new and perhaps unusual things. They do not want their children to be too different from others. Regarding the parents believes on how much creativity should be implemented in their education, most parents believed that

half of their child's education should be based on creativity (F = 3), and the rest believed that around 75% of their child's education should be based on creativity (F = 2). That also shows that creativity is expected in the language classroom. Regarding which aspects of creativity parents believed to be important, all parents believed that innovation was the most important aspect of creativity, although other results had shown that they also believed aspects such as uniqueness to be important. These results show that although parents believed creativity was important in their children's life and language learning, they had not all yet started to act on it or truly accept it. They did believe that English teachers should implement creativity throughout the lessons, arguing that it is an important skill to have, however, although it seemed like they did have the intention to encourage it at home, they did not.

Teachers

One needs analysis was administered with two teachers, with two open-ended questions and two multiple-choice/checklist questions questionnaire (see Appendix C). The purpose of this questionnaire was to know what topics were expected to be covered in the English class throughout the study, the teachers' expectations regarding students' improvements in the language classroom, expected characteristics of the students by the teachers, and teachers expectations towards the aspects of divergent thinking to be used throughout the English lessons in the research.

From the two open-ended questions given, the teachers were inquired to answer what language aspects they expected to be covered throughout the English lessons in the study and whether or not teachers had a choice between the language aspects or if the language aspects had been strictly chosen by the institution; and what

were their expectations regarding students' improvements in the study. On the first question, teachers expressed that they expected phonics, spelling and grammar points to not be taught separately, but rather using a storybook, which encouraged students to use the language learned communicatively, in order to guide students through language learning. Such method was being used with students in advanced English levels, but had just started to be implemented with the ESL students. Applying what students have learned throughout the year, such as phonics, grammar and spelling, was also a specification, where instead of learning new things students would put in practice all the skills they had previously learned. On the second question, when questioned about their expectations of students' improvements throughout the study, they made it clear that they wished students to improve their basic language skills, such as speaking, listening, reading and writing; as well as their confidence to discuss and give opinions in English; to be able to work in pairs or small groups doing collaborative work; to improve their vocabulary in order to make their English writing more interesting; and also to perform in short plays. Teachers also responded that the institution uses a set British curriculum that allows them to choose from a variety of topics that the British curriculum suggests.

From the two multiple-choice/checklist questions given, the teachers were inquired to tell the behaviors and characteristics they expected from Year 3 students in the language classroom, and which aspects of creativity their expected students to be exposed to. Table 13 below shows what characteristics and behaviors Year 3 teachers expect from their students.

Table 13 Teachers Expected Characteristics and Behaviors from Students

Give opinions	Be creative	Open-minded
Solve problems	Think critically	Think creatively
Think outside the box	Use their imagination	Be unique

The answer from the first question showed that none of the teachers expected students to strictly follow rules or norms in the English language classroom, which were represented by the choices "strictly follow rules" and "follow the norms", rather, they expected students to have all the creative characteristics and behaviors available in the question. One teacher added that it was expected that they be able to listen and respond to others' opinions respectfully, and be able to work together in groups using the English language. On the second question, when questioned about the aspects of creativity that they expected students to be exposed to, teachers responded that all four aspects, Originality, Flexibility, Fluency and Elaboration, were expected to be exposed to the students.

From the results of the teachers' questions, it can be concluded that teachers wanted students to be exposed to communicative English learning through the implicit usage of language aspects such as grammar, phonics and spelling which had already been taught throughout the year. They also expected students to have all the creative characteristics in the language classroom, such as give opinions, solve problems, be open-minded, think outside the box, etc. and expected students to be exposed to Originality, Flexibility, Fluency and Elaboration.

Students

One needs analysis was administered with the students, with five multiple-choice questions and two open-ended questions questionnaire. This questionnaire was given to the students in order to find out students' preferences of learning, attitudes towards English and activity preferences (see Appendix D). Table 14 below shows the results of the students' needs analysis.

Table 14 Students' Needs Analysis Responses

STATEMENTS	FREQUENCY	
	YES	NO
I like to work with my friends.	5 (100%)	0 (0%)
English is fun.	5 (100%)	0 (0%)
Color green the activities that you like.		
Storytelling	4 (80%)	1 (20%)
Role-play	5 (100%)	0 (0%)
Writing stories	4 (80%)	1 (20%)
Dancing	2 (40%)	3 (60%)
Field trips	5 (100%)	0 (0%)

N=5

Focused on the frequency of the responses of the needs analysis given by the students, shown in Table 14, it is clear that all students liked to work with their friends (F=5) and that all of the students had a positive attitude towards English,

believing that English was fun (F=5). When students were asked about their favorite activities, the highest scored activities were role-play (F=5) and field trips (F=5), followed by storytelling (F=4) and writing stories (F=4), and at last was dancing (F=2).

Based on these results from the students' questions, group work, storytelling, role-play, writing stories and class discussion were chosen to be implemented throughout the study. They were chosen based on the scores given by the students and by consent from the administration. Dancing was not chosen due to its low scoring, and fieldtrips was not chosen due to the school's rules towards fieldtrips, even though it received a 100% approval by the students.

3.3.1.2 Outline and Learning Activities

The outline and learning activities were designed according to the responses given by the parents, students and teachers in the needs analysis questionnaire, corresponding to their preferences. They were designed by the researcher, and went through a validation process done through an interview/discussion with two experienced teachers, one in the primary school level field and one in the creative field. The main changes done were on the length of the activities and choice of vocabulary, which the teachers found to be primarily too difficult and were therefore adapted. There are a total of twelve learning activities, each ranging between 1 and 2:30 hours, depending on the availability given by the school. They were the guides for the teaching of each the student-centered English lessons, however, flexible to change if needed. The learning activities were revised after the implementation of the lessons as well (see Appendix E).

The table 15 below represents the activities used throughout the research, together with the learner-centered/creativity characteristics it enhances and the lesson it was used with.

Table 15 Activities, Characteristics Enhanced and Lesson Date

Activity	Learner-centered/ Creativity Characteristics	Lesson Date
Group Work	Autonomy, motivation, imagination, problem-solving skills, active learning and brainstorming	09/05 10/05 11/05 14/05 15/05 16/05 17/05 18/05 22/05 23/05
Role-Play	Motivation, imagination, active learning and risk-taking	14/05
Story Writing	Autonomy, imagination, problem-solving skills, brainstorming and risk-taking	02/05 22/05 23/05 24/05
Storytelling	Autonomy, imagination, active learning, motivation, brainstorming and risk-taking	11/05 14/05

Students were exposed to four different types of activities: group work, role-play, story writing and storytelling. Each type of activity were composed of sub-activities and were also implemented together with another type of activity each

lesson. Tables 16 to 19 below show the specific activities used under each type of activity mentioned above.

Table 16 Activities used with Group Work

GROUP WORK	
Activity	Description
Brainstorming	Students were invited to brainstorm and come up with different thoughts, ideas, expressions and vocabulary related to a certain stimulus/topic.
Poster making	Students were invited to design a poster related to the brainstorming they had done previously. They were asked to be as creative as possible.
Discussion	Students were asked to discuss about characters, story illustrations or stimulus, looking to make students comfortable sharing their own ideas, where each student had to respect each other.
Matching	Students were invited to match pictures and vocabulary flashcards, using the vocabulary that best described the picture.

Table 17 Activities used with Role Play

ROLE-PLAY	
Activity	Description
Role-play the book characters	Students were invited to choose book characters and interpret them in a role-play, which they presented to the rest of the class.

Table 18 Activities used with Story Writing

STORY WRITING	
Activity	Description
Evaluative story writing as part of the pre-test process	Students were asked to write a story. using their imagination. The topic of the story was chosen by each student allowing them to be creative. This activity was used as a pre-test evaluation.
Evaluative story writing as part of the post-test process	Students were asked to write a story using their imagination. The topic of the story was chosen by each student allowing them to be creative. This activity was used as a post-test evaluation.
Description	Students were invited to write a description of different characters and settings, using their imagination.

Table 19 Activities used with Storytelling

STORYTELLING	
Activity	Description
Tell a story from the pictures	Students were given a set of different pictures from stories and invited to order the pictures, telling what is happening in the story. This was done together with group work, as students worked together to tell the stories.

A more detailed look at the activities can be seen in Appendix E.

3.3.2 Data Collection Instruments and Procedures

Four data collection instruments were used in this research: classroom observation, Instances Tests, Teachers' Evaluation of Students' Creativity, and experts' evaluation of students' end products.

3.3.2.1 Classroom Observation

Classroom observations were done daily by the researcher, throughout the implementation of the lessons to the students. It was done through a classroom observation log and a classroom observation checklist (see Appendix F), which was based on the characteristics of creative people, based on Harrington (1990), Runco (1990) and Gedo, (1990), adapted by the researcher to fit linguistic creativity performance, as seen below.

- Imaginative: being able to come up with new vocabulary, expressions and ideas throughout the learner-centered activities, and using them in new situations in order to convey meaning.
- Novel: being able to come up with interesting and unusual vocabulary, expressions ideas throughout the learner-centered activities in the English classroom.
- Original: having and applying unique vocabulary, expressions ideas that others have not thought about or not used in the classroom.
- Problem-solvers: a student who focuses on the given problem and tries to use the previously learned language, including vocabulary and expressions in order to come up with a solution.
- Fit to the situation: being able to change the language use, including vocabulary and expressions, according to the situation imposed in the English classroom.
- Accomplish goals: being able to use one's vocabulary and language knowledge capacity to complete a task.

- Adapt: being able to adjust the language being used to new conditions, which may arise in the language classroom. Being able to adapt the vocabulary being used to the learner-centered activity being presented and participate in the class.
- Open-Minded: being ready to accept new ideas and new concepts regarding the English language, including vocabulary and expressions, and being able to be opened to ideas given by the classmates.
- Experimentalist: the ability to try new vocabulary and expressions, put into practice chunks of language that perhaps have not been studied or presented during class, taking risks regarding the language use, and naming different things in English.
- Independent: not being dependent of the language teacher, being able to work independently or with the support of fellow classmates. Being able to independently use the English language to convey meaning and be communicative.
- Ambitious: showing motivation to succeed and want to learn more, always trying to use new vocabulary and trying to convey meaning through the usage of vocabulary and expressions that have not been previously attempted.
- Confident: being self-assured, not being scared to be part of the learner-centered activities or to try using new vocabulary and expressions.

- Curious: eager to learn new vocabulary, expressions and general English language knowledge and culture, asking questions and wanting to know more about the language.
- Active: engaging in the student-centered activities, actively using new vocabulary, expressions and ideas proposed throughout the lessons, being eager to participate in class discussions and communicatively convey meaning.
- Resourceful: having new ways to overcome difficulties in conveying meaning and helping others by aiding them with new vocabulary, expression and ideas.

The fifteen behaviors presented in the checklist were observed for throughout the lessons, and when they were present they were checked on the list. They were analyzed by summing the number of characteristics checked and calculating their frequency, where the higher the frequency, the higher students' creativity was throughout the class. Therefore, if on day x there were 5 behaviors checked, and on day y there were 7 behaviors checked, students' linguistic creative behaviors were higher on day y. These results will be supported by the experts' evaluation of students' end products. The classroom observation checklist was computed through the statistical analysis software SPSS for frequency.

Apart from the classroom observation checklist, a classroom observation log was kept daily throughout the process of applying the materials and learner-centered activities. They were written and at the end of the lesson, where they were analyzed

in order to improve the learner-centered activities and materials for the next classes. The classroom observation logs were used in complementation to the classroom observation checklist, where students' behaviors were observed.

3.3.2.2 Instances Tests

The Instances Tests were administered with the students before and after the implementation of the learner-centered activities (see Appendix G). It is composed of one set of class discussion and two sets of individual work. The former was done through speaking interaction amongst subjects, containing three open-ended questions, evaluating three aspects of divergent thinking: Flexibility, the number of categories of vocabulary, expressions and ideas which can be found within student's Fluency results, where ideas are grouped into different categories; Fluency, the number of vocabulary, expressions and ideas that students present; and Elaboration, the number of ideas within each category found in Flexibility. Originality was excluded because to know if an idea is original or not it must be compared to another set of responses. The two sets of individual work contained three open-ended questions each, evaluating the four aspects of divergent thinking: Originality, Flexibility, Fluency and Elaboration. The Originality counts in the individual works because then there are works of five students which can be compared to one another in order to see if they are original or not, where if only one student had a certain response it was considered original and if more than one student had the same response it was not considered to be original. Thus, Originality can be observed when the individual work is compared. The Instances Tests questions were read by the committee members of the thesis proposal and were adapted according to their

comments. Questions such as "How are a cat and a dog similar?" were adapted to be "Are a cat and a dog similar? If so, how?" because the committee suggested that if the question was kept in its original style it would imply to the students that those two animals were indeed similar.

The evaluation of the responses were done according to the criteria suggested by Runco (1991) and Kaufman, Plucker and Baer (2008). The Instances Test results were analyzed individually through the divergent thinking measurements and the methodology for the analysis of the responses can be seen below and on Table 15 and 16 below.

The measurements of Originality are excluded from the group discussion and it was the only measurement of Divergent Thinking that was calculated through a comparison of the class's responses was Originality, which is relative to the pool of responses given by the entire sample of subjects. To know if an idea is original or not it must be compared to the group's set of responses. (Runco, 1991) For each individual work, a frequency of the ideas produced in the Instances Test was calculated. Ideas that had a frequency of 1, where only one student had produced it, were considered to be original. Then by comparing the amount of original vocabulary, expressions and ideas by each student, the percentage of Originality was calculated.

Fluency was analyzed through the number of total vocabulary, expressions and ideas given by the students in each question, where the mean represented the end results as well Fluency is the number of vocabulary, expressions and ideas that each student came up with, and therefore the number of ideas was summed. So, if a student

gave 3 responses to a question, that students' Fluency is 3. Flexibility was analyzed through an investigation of the number of conceptual categories found within vocabulary, expressions and ideas present on the students' responses, where the mean represented the end results.

Flexibility is the number of categories the vocabulary, expressions and ideas produced by the subject can be put into, for example, if a response to the question "Name all of the things you can think of that are strong" with "Superman, Batman, and Wonderwoman," only one category is present, the superhero category, as seen on Table 15. But if the student response is "Superman, Gravity, and Steel," three categories are used, the superhero category, the force category and the element category, as seen on Table 16.

Elaboration is calculated through the number of vocabulary, expressions and ideas within each category from Flexibility, where the mean is calculated. Elaboration was analyzed through the number of vocabulary, expressions and ideas within each conceptual category found under Flexibility, where the mean represented the end results. If each category has 3 responses, the student's Elaboration is 3, as seen on Table 15, but if one category has 1 response then the student's Elaboration is 1, as seen on Table 15.

Table 20Instances Test Results Sample #1

Fluency	Flexibility	Elaboration
Superman Batman Wonderwoman	Superhero	Superman Batman Wonderwoman
3	1	3

Table 21 Instances Test Results Sample #2

Fluency	Flexibility	Elaboration
Superman Gravity Steel	Superhero Force Element	Superman Gravity Steel
3	3	1

Each set administered contains three open ended questions, composed of one Instances question, regarding naming things which look a certain way, for example, naming all the things that are triangular; one Uses question, regarding ideas of what are the uses of a certain object, for example, what can people do with a plastic cup; and one Similarities question, regarding ideas about how two things are similar, for example, how are a fan and an air conditioner similar. These types of questions asked were suggested by Wallach and Kogan. (Runco, 1991)The Instances Test was divided into a class discussion and individual work due to the theory that people are more

creative when working in groups and elaborating each other's ideas. The instrument was adapted from the Wallach and Kogan Instances Tests. (Runco, 1991) The purpose of these tests is to evaluate students' divergent thinking through the divergent thinking measurements of Originality, Flexibility, Fluency and Elaboration, before and after the implementation of the learner-centered activities.

3.3.2.3 Teachers' Pre and Post Evaluation of Students' Creativity

The Teachers' Evaluation of Students' Creativity (TESC) (Runco, 1991) was administered before and after the implementation of the learner-centered activities (see Appendix H). The evaluations were answered by the Year 3 homeroom teacher and the Year 3 ESL teacher. They were evaluated by the research adviser, which suggested that a 5-scale should be used instead of a 7-scale Likert Scale, and so it was adapted. Based on the experts' evaluation and feedback of the TESC, stating that the original seven-point scale suggested by Runco (1991) was confusing, the evaluation then was adapted to a five-points Likert scale questionnaire. It is composed of twenty-five questions directed to the teachers about the students, where questions number 3, 6, 10 and 14 are guided towards non-creative behaviors and the other twenty-one questions are regarding creative behaviors. The questionnaire aims towards finding the perception of teachers on students' creativity before and after the implementation of the learner-centered activities. The TESC was computed through the statistical analysis software SPSS for the mean and standard deviation results, and the results were interpreted as following: extremely: 4.51-5.00, very much: 3.51 – 4.50, considerably: 2.51-3.50, slightly 1.51-2.50 and rarely: 1.00-1.50.

3.3.2.4 Experts' Evaluation

The Experts' Evaluation of the end products was done after all the learner-centered activities were implemented with the students. The purpose of this instrument is to find out students' divergent thinking progress throughout the implementation of the learner-centered activities. Three experts were chosen according to their background on creativity, where they have either taught classes on creativity or/and have attempted to teach for creativity. They evaluated the products, where each received a package with three works picked selectively from different time periods from each student, one being from Lesson 1, where students were asked to write a story; one being from Lesson 8, where students created their own character and made a brainstorming list with its characteristics; and one being from Lesson 11, where students were asked to write a story. The scale used for the evaluation was adapted from Bosch (2008), with low, average and high levels of creativity, which is shown in Table 17 below. The students' works were evaluated individually. The Experts' Evaluation results were computed through the statistical analysis software SPSS for the mean and standard deviation results. The results were interpreted as following: extremely: high: 2.51-3.00, average: 1.51-2.50 and low 1.00-1.50.

Table 22 Rubric for Experts' Evaluation of Students' End Products

	Low	Average	High
FLUENCY	Lists a limited number of words, expressions and ideas.	Lists a sufficient number of words, expressions and ideas.	Lists many words, expressions and ideas.
FLEXIBILITY	Perceives or approaches the problem using a few different sets of vocabulary, ideas and expressions.	Perceives or approaches the problem using different sets of vocabulary, ideas and expressions.	Perceives or approaches the problem using a number of different sets of vocabulary, ideas and expressions.
ORIGINALITY	Generates few clever, unique or unusual words, expressions and ideas	Generates several clever, unique or unusual words, expressions and ideas.	Generates many clever, unique or unusual words, expressions and ideas.
ELABORATION	Adds details, expands or embellishes words, expressions and ideas.	Expands, develops and embellishes words, expressions and ideas by adding details.	Expands, develops and embellishes words, expressions and ideas by adding details and making changes.

3.4 Analyzing Data

The following data analysis procedures were employed based on the instruments that were used to serve the two research objectives.

3.4.1 Research Objective 1

In order to study the effectiveness of promoting the divergent thinking of primary school students through learner-centered activities, classroom observations and the experts' evaluation of the end products were used.

The classroom observation checklist was analyzed through the frequency of which the creative behaviors were seen throughout the implementation of the learner-centered activities.

The experts' evaluation of the end products was analyzed based on the three level scale rubric adapted from Bosch (2008).The three pieces of work from each student from Lessons 1, 8 and 11 were compared in order to see if there was an increase or a decrease in creativity throughout the study.

3.4.2 Research Objective 2

In order to investigate students' capacity for expressing creativity before and after the implementation of the learner-centered activities, the Instances Tests and the Teachers Evaluation of Student Creativity were used.

The Instances Tests were analyzed qualitatively and quantitatively counting students responses in order to come up with a mean result. The analysis of the results were done based on the criteria set by Runco (1991), and Kaufman, Plucker and Baer (2008), where responses are solely added to one another, according to what aspects of divergent thinking are being looked for. The results were analyzed by computing the means from the frequency of the divergent thinking skill aspects, Originality, Flexibility, Fluency and Elaboration, found from the students' responses in vocabulary, expressions and ideas presented. (Runco, 1991; Kaufman, Plucker and Baer, 2008)

The Teachers' Evaluation of Students' Creativity was analyzed through the means of responses given by the teachers. Questions number 3, 6, 10 and 14 represented those significant of non-creative characteristics, and therefore were not

taken into account in the calculation of the means of creative characteristics. They were calculated using the statistical analysis software SPSS.

3.5 Summary

Chapter 3 has covered the methodology used in the study, discussing the setting, participants, instruments used, and how the data were analyzed, looking for a change in students' divergent thinking after the implementation of the learner-centered activities.