

*Developing Thai Student's Analytical Thinking and English Presentation Skills  
through Mind-Mapping Technique*

Phasuk Boontham, Chiang Rai Rajabhat University, Thailand

The Asian Conference on Education & International Development 2015  
Official Conference Proceedings

**Abstract**

Today teachers are mostly in charge of preparing students for life in the 21st Century. According to the well-known Framework for 21st century learning, the analytical thinking skill is determined as one of the needed abilities for learning at the university level. This experimental research was conducted with the following purposes: 1) to compare analytical thinking skills of students after providing the activities with Mind-mapping technique; 2) to evaluate the student's presentation skills and obstacles occurred during their presentation; 3) to explore the student's opinions toward the use of Mind-mapping Technique. Twenty two university students in English education were selected by purposive sampling from Reading and writing English courses. The analytical thinking test, the presentation assessment form and student's learning logs were used as the main research instruments.

The findings revealed that the use of mind-mapping technique can develop students' analytical thinking and presentation skills after the implementation of the learning activities, the students also gained positive attitudes toward the mind-mapping activities. The study suggests that analytical thinking practice is beneficial for the success of learning. Besides, it recommended that to increase more sharing and collaboration in learning, teachers should provide analytical activities requiring students' reflection on their learning processes.

Keywords: The 21st century learning, Analytical thinking skill, English skills, Mind-mapping technique

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## **Introduction**

Education is extremely important for survival and immunity in the current trend of rapid and continuous global changes. It is also considered an important tool to enhance student competitiveness at the international level. According to the statement of the Bureau of International Cooperation, Ministry of Education (2012), education is a tool to construct values, concepts, and understanding between nations, as well as the fundamental strengthening of developing countries. This means that the quality of people depends on the quality of education they receive. Consequently, teachers play an important role in the process of developing both the people in the country and the country itself. Improving the quality and standard of university 'English Education' students is a critical foundation and an indicator of the quality of the university's instructional management. To increase the quality standards of students, it is vital to be ready to organize effective learning activities for children and others. That is, education students need to acquire the skills to build up creative learning behaviors according to the needs of today's world as well as to achieve the established goals of the curriculum.

Education change in the 21st century, with a focus on the development of all elements of learning has become one of the most important components in manpower development. This includes practicing skills for a better quality of life and readiness for social changes. As Trilling & Fadel (2013) suggest, an approach to teaching and learning in the 21st century needs to develop the skills necessary for new generation learners. The following presents the concepts of 21<sup>st</sup> century skills required for the university students in Thailand,

## **Required Skills for the 21st Century Students**

The learning skills needed in the 21st Century, known as the framework for 21st century learning which is delivered by the Partnership for 21st Century Skills, has identified the skills needed. These are critical thinking, problem solving, network collaboration, adaptation, initiation, oral and written communication, as well as an assessment of data with the students' complete curiosity and imagination. Undeniably, the framework indicating learning skills need in the 21st century, in particular analytical thinking, has been perceived as an essential notion for the global education. According to Cottrel (2011), analytical thinking skills have been perceived as a particularly important tool for students at the university level because they enable students to break down and synthesize data, and assess reality most effectively. Marzano (2001) and Hounsell (2010) pointed out that analytical thinking skill for students is the process of developing the capability to provide information accurately and effectively to survive in today's society, 'the Information Age', in which students must be closely connected to 'the world of knowledge' (Atagi, 2002).

However, the sole development of analytical thinking skill is not enough for 21st century students. Future teachers should also develop their presentation skills, communication skills as well as transferring skills to be ready for managing the qualified learning activities. Most importantly, education students should be trained to listen and open their minds to criticism. The findings of several studies (e.g. Marzano, 2001; Khammanee, 2009) indicate that analytical thinking can help collect enough and reasonable knowledge for presentation skills, this also helps develop the key

components in the learning process that benefit all students. According to the board of education in Thailand, the efficiency of communication skills is essential to Thai people. One of the reasons is because more than 80 % of knowledge and information is recorded in English. The people who are able to communicate effectively: listening, speaking, writing, and reading, will have an advantage because they can rapidly receive necessary and beneficial information in a short time, and respond their intentions more clearly and quickly (Klaaisee, 2012). Indeed, having good language skills, especially English is an extremely crucial. The role of English has become important for Thai people in all aspects; including business, education, and social life.

### **Key Learning Skills for Thai Students**

From the research of the Education Development Organization presented updated information regarding efficiency analysis on the effectiveness of English use around the world, it ranked effective use and development of English use over the previous 6 years. Based on the findings of the research in Asian region, it found that the overall effectiveness of English development in Indonesia and Vietnam ranked at a higher level. In contrast, the English development and the effectiveness of English use by the people in Thailand were ranked 55 out of 60 countries in the low level group. As a result of this, the problematic use of English by Thai people can be determined as the crucial problem which seriously affects the country's growth.

A good command of English would also build stronger relationships between Thai people and expatriates, as well as helping them communicate at an international level. Moreover, in 2015, the status of Thailand will move to be, officially, a part of the Association of South East Asian Nations (ASEAN). As known, the ASEAN Charter (ASEAN Charter, 2008), Thai people, as an ASEAN citizen, will have to use English for official communication. It implies that everyone has to be able communicate in English within the continuity of the changing atmosphere of education. Besides, several educational studies and reports explicitly point out that instructional management and English skill development for Thai people need to be reformed; English efficiency of Thai people needs to be developed to increase the country's capacity for international competitiveness.

In terms of university students development, Hounsell (2010; Marzano, 2001) agree that it is exactly the teacher's responsibility to encourage learning skills development for increasing the qualified students in the 21st century. Therefore, it has also been a high commitment for teachers to organize creative activities which help develop students' learning management and also train them to learn effectively. As Formanack (2008) indicates, people in today's society need to be encouraged to learn continuously, increase their competitive capacity and adapt themselves effectively in a dynamic world. Therefore, university students aiming to be an English teacher should be provided opportunity to gain analytical thinking and creative skills that help them communicate effectively with knowledge, ability, and readiness, before they graduate and compete in the labor market. Developing students to have effective language skills in various situations, being enthusiastic using English for communication, transferring or presenting information, and having analytical thinking skills creatively are, therefore, determined as the key learning skills development of the university students in Thailand.

## **Mind-Mapping Technique**

As stated, the education students, as the future teachers, should be developed all key learning components in the learning process designed by the teachers. From the relevant concepts and theories explained, the mind-mapping technique was chosen as an integrative strategy for this implementation. Buzan (2002) who originated the use of mind-mapping, introduced the conception of 'mind map' key words in a colourful, radiant, tree-like structure. Buzan's mind mapping has been popularly used in note making. In addition, Farrand, Hussand and Hennessey (2002) pointed out that the unique combination of imagery, colour, and visual arrangement of mind-mapping enhance student's stimulation. Moreover, Mento et al (1999) explained that mind-mapping is useful for presentations because it can help students to handle challenging questions with confidence and the presenters can have better recall of information stored in an integrated design.

In terms of learning development, Toi (2009) illustrates in his research that mind-mapping can help learners recall words more effectively with improvement in memory up to 32 %. Based on the study of Al-Jarf (2009), it reveals that mind-mapping offers powerful methods for improving the student's ability to generate, visualize, and organize ideas. Most importantly, mind-mapping encourages thinking skills. Similarly, the positive findings are found in several studies (e.g. Chai-sida, 2010; Goodnough and Woods, 2002; Phol-anun, 2013); that is, several students in their study attributed the enjoyable aspect when they created mind-mapping.

From these relevant concepts and theories as explained, the technique, mind-mapping, is believed that it was advantageous for categorizing ideas clearly and it was easy to grasp information to present or transfer to others. In other words, mind-mapping is the effective technique that helps students analyze and synthesize knowledge, and to increase understanding for both themselves and others. For this reason, mind-mapping was chosen as the integrative strategy that could help increase students' learning skills: managing, collecting, and linking information associated with main ideas, then expanding or sharing by brainstorming as through this creative diagram.

## **The Objectives of the Study**

Regarding the importance of developing analytical thinking and English presentation skills of Thai students through the use of mind-mapping technique, the specific objectives of this study were set out as follows:

1. To compare students' analytical thinking skills before and after providing instructional activities through the use of mind-mapping.
2. To evaluate the students' presentation skill in English and the obstacles occurred during activities through the use of mind-mapping.
3. To explore the students' attitudes on activities toward the use of mind-mapping.

## **Research Methodology**

The subjects of this study were 22 students enrolling in Reading and Writing English II course and these students were selected by the random sampling technique. The analytical thinking test, presentation skills assessment, learning log, and five lesson plans with mind-mapping technique were employed as the research tools of this study.

The analytical thinking skill test consisting of multiple choice questions with 4 options and one correct answer aimed to measure five aspects of analytical thinking, namely identifying problematic issues, classifying logically, comparing data systematically, referencing reasonably and connecting the relationship of data. Each aspect comprised 6 items. To do the test, the students were asked to analyze 6 situations of 30 items within 45 minutes. The presentation skills assessment was used in a form of a checklist to measure the students' performance level (Haber and Lingard, 2004). The assessors chose the behaviors as shown in the assessment list: 1 meaning the behaviors were shown and 0 meaning behaviors were not shown. The learning log, similar to student's diary, comprised student's reflections on instructional activities through the use of mind-mapping. Also, five lesson plans of learning activities through the use of mind-mapping were designed. Each lesson plan consisted of 3 stages: the first started with questioning for each group brainstorming, then, the teacher encouraged students to search for various answers to each question. The second stage, students wrote their answers as freely as they could. This was also called data collection. That is, group members had to collect the group answers and help each other analyze them: identify and clarify the similarities and differences in order to classify and make the conclusion of group answers. The last stage was called drawing mind-maps. The group members worked together on creating mind-maps to present group thinking results. At this stage, group members were encouraged to use their imagination in mind-mapping to present relevant information clearly and interestingly through lines, colors, font and pictures.

## **Results and Discussion**

### **1. Analytical Thinking Skills**

For the comparison of the students' analytical thinking skills before and after learning management through the use of mind-mapping, the results clearly indicated that the mean score of the analytical thinking skills of Thai students in general was higher. In addition, the percentage of the progress score of student's analytical thinking skills after the instructional activities through the use of mind-mapping was higher than before the provision of the activities. Regarding various elements of the analytical thinking skills, the highest percentage of the progress score was the aspect of the data comparison for systematical classification whereas the lowest percentage was the aspect of classifying data logically.

As analytical thinking skills have been considered as the ability to analyze things or subjects and search for elements and the relationship of elements for understanding these subject and skills development, Marzano (2001); Chaisrida (2010); and Phol-Anan, (2013) similarly viewed that mind-mapping is a useful tool not only for analyze and classify similarities and differences systematically but also to connect with other related knowledge. Thus, findings of the present study which revealed that mind-mapping could enhance the effective application of knowledge to new situations and create predictions by using the data displayed, it was similar to what Chai-sida (2010) and Phol-anun (2013) indicated in their studies. It is important to note that the results of the study definitely confirms that mind-mapping is an effective instructional activity for developing skills related to analytical thinking skills; however, the overall mean score shown in this result was not significant. The following rationale can be given for students in the Reading and Writing English II course who had to analyze

data from a passage prepared by the teacher. That is, the students needed to use basic English reading skills and transfer them to writing process skills which depended on the individual's fundamental English knowledge: whether weak or strong. As a result of this, it is the teacher's responsibility to arrange the learning activities which help on-going development of the students' analytical thinking skills as well as to spend some time for developing student's thinking skills.

## **2. The Presentation Skill**

This part, the results illustrated the average progress score of the students' English presentation skills after the implementation of instructional activities through the use of mind-mapping. It was found that the overall progress score was higher than before providing instructional activities. Regarding the results from the assessment list, the highest percentages of the progress scores were: presenting with accurate, complete, and comprehensible content; communicating with clear and accurate information; and grasping accurate concepts through the use of mind-mapping. The results were respectively. On the other hand, it was found that the percentage of the progress score of using pictures, fonts, colors, and lines in mind-mapping was 0, meaning there was no significant improvement in this aspect.

This can be explained that learning skills in this study were integrated through the procedures of activities as designed: stating the topic; brainstorming for fathering data; as well as drawing a summary of concepts through the use of mind-mapping. Each learning element certainly influenced student's learning development. Thus, the results of progress scores as shown were high. Additionally, assigning the students to work on the task in groups of 5-7 also led to productive outcomes because students had an opportunity to help each other than working alone. Students had their own space to think and share ideas freely without teacher's control and felt free to pass their ideas through mind-mapping activities. This was the strength of using mind-mapping at the brainstorming stage in this study.

As a result, the better presentation skills appeared at each stage, the progress score of each assessing aspect was rather high. In addition, it can be seen that the atmosphere surrounded with friendship could increase tight participation for sharing. When the ideas were concluded through mind-mapping, it could help students argue in a positive manner, help them accept the other's imagination and be able to relate ideas in various ways. This learning activity affected positively to the presentation skill development. This study result was consistent with the study of Klaisee (2012) which speaking training set technique was implemented to develop presentation skills. Also, this study was not different from the study of Kim et al (2005) which developed the medical students' presentation skills in The United States of America by using OCP card set technique to improve student's presentation of medical information. His overall result indicated that the use of mind-mapping techniques obviously helped medical students' understand the content of presentation; the brainstorming variety also helped manage ideas and present thoroughly.

Besides, the analysis of assessment lists found a significant mean in almost every aspect including knowledge and understanding of presentation data, presentation skills, and the use of mind-mapping. Regarding each aspect of the assessment list, the highest progress scores were for; presenting content correctly and completely

covering the main points. The subordinate assessment list showed knowledge and understanding of data and presentation skills. It can be explained that when students had an opportunity to exchange knowledge in sub-groups and summarize through the use of mind-mapping techniques, this helped them learn integratively and thoughtfully before presenting effectively. However, the results of assessment lists of using pictures, font, colors and lines clearly did not increase after the learning activities. It was because the students were able to do well both before and after the implementation of mind-mapping technique. So, there were no changes for this.

### **3. Student's Attitudes toward the Implementation of Mind-Mapping**

According to the learning log, another source of the students' opinions on the use of mind-mapping technique, the results were categorized into 6 aspects, namely learning process, thinking skills development, knowledge development, emotion or feeling, action or behavior, and application development. Learning process was the students' feeling reflected the learning through the use of mind-mapping in various aspects including team working, learning thinking, and building up member relationship. The results indicated that the instructional activities gave the members opportunities to work as a team: they could brainstorm, learn with each other enjoyably and happily and also create unity in groups. The students also identified that they could learn to listen and accepted the ways the other thought and the group relationship could be built up. Thinking skills development was the student's reflections toward the use of mind-mapping in terms of the development of thinking skills. In general, most students felt that the participation in mind-mapping activities could help them think more systematically. Moreover, students stated that the activity helped them practice arranging ideas for solving problems, link related concepts from a broad perspective, and learn how to analyze effectively. Knowledge development was the student's views on their development of knowledge through the use of this technique. They stated that using mind-mapping could develop their knowledge and learnt by themselves. This certainly increased more independent learning.

The emotional development was the students' feeling about their learning in terms of the development of feelings. The results indicated that students felt appreciated during drawing mind-mapping, they enjoyed creating the map as it helped them remember things easily. Behavior development was the students' feeling reflected in terms of the development of behaviors. The students felt that mind-mapping technique helped them practice seeking for the answers themselves: they practiced to learn more independently. Besides, they stated that this technique helped them learn to apply things to daily life: making decisions; solving urgent problems; and working more purposefully. The last aspect, application development was the students' opinion on their learning of application. The students felt that they could apply knowledge to practice and their thinking skills increased. Moreover, they assured that they could apply and motivate their students' thinking skills by this way in the future. Besides, they felt confident to apply this technique to their real life, as well as to be ready for giving others some suggestion.

In sum, the implementation arranging the activities that the students participated in as shown in this study, the teacher played important roles for successful results planning lessons, preparing learning management, defining the objectives of the analytical thinking skills, explaining the activities and preparing questions so that the students

could brainstorm through the use of mind-mapping technique. This was consistent with what Johnson et al. (1991) and Kagan (1995) said that the teacher has an important role to encourage students to participate in activities and group members' have the roles of taking responsibility together.

## **Conclusion**

The paper has shed some light on the importance of analytical thinking skills required for the university students in Thailand. It demonstrated the use of instructional activities with mind-mapping designed by the teachers. The results revealed that the development of the student's analytical thinking skill after the implementation of mind-mapping activities was higher than before the implementation. Regarding the presentation skill, most of students were able to generalize the topic of presentation clearly with high scores, and the students also had good attitudes toward their learning activities through the use of mind-mapping. All of the results lead to the important conclusion that analytical thinking skill is one of the essential key learning skills for the Thai university students and it is possible for the teacher to increase student's thinking skills with a productive technique, mind-mapping is one example.

Some suggestions for the teacher who uses mind-mapping technique, it is recommended that the student's reflection, i.e. on motivation, or skills improvement, should be added in the instructional activities process. For the future researches in this area, the study suggests that the activities promoting analytical thinking skills should be provided to other educational students or other major students. Moreover, the comparison between study programs can be conducted to check the differences of development progress, to find good points, weak points and develop students following the objective directly. Besides, the investigation of other required skills in the 21st century such as searching skills in the world of technology and communication for understanding other different cultures should be developed in the future.

## References

- Al-Jarf, R. (2009). *Enhancing Freshman students' Writing Skills with a Mind Mapping software*. Paper presented at the 5th International Scientific Conference, eLearning and Software for Education, Bucharest, April 2009.
- Atagi, R. (2002). The Thailand educational reform project: School reform policy ADB TA 3585-THA. Retrieved from <http://www.worldedreform.com/pub/fulltext2.pdf>
- Bernie Trilling & Charles Fadel (2013) 21st century skills : learning for life in our times. San Francisco, Calif: Jossey-Bass. Partnership for 21st Century Skills (2001). Framework for 21st century learning Partnership. Washington, DC. <http://www.p21.org/>
- Buzan, Tony. (2002). *How to Mind Map*. London: Thorsons.
- Cottrel, Stella.(2011). *Critical Thinking Skills: Developing Effective Analysis and Argument*. (2nd ed.). Palgrave Macmillan. Palgrave Study Skills.
- Formanack, G. (2008). The Importance of Language: The Partnership for 21<sup>st</sup> Century Skills and AASL Standards. *School Library Media Activities Monthly*, 25(1), 28-30.
- Goodnough, K. and Woods, R. (2002). *Student and Teacher Perceptions of Mind Mapping: A Middle School Case Study*. New Orleans, LA: The Annual Meeting of the American Educational Research Association.(1-5 April).
- Hounsell, Dai. (2001). *Graduates for the 21st Century: Integrating the Enhancement: Themes synthesis of work of the theme 2010-2011*. End of year report by Professor Dai Hounsell.
- Johnson, D.W., and Johnson, R.T. (1991). *Teaching Students To Be Peacemakers (Video)* .Edina, Minn, Interaction Book Company.
- Kagan,S. (1995). *Cooperative Learning*. San Clemente, CA: Kagan Publishing
- Kim, S., et al. (2005). *A randomized-controlled study of encounter cards to improve oral case presentation skills of medical students*. *J Gen Intern Med*, 2005. 20(8).
- Marzano, Robert J. (2001). *Designing a New Taxonomy of Educational Objective*. Thousand Oaks, CA : Corwin Press; London: Sage.
- Mento, A.J., Martinelli, P. and Jones R. M. (1999), Mind Mapping in Executive Education: Applications and Outcomes. *Journal of ManagementDevelopment*, 18 (4), 390–416.
- Partnership for 21st Century Learning Skills. (n.d.). Framework for 21st Century Learning. Washington, DC . (<http://www.p21.org/>) Retrieved from <http://www.21stcenturyskills.org/documents/Frameworkflyer092806.pdf>

Phannipha Klaaisee. (2012). *Developing the Diploma Student's Presentation Skills Through the Use of Speaking Set Technique*. Retrieved from the theses database of the Vocational College. Pitsanuloke.

Richard J. Haber and Lorelei A. Lingard. (2004). *Learning Oral Presentation Skills: A Rhetorical Analysis with Pedagogical and Professional Implications*. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1495213>

Suphanee Chai-sida (2010). *The Results of Mind-mapping training workshop influencing on the Analytical Thinking Skills of the Student Grade 4-6, Wat Barn KoaK Nhong aeng, Nakorn Rachasima Province*. Retrieved from database of Thesis in Education. Nakorn Rachasima Province.

Tissana Khammanee. (2011). *Science of teaching. Knowledge for effective learning management*. (14th Edition). Bangkok: Chulalongkorn University publishing house.  
Thanya Phol-anun. (2013). *Mind Mapping: 5 minutes Ready for Use*. Bangkok: Khwankaew'94.

The ASEAN Charter (2008). Jakarta: ASEAN Secretariat, January 2008 Association of South East Asian Nations.

Toi, H. (2009). Research on how Mind Map improves Memory. Paper presented at the International Conference on Thinking, Kuala Lumpur, 22<sup>nd</sup> to 26<sup>th</sup> June 2009.

**Contact email:** pomme597@yahoo.com