

## Chapter 7 Summary and Discussion

From the findings as presented in Chapters 4, 5, and 6, the researcher would like to summarize and discuss as follows:

### 1. Summary of Research Findings

From examining the verse tale *Phra Abhaimani* of Sunthorn-Phu, the researcher has presented in 3 issues. Chapter 4 was the background of the verse tale *Phra Abhaimani*. In chapter 5, the researcher presented the ideas in the verse tale *Phra Abhaimani* related to knowledge and imagination in science and technology of Sunthorn-Phu. Finally, in chapter 6, the researcher presented the content of science relating to or explainable to knowledge and imagination in science and technology in the verse tale *Phra Abhaimani* and used those pieces of knowledge to analyze the content and come up with the corresponding list of the science substances that matched with the knowledge found in the literature in each grade level. The findings of the research in each issue mentioned in the chapter could be concluded as follows:

#### 1.1 The Background of the Verse Tale *Phra Abhaimani*

Regarding the background of the verse tale *Phra Abhaimani*, the researcher had raised 4 major points related to Sunthorn-Phu and the verse tale *Phra Abhaimani* as summarized as follows:

**1.1.1 The synopsis of the Verse Tale *Phra Abhaimani*** From the documents on the verse tale *Phra Abhaimani* of Sunthorn-Phu published by Silapabannakhan coming in 4 volumes including 132 episodes, it was found that the verse tale *Phra Abhaimani* is an adventure story of *Phra Abhaimani* and other prime characters basing on the plot of the conflict stemmed from triangle love among *Phra Abhaimani*, Suwanmalee, and Laweng-wanla. At the end, the three characters had turned to dhamma-the Buddhist principle in solving the problem and the story reached a happy ending.

**1.1.2 Sunthorn-Phu and His Composition of the Verse Tale *Phra Abhaimani*** It was found that there was some speculation that Sunthorn-Phu could have composed *Phra Abhaimani* during his prison. The purpose of the composition was not definite. From part of Sunthorn-Phu's life, it could be possible that he would have wanted to tell the story of his life as well as some of his knowledge and experiences to the audience through the tale.

**1.1.3 Causes of Popularity** It was found that the reason why the verse tale *Phra Abhaimani* has enjoyed popularity is, first of all, the novelty of the story which was new to the Siamese people in that time. The story was far different from other kingly stories. For one thing, the major character was not a physical power but a musician. Secondly, the melodiousness of language which was the talent of Sunthorn-Phu who composed the story in octameter poem. Thirdly, the realism of the story in which Sunthorn-Phu set up the plot in a well-thought way including the setting, the actions of the characters, and the fit to the reality of the Thai societal and world contexts at the time. Lastly, the essences in the story was relevant to beliefs and way of life of Thai people, such as the beliefs in ghost, gods, and supernatural things. There are some reminding expressions for maintaining people's life and Buddhist beliefs.

**1.1.4 Social Context in the Sunthorn-Phu's Period** It was found that in Sunthorn-Phu's time, the society was in solidarity, peace, and prosperity in all aspects. In political sense, the society was governed by the absolute monarchy headed by the king who was a divine god who had the supreme power in the kingdom. The ruling was based on feudalism and social stratification. Regarding to economy, at the time there was some investment in industry and agriculture. The Samphao ship trade was at its peak. The people in the society was composed of various ethnicities and nationalities, particularly the Chinese who had had roles ranging from labor selling to the bid merchants. Some of them was appointed a high ranking aristocrat. The natural setting of the time was totally fertile and full of diverse species of plants and animals. People depended mostly on nature. Regarding the situation in Southeast Asia at the time, the Western Superpowers, the French and British, had expanded their colonial territories to maintain their trade benefits. Siam had felt the impact of this starting in the Reign of King Rama the 3<sup>rd</sup>.

### **1.2 Knowledge and Imagination in Science and Technology in the Verse Tale *Phra Abhaimani***

Concerning knowledge and imagination in science and technology in the verse tale *Phra Abhaimani*, it was found that Sunthorn-Phu had knowledge on natural facts in holistic view. That is everything was interrelated on some particular logic such as wind which is an element – a basic component of things and would have impact on health and geographical condition such as season, for example. In explaining things in logical manner, Sunthorn-Phu had based on religious knowledge, particularly that of Buddhism. In the analysis presented in Chapter 5, the knowledge in science and technology was divided into 2 parts – physical and biological ones. The classification is relevant to the knowledge in science which covers knowledge on the physical and biological aspects (Prawase Wasi, 2004) and still related to knowledge on natural rules basing on Buddhist principles (Prayuth Payutto, 1992). The knowledge in science was classified in terms of subfields of physics, chemistry, astronomy, geography, geology, and biology used by the researcher to analyze the knowledge and imagination in science and technology in the verse tale *Phra Abhaimani*. There are 21 concepts related to these 6 subfields in science as reported in chapter 5.

### **1.3 The Verse Tale *Phra Abhaimani* and Science Learning Substance**

Regarding this, the researcher had analyzed the content of the knowledge in science relating to or explainable to knowledge and imagination in science and technology in the verse tale *Phra Abhaimani* and used those pieces of knowledge to analyze each content in the science learning substance in each grade level. The results were summarized in tables 1-6 in chapter 6 on pages 99 – 101. Such results were derived from analyzing knowledge in science related to knowledge and imagination embedded in the verse tale *Phra Abhaimani* and were compared to the standards in science learning substance according to the 2001 Basic Education Curriculum. It was found that the knowledge was relevant to the 7 substances of science learning substance as presented in chapter 6 on pages 103 – 105 to guide the use of the verse tale *Phra Abhaimani* in organizing learning in science learning substance for all grade levels.

## 2. Discussion

From the conclusion in the 3 main issues, the researcher will discuss the research results along the three issues as follows:

### 2.1 Background of the Verse Tale *Phra Abhaimani*

Examining the background of the verse tale *Phra Abhaimani* had revealed the talent of Sunthorn-Phu as the composer and an intelligent which the researcher would discuss in each aspect as follows:

**2.1.1 Characteristics of Sunthorn-Phu.** The verse tale *Phra Abhaimani* and other works had reflected that Sunthorn-Phu was a person who had high motivation to learn about things. This was evident when he had mentioned the texts and sources of knowledge from which those in high social status should learn. His well-rounded knowledge included those in astrology, and the sources used as reference such as when he raised the case of Khongbeng, a character in the literature - the Romance of the Three Kingdoms (Samkok). Such citation signifies the fact that Sunthorn-Phu was knowledgeable in various fields as well as the Buddhist principles such as the desires induced by the human 5 sensory perceptions, for example.

One characteristic of Sunthorn-Phu is his being reasonable man. He always reasoned the phenomena. One clear instance was when he mentioned the wrecked town as the consequence of the lack of morality on the part of the people in the society making the prosperous town disappeared.

One of the characteristics of Sunthorn-Phu was his generosity and open-mindedness in accepting new things. This is evident when he had *Phra Abhaimani* learn French when he was left alone in the island with a Rusi at Koh Kaew Pitsadan. In mentioning various lands and territories, he had based on his knowledge other than that from Buddhism and Brahmanism reflecting his exposing to the wide world of knowledge of the time.

The forth characteristic was that Sunthorn-Phu was keen in observation and recording. This is apparent in his poetic works of various banishment poems in which he put the notes about things along the way. It could be possible that in the verse tale *Phra Abhaimani*, there were events really occurred at the time some of which were modified by Sunthorn-Phu along his imagination. Thosaporn Wongrat (2007) has worked as well on the issue.

The fifth characteristic of Sunthorn-Phu was his being cautious which is evident from his careful design of the plot basing on his sophisticate knowledge about time and space.

The last characteristic of Sunthorn-Phu was his being imaginative. This is reflected well in his imagination about the things happening to the characters and the locations used as the setting which were full of wide imaginations incomparable to any other Thai literatures. The characters like the mermaid, the Blue sapphire dragon-horse, and the ship of the Pirate Surang, for example.

This characteristic of Sunthorn-Phu well synchronizes the science attitude – one of the significant characteristics of a good scientist suggested by Phop Laopaiboon (1999, pages 12 – 13). According to the autor, a scientist should possess the 6 characteristics which included curiosity, persistence, reasonability, generosity, honesty, and being systematic. Though Sunthorn-Phu was not a scientist, but he was an intelligent who had many characteristics possessed by a good scientist if not all.

**2.1.2 Social Context of the Verse Tale *Phra Abhaimani*.** It was found that the social context of Thai society at the time had influences on Sunthorn-Phu's works. One instance was in the setting on the sea and the Samphao ship travelling which was relevant to the time in which the Samphao ship trade was at its peak. The world event at the time such as England which was ruled by the Queen and the conquer of Sri Lanka had impact on his design of the setting, location, and the prime characters of the story.

**2.1.3 Significance of the Verse Tale *Phra Abhaimani*.** From the analysis, it was found that the verse tale *Phra Abhaimani* has high significance. It serves as the channel through which knowledge and ideas of Sunthorn-Phu on the world and society as well as the presentation of reality, morality, and beauty via nature were transmitted. The story of wrecked city, for example, demonstrated the lack morality on the part of the people leading to the deterioration of the society. It also reflect the Buddhist principle of uncertainty which conveys the fact that things come and go. They change along their causes. Law of action can also applies here signifying that the good would lead to the food result. All these moral principles were presented through beautiful languages in metaphoric term adding the point to the tale's popularity up till now.

At this point, it should be concluded that the examination of the background of the verse tale *Phra Abhaimani* well reflected the characteristic of Sunthorn-Phu who though was a poet had many characteristics of a good scientist. Such quality could lead to his integration of the knowledge and imagination to wisely fit in the Thai society at the time making the verse tale *Phra Abhaimani* a significant work as a literature that passes on knowledge and imagination to the readers in reality, morality, and beauty senses. All these literal qualities are universal. No wonder *Phra Abhaimani* still enjoys popularity and recognition until the present time.

## **2.2 Knowledge and Imagination in Science and Technology in the Verse Tale *Phra Abhaimani***

The analysis of the verse tale *Phra Abhaimani* has revealed the fact that Sunthorn-Phu had perspectives about things related to science and technology. One of them was his holistic view which asserts that everything is interrelated and interdependent in a balanced way. His view was also influenced by religious principles that provided the perspective for looking at natural reality. Knowledge and imagination expressed by Sunthorn-Phu reflects the essence of reality. Regarding this, the researcher would discuss on knowledge relating to reality of things, Sunthorn-Phu's imagination, and factors having been influencing his knowledge and imagination as follows:

**2.2.1 Knowledge of Sunthorn-Phu.** Sunthorn-Phu had perspective on reality of things, the access into the reality, and the convey of the reality of Sunthorn-Phu are as follows:

**Knowledge on reality in nature.** Sunthorn-Phu had knowledge in explaining phenomena in logical way utilizing knowledge basing on religion in explaining things. The knowledge used by Sunthorn-Phu in explaining phenomena in the logical way which could also be regarded as an Eastern science as follows:

**a. Things in Nature were Composed of "Body" and "Mind".**  
In this regard Sunthorn-Phu viewed that the world and humans had two components,

namely body and mind. Things were composed on earth, water, fire, and wind which were the basic components of body. The other component helped living things to perceive and control their interaction with objects which was the mind which is abstract. Sunthorn-Phu viewed that “Mind” was more important and durable than the body. Viroj Inthanon (2006, pages 119 – 120) made an observation on this point that though body had gone, mind could stay and engage in the cycle of death and birth. It controlled the body’s functioning.

b. **Things are All Interrelated in a Logical Way.** This principle provides ways to express one’s self asserted by Sunthorn-Phu. He was a man of reasons and always came up with the reasons to explain things such the wrecked city which Sunthorn-Phu explained it happened because of the people did not maintain morality but violated the natural rules leading to the bad consequences. Blue sapphire dragon-horse was produced by parents of different species. That’s why it was not normal. It had a set of superpowers but was a homosexual and could no reproduce.

Another instance illustrating this point is the poet’s imagination of Rothan tree reflecting his knowledge on ecological system in which there was an inter-supporting between trees and sun adding to the balance which supports the nature’s normal function such as rain which came at the season along the cycle. When one thing occurred, another thing or other things followed. This claim was also made by the intelligent of the East who asserts that things and events were interrelated and kept changing. The principle of is known as “idappaccayyatā” (Capra, 1989, pages 19-29; Prawase Wasi, 2004, page 17). The burn requires the wind but if thrown on by water, the fire is put off. Fire and wind have interrelationship in a complementary way. Fire and water, on the other hand, have antagonistic relationship.

c. **Things Have Holistic Nature.** This perspective is reflected well in the notion of the four elements each component of which is interrelated. The components are combined with different proportion to generate the product (Capra, 1989, pages 95-123). If one of the elements is abnormal or fluctuates, the imbalance occurs. This is implied in the case of the woman giant. When water and wind elements of hers stopped functioning, the earth element could no longer function. When she got the fire element, it could restore her system and vitalize her. Everything is composed of the 4 elements in the unique proportion. Nature is holistic. This differs from the tradition in science where each issue is separately studied such as they took fire as the energy while earth, water, and wind as matter, for example.

d. **Things Are Governed by Universal Rules.** One set of knowledge is that things are along the natural rules. Everything has origin and end. The woman giant was born and dead. The City of Kind Pakka was also under this rule. It was prosperous once and someday destructed. Nothing is eternal but changes. Rothan tree had dynamics of changes. The drops of water on the tip of its leaves are burnt away by the sun and became fog which in fact was the same drops of water but expressed itself in different forms. When 15 days cycle returned, the fog became rain which had been the fog fifteen days ago. Changes of things are also explained by the Buddhist Tri-lak rule – uncertainty, suffering, and self-nonexistence (tri-lak, 2004, page 17).

Besides, Sunthorn-Phu had shown natural rule in other dimensions one of which was the law of kamma which signified that good deed led to good

consequence and bad deed led to the bad one. This was clearly seen in the case of the wrecked city when people did not stay with morality which if eroded the society would do too. The other example was of digging up of the grand diamond signifying the destroying the natural resources violation the ecological law leading to the adverse consequence for humans. The real understanding of dhamma (Buddhist principles) where everyone forgave one another could assure the co-existence between humans and humans and humans and nature. At the end of the tale, Sunthorn-Phu had *Phra Abhaimani* ordain reflecting Sunthorn-Phu's confidence in the capacity of morality in solving the society's problems.

e. **The Realization of the Reality of All Natures.** Sunthorn-Phu suggested the realization of the reality through the 5 sensory organs, namely, eyes, ears, nose, tongue, and bodily touch. Moreover, there was the cognition which could be regarded as the 6<sup>th</sup> sense. The noise of *Phra Abhaimani's* woodwind play was just the melody but could communicate with the others. Sunthorn-Phu would conceived that such knowledge was carried out by the people's mind serving as the mechanisms to perceive and interpret the characters' emotion and feeling which had occurred in the people's mind. The cognitive process sometimes yielded knowledge such when the Rusi was on concentration to realize the origin of the Blue sapphire dragon-horse which was the product of the cross-breeding between the horse and dragon, for example.

In Sunthorn-Phu's perspective, mind was important in realizing knowledge or reality. This was also recognized by Buddhism which stressed the importance of the 6 sensory organs in realizing reality while in the scientists focused on only the 5 senses - eyes, ears, nose, tongue, and bodily touch. Mind was then very important in realizing the reality. Science stresses the outer experience (Prayuth Payutto, 1992, pages 130-131). This principle was also recognized by empiricism of John Locke (John Locke, Chaiwat Attaphat, 1985, page 25) which suggested that the real knowledge was acquired through 2 types of experiences-sensory and mental ones. The former was used when a character would like to know the depth of the sea and the latter utilized the reflective process such as the concentration of the Rusi. Most experiences started with the sensory perception and then reflection could help survey the experience further in the mental dimension.

It could be concluded that knowledge in science and technology of Sunthorn-Phu was based on Eastern philosophy around Buddhism which viewed things as a whole. It believed that nature of the world and humans is composed on "Body" and "Mind." Everything is interconnected on certain balance, logical, and under the natural law of Tri-lak. Regarding the method to acquire knowledge, Sunthorn-Phu believed in both bodily and mental experiences utilizing the 6 senses – eyes, ears, nose, tongue, body, and mind, as the instrument to realize the reality. This belief is confirmed by Buddhism and empiricism.

Body of knowledge and imagination analyzed from the verse tale *Phra Abhaimani* when further analyzed could help realize that it could be explained by scientific principles reflecting the congruence between Eastern and Western bodies of knowledge. The difference is that science which serves the framework for the Western knowledge has recognized only knowledge that has been acquired through the 5 senses. They have not yet recognized the 6<sup>th</sup> sense – the mind. Capra (1989, pages 19-29) has explained that the Western consensus was the result of the seeing

the world of reality in dualism – body and mind. This was the influence of Rationalism led by Descartes. One consequence was that modern science could explain things only in physical or concrete term but not of the mind or abstract thing such as the wrecked city used by Sunthorn-Phu to represent the people's good/bad deeds. Modern science is then reductionist while of Sunthorn-Phu's knowledge was based on holism which assure the width and the depth of it in the attempt to understand nature.

### **Sunthorn-Phu's Mode of Delivering Reality**

Sunthorn-Phu's delivery of reality was not done through direct mode but the metaphoric one. He had used analogy, expression, proverb, and other kinds of symbolization. He, for example, used vine to metaphorically refer to people's mind reflecting the reality of human mind which was abstract. The complex vine was used to represent the mind's complex system. He used lion to represent authority of the aristocrats in their ruling class status. He used camel to refer to the labor class in the society. All these power relation symbol signified their functional relationship. Natural materials were used to represent things such as the color of the lychee fruit's color and the moon to represent beauty of the girls to communicate the image to the audience. Besides, Sunthorn-Phu also used symbolic system such as Rothan tree to represent the forest prosperity and the relationship of things in nature. The Blue sapphire dragon-horse was used as the symbol of natural imbalance. The sea represented the loneliness, for example.

#### **2.2.2 Imagination of Sunthorn-Phu**

The verse tale *Phra Abhaimani* reflects the imagination of of Sunthorn-Phu in various forms for both the real and imaginative objects. The imagination could be classified into 2 types – the constructive imagination and the one to represent the real thing. Sathien Koses (1990, page 73-36) had come up with two types of imagination.

a. **Reproductive Imagination.** Examples of this kind is the imagination on forest, mountain, plants, animals, and the likes in nature such as sea, island, or the people such the court women during their picking up flower in the court garden. All these images were reproduced by Sunthorn-Phu from his vivid memory about things through the verse he had composed in a poetic yet effective way.

b. **Creative Imagination.** The imagination of this type includes the towns which was not actually seen or visited by Sunthorn-Phu but he could made it up in a realistic way. Besides, he also imagined many new innovations such as the autonomous accordion which would have represented the modern sound system. He had creative imagination of a large ship with 800 meters in length which could have meant the modern cruise. All these imaginations reflect Sunthorn-Phu's talent in imagination. He could go further in the future ahead the people in science and technology at the time.

The verse tale *Phra Abhaimani* of Sunthorn-Phu could also be regarded some kind of science fantasy as it is the story he had composed from pure imagination with some insertion of natural facts. The imagination was on new technology and societal condition particularly some societal ideals. He did this by taking the context into the setting and situation all of which reflect the well-rounded knowledge of Sunthorn-Phu. From science point of view, the knowledge and imagination in science and technology in this verse tale could be explained by

knowledge in modern science. Chaiwat Khupratakul (1997, page 64) and Nattapong Charoenpit (1996, page 179) had noted that literatures including the verse tale *Phra Abhaimani* were not only just the ordinary fantasy but the science fantasy of Thai society.

### 2.2.3 Factors Influencing Knowledge and Imagination of Sunthorn-Phu

From the analysis of knowledge and imagination expressed by Sunthorn-Phu in the verse tale *Phra Abhaimani*, it was found that Sunthorn-Phu could have acquired knowledge, concepts, and imagination from the following factors:

**a. Knowledge in Philosophy and Religion.** It was found that some pieces of the knowledge and imagination of Sunthorn-Phu were inspired by philosophical and religious notions. This speculation is similar to that proposed by Thosaporn Wongrat (2007, page 23) that some imaginations of Sunthorn-Phu were inspired by the Triphum Pictorial which served as the reference for Buddhism concerning the three worlds. Capra (1989, page 95-123) noted as well that the philosophy and religion that influence the Eastern way of thinking were Hinduism, Buddhism, and the Chinese philosophy. The examples included the thoughts about the earth and universe and the four elements which served as the fundamental principle in searching for reality in the East.

**b. Thai Wisdom.** From the study, it was found that concerning various pieces of knowledge embedded in the verse tale *Phra Abhaimani*, Sunthorn-Phu had knowledge on them transmitted by the ancestors through the practice in the daily life such as knowledge about sailing. Such knowledge was based on certain logical framework. Regarding this, Virapong Seang-Xuto (2001, page 15) had studied wisdoms and classified them. Sunthorn-Phu had mentioned the sailing of the characters through the wisdom on communication. It was logical for him to plot the characters in sailing out at night time and sailing in a day time.

**c. Social and Environmental Contexts.** It was found that such contexts had heavily influenced Sunthorn-Phu's works. Sunthorn-Phu's period was time the Western colonizers had hunted for colonial states in other areas (Nithi Eawsriwong, 2545, page 8 – 10) forcing Thai society to adopt modern science and technology (Nattapong Charoenpit, 1999, pages 200 – 201). This factor could explain why Sunthorn-Phu could imagine such innovative inventions. Besides, the social context on environment also had heavy influence on Sunthorn-Phu. The forests and mountains were the imagination reproduced from what Sunthorn-Phu had seen (Office of Literature and History, Fine Arts Department, 2001, *Biography of Sunthorn-Phu*, pages 13-46). He could then reproduced it in form of such melodious and realistic verses.

**d. Personal Imagination.** It was found that the outstanding talent of Sunthorn-Phu had made the verse tale *Phra Abhaimani* tremendously enjoyable and exciting. Sunthorn-Phu had imagined various kinds magical things far ahead of time. Some of the imaginations in *Phra Abhaimani* were purely his own, such as the arrow that could shoot out 7 ones at a time, the word to call up the wind and rain, and the amphibious vehicle. Regarding technology imagination in literature, Bunthueng Nanna (1998, pages 96-98) had analyzed the imaginations in literature such as in Ramakien and found them implacable to science knowledge too.

For all these factors, it is evident that Sunthorn-Phu was a well-rounded knowledgeable person who could create *Phra Abhaimani* up as an entertaining story which sounds realistic representing real phenomena in the world. Knowledge related to natural reality such as the diversity plant and animal species in the areas of Thailand which is a tropical. The Eastern knowledge on the four elements – earth, water, wind, and fire, all are now parallel to those principles in modern science.

### **2.3 The Verse Tale *Phra Abhaimani* and Science Learning Substance**

Knowledge and imagination in science and technology in the verse tale *Phra Abhaimani* relates to physical and biological worlds. These sciences could be categorized into subfields such as physics, chemistry, astrology, geography, geology, and biology. Knowledge and imagination in science and technology in the verse tale *Phra Abhaimani* then could be classified into 6 science fields.

The knowledge in these 6 science subfields when analyzed to relate to the learning standard in science learning substance, it was found they such knowledge and imagination are relevant and they could be used to organize learning activities in science strand for each grade level. As verse is melodious, it could be used to communicate certain messages or for the introduction to the lesson session. Chantaporn Phol-inta (2003) had used Thai literature to develop a learning module to teach creative writing for Prathom Suksa 5 students. Likewise, Darunee Nipatsarn (2006) had analyzed morality in local literature the verse tale *Chao Witoon Sorn Larn* (King Witoon taught the nephew) to teach Thai for the Workplace 1 course at the Certificate of Vocational Education level and used it for developing the students' morality and desirable characteristics.

In applying Thai literature in the process of learning and teaching is a way to use it for the purpose of educating Thai youths to appreciate the value of literature assuring them that it has contained knowledge along that of modern world. Such initiative is a response to Article 7 of the 1999 National Education Act and a way to integrate science with literature to guide the study of literature from a science perspective and on the knowledge possessed by the poet.

### **Recommendation**

The researcher would like to recommend the use of this research finding for further research on or relating to topic as follows:

#### **Recommendation for making use of the findings.**

1. In using the verse tale *Phra Abhaimani* for learning and teaching, it could be used at a learning medium in the introduction to the lesson and the instructional stages. The teacher should intensively read the verse tale *Phra Abhaimani* to obtain understanding the background of each of the verse and then match it to the relevant learning substance and check if it is suitable for which stage of instruction – for introduction or instructional stages.

2. The teacher should analyze many verses before choosing the ones to fit a particular topic of the destination lesson as Sunthorn-Phu did not write them up for the purpose of teaching on a particular topic. The relevant materials might be here and there all over the whole tale. It's the teacher's task to gather such bits of knowledge together under particular topic to help the student form knowledge in such topic.

3. The teacher could use the verse tale *Phra Abhaimani* in various forms such as having the students play a drama episode or having them watch a movie, for example, to motivate them to learn.

4. The teacher should study other Thai literatures or the related issues as well to acquire knowledge and understanding in addition to that obtained from the verse tale *Phra Abhaimani*, such the knowledge on Thai constellations, for instance.

5. The teacher should also study knowledge relating to the verses to be taught in the learning substance in all perspectives, namely, science and technology, philosophy, religion, and Thai wisdom related to such verse to have clear background knowledge for it before teaching it.

6. There should be a science instructional module utilizing *Phra Abhaimani* to encourage the students to realize the significance of Thai wisdom, value of the Thainess, the talent of Thai poets, etc. as a way to organize the learning that is more relevant to social context of the society.

#### **Recommendations for Further Research**

1. There should be some attempts of using this research findings to design science instruction at each grade level to confirm the effect of using the verse tale *Phra Abhaimani* in the learning and teaching.

2. There should be some studies to compare the knowledge and imagination in science and technology embedded in this verse tale with that in other literatures to realize the value and talent of Thai poets from the science perspective encouraging the learners to see the clearer relationship between science and literature

3. There should be some studies to analyze the relevancy between knowledge and imagination in science and technology in the verse tale *Phra Abhaimani* at each grade level in a more detail to be able to select the materials that better fit learners at each level.

4. Though this research had covered the 6 physical and biological science subfields, there might still be some knowledge and imagination in science and technology left out from the analysis of the researcher, there should some repetitive study on the topic.

5. Though the study on literature depended largely on the interpretation of the researcher, for a more accuracy, there should be some validation on the materials used in the analysis by experts in the related fields.

6. There should a more extensive study on the verse tale *Phra Abhaimani* to cover the aspects of knowledge, morality, and aesthetics.

7. There should be a study to interpret the verse tale *Phra Abhaimani* in deeper extent to access the metaphors related to Buddhism. One example is a study where characters in *Saiew* or *The Journey to the West*, a classic Chinese literature, were used to represent human's psychological construct. In such study, Heng-jia or the Magic Monkey, represented anger, Tuepuokai or the Pig Monster, represented greed, and Sua-jeng or the Fish God represented ignorance. The three characters symbolized human minds. In religious sense, they represent people's desires.