A Computer Game for Cultural Learning and Promotion:
A Case Study of Thai Risk-Loss Cultures

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Abstract

In this modern world, communication and transportation has become more convenient and faster than before. This rapid growth of globalization has made many changes in our culture and society around the world. Thai culture and society has been also influenced by the effects of globalization. Especially, the influence of western societies has led to cultural changes dramatically in Thailand. Since Thailand has become a popular destination for many tourists from around the world, the cultural changes become serious problems. Nowadays, Thai pupils and students have less knowledge about Thai culture than before. The new Thai generations have forgotten their own traditions and customs. Some Thai traditions and customs are in risk to be lost. The festival of dead ancestors merit days, called Thai Sart days, is one of risk-loss cultures. Although change is inevitable, each country's traditions and customs should be passed to its next generations. Therefore, this study aims to reinforce the knowledge of Thai traditions and customs to the new generations by using computer game-based learning. The festival of Thai Sart Days was selected as a case study. Ten subjects were voluntarily selected to evaluate it for users' satisfaction in terms of its design, performance, and value-added outcome for knowledge gained. The results of elementary evaluation were rated as very good quality in all categories.

Keywords: Computer game, Cultural promotion, Game-based learning, Risk-loss culture.

1. Introduction

Since Thailand, formerly known as Siam, is a small country and the nation has been developed under multi-cultures and diversities, Thai culture has its own unique and new integrated adoption. Thailand is located in the mainland of Southeast Asia. Some studies have suggested that Thai people came from the Tai group who settled at the southern area of China and migrated into the present area where it was inhabited by Mons and Khmers [1],[2]. These studies were based on the focus of Tai linguistic diversity occurring today as well as some evidences from historic, archaeological and cultural records. However, some new studies have suggested that Thai people have their origins in the present area and moved around from the Indochina and Malay peninsula to the southern area of China [2]. These studies were based on gene frequency and blood-group evidence. The results of these studies suggest that Thai people are not from Chinese people. They have evolved with the co-habitation of indigenous people and some ethnic groups such as Mons, Khmers, and Laotians since agricultural societies were settled here by about 3000 BC [1]. There still remains the question of where Thai people came from.

The main four parts of Thailand, consisting of the central, northern, north-eastern, and southern parts, have their own identities, traditions and dialects [3],[4]. Along with its history, cultures from several countries have influenced Thai cultures, especially Chinese and Indian cultures. Indian cultures affected Thai culture with the belief of Buddhism. Thailand has accepted several sects of Buddhism such as Mahayana, Theravada, Hinayana (a variation of Theravada). Thailand also founded the Dhammayuttika sect [5].The majority of Thai people are Buddhists. Chinese immigration in the past also affected Thai cultures. Along the border of Thailand, Thai culture has been affected by its neighboring countries such as Myanmar (previously named Burma), Laos, Cambodia, and Malaysia [6]. During the past decade, cultures from western countries have led to cultural changes in Thailand dramatically.

Jiazheng has highlighted about culture in [7] that "*Culture is a field with a great variety of categories, different levels, functions and tolerance. Generally speaking, the functions and roles of culture in education, inspiration, molding of character, esthetics and enjoyment, are largely manifested in an indirect and profound way, and in subtle imperceptible change. In this sense, culture is like water, which silently seeps into and nurtures all forms of life. Culture is the best channel to reach people's hearts*". He also discussed in his book about the basic elements of culture in four aspects: (1) knowledge (2) sentiment (3) social ethics and (4) belief.

In recent years during this digital era, computer and information technologies have become one of several human needs. Various software products are provided for these technologies. Computer games are one of most popular software products. Although many computer games have been introduced to players, a few of them are related to cultural learning and promotion. Therefore, in this study, a computer game for learning and promoting risk-loss cultures was proposed.

The following sections will be organized as follows: we will give basic ideas about

computer games and game-based learning in Section 2. Later, a case study of Thai Sart Days will be introduced in Section 3. Section 4 will present some concepts about analysis and design of our computer game as well as its implementation and evaluation in Section 5 and 6 respectively. Finally, we will draw conclusions of our study.

2. Computer Games and Game-Based Learning

Computer games have both positive and negative impacts and outcomes [8],[9]. Many kinds of computer games are available as commercial and non-commercial products, especially entertainment games such as action, adventure, fighting, puzzle, role-playing, racing, sports, strategy, simulation, virtual reality, and animated tutorial games [10]. Some children become computer game addicts. Their parents are concerned with serious and violent computer game addiction. However, some researchers have tried to distinguish between computer game addiction and high engagement in order to get a better understanding of player behaviors because this would affect human life and learning process [8], [9]. The effect of violent and non-violent computer games were also studied [10],[11],[12],[13]. Besides their use for entertainment [14], computer games have been successfully used for education and learning. Successful learning in terms of enthusiasm and motivation, determination to reach a high standard of achievement, learning as a group or private, and linking and applying learning in new situations, was discussed and reported in [15]. Playing computer games is also linked to an increase in cognitive performance [11].

The basic design of educational computer games is concerned with learning objectives and learning outcomes for target groups. Pedagogical requirements should be also considered for game design, such as integration with online education, adaptation, and assessment [16]. In addition to the outcome of content understanding and knowledge acquisition by a player as a learner, enjoyment outcome of playing games should be added in design features for educational computer games, such as characters, graphics, music and sound effects, story, rewards, challenging goals, rules and guidelines.

3. Case Study of Thai Sart Days

Some Thai traditions and festivals came from the religious belief, especially the belief in Buddhism. The festival of Thai Sart days came from the belief in Buddhism about reincarnation and reincarnation levels (hell and heaven) when people die they might reborn again in any reincarnation level depending on their sins. A good person would be reborn as a good form in a good place such as heaven while a person who did bad things would be reborn as a bad form in a bad place such as a suffering demon or a hungry ghost called a '*pret*' [17]. The '*pret*' could be in any shape depending on its sins. It is usually imagined as a tall and thin body, a long thin neck, protruding eyes, and a tiny mouth with a very long tongue because of its hunger. Figure 1 shows some examples of sculptures, paintings about the '*pret*' spirits, their punishment, and the festival celebration. The festival of Thai Sart days is the annual merit-making ceremony for dead ancestors and celebrated during the tenth lunar month or in September or October each year [18]. It is believed that the '*pret*' spirits are allowed

to come back to meet their relatives for fifteen days during this period. Each part of Thailand has a different name for this festival and celebrates it in different ways. The '*pret*' spirits are welcomed to the earth by their relatives on the first day and are sent back to hell on the last day. These two days are the actual merit-making days. Especially, on the last day their relatives take food and desserts to temples to make merit. Some food is given to monks and some food is given to the '*pret*' spirits by inviting them to eat. In some areas of Thailand, people offer five specific kinds of desserts to the '*pret*' spirits: (1) '*pong*' representing a raft for travelling (2) '*la*' representing clothes (3) '*kong*' representing gems and jewelry (4) '*desum*' representing money, and (5) '*ba*' representing a kind of fruit seeds for playing local sport. The shapes of these specific desserts are made to look like their representation.

Figure 1. Sculptures, paintings about the 'pret' spirits, their punishment, and the festival celebration   [Source : www.oknation.net, www.palaungdham.com]

Nowadays, the new Thai generation realizes that the belief of the 'pret' spirits, reincarnation and reincarnation levels are senses of strategic warning to people not to do bad things during their lives. Thus, they tend to abandon the festival of Thai Sart days. Some sects of Buddhism have tried hard to convince the new Thai generation of this belief by creating visual models or paintings or story telling while some sects educate people about hell and heaven in the senses of body and mind and in the way of causes and effects. However, there are other strategic reasons of its celebration in senses of sharing and meeting among relatives and friends for a merit-making ceremony to pay respect to all supports after finishing harvest time, as well as to pay

respect to their deceased ancestors. Therefore, this tradition should be promoted and passed to the new Thai generation.

4. Analysis and Design

4.1 Characters Analysis and Story Board Design

From the belief of Thai Sart days, cultural elements, knowledge elements, and entertainment elements were adopted for game designs such as characters, screens, rules, goals, and guidelines as follows: (1) the cultural elements consisting of the '*pret*' characters, the reincarnation levels, the punishment, the merit-making food and desserts; (2) the knowledge elements consisting of knowledge boards and tests of knowledge gained from playing the game; (3) the entertainment elements consisting of challenging goals, dangerous monsters and objects, and life power value. Text, sound and effects were used to add more value in these elements.

A player can choose to play as a male or female '*pret*' spirit. These two '*pret*' spirits were designed as shown in Figure 2 and Figure 3. The player will try to pass each reincarnation level. There are five levels as shown as Figure 8 to Figure 12. If the '*pret*' spirit succeeds to pass the current level, it will be reborn in the next reincarnation level. During its adventure at each level, it will be faced with monsters and dangerous objects as shown as Figure 4 and Figure 7. Its life power value will be reduced if it is punished by these monsters and objects and will be increased if it gets merit-making desserts as shown as Figure 5 and Figure 6.

The story-board design is corresponding to the following brief description.
1. A player starts playing a computer game.
2. The pretest is administered to measure the player's current knowledge about the festival of Thai Sart days.
3. The player selects the form of '*pret*' spirits.
4. The player as a '*pret*' spirit takes an adventure through the level 1.
5. The '*pret*' spirit finds the level-1 knowledge asset.
6. The '*pret*' spirit answers the level-1 questions for passing to the next level.
7. The '*pret*' spirit takes an adventure through the level 2.
8. The '*pret*' spirit finds the level-2 knowledge asset.
9. The '*pret*' spirit answers the level-2 questions for passing to the next level.
10. The '*pret*' spirit takes an adventure through the level 3.
11. The '*pret*' spirit finds the level-3 knowledge asset.
12. The '*pret*' spirit answers the level-3 questions for passing to the next level.
13. The '*pret*' spirit takes an adventure through the level 4.
14. The '*pret*' spirit finds the level-4 knowledge asset.
15. The '*pret*' spirit answers the level-4 questions for passing to the next level.
16. The '*pret*' spirit takes an adventure through the level 5.
17. The '*pret*' spirit finds the level-5 knowledge asset.
18. The '*pret*' spirit answers the level-5 questions for passing to heaven.
19. The post-test is administered to measure the player's current knowledge about the festival of Thai Sart days.
20. The game overs when the '*pret*' spirit runs out of its life power value.

Figure 2. A male '*pret*' spirit
spirit

Figure 3. A female '*pret*'

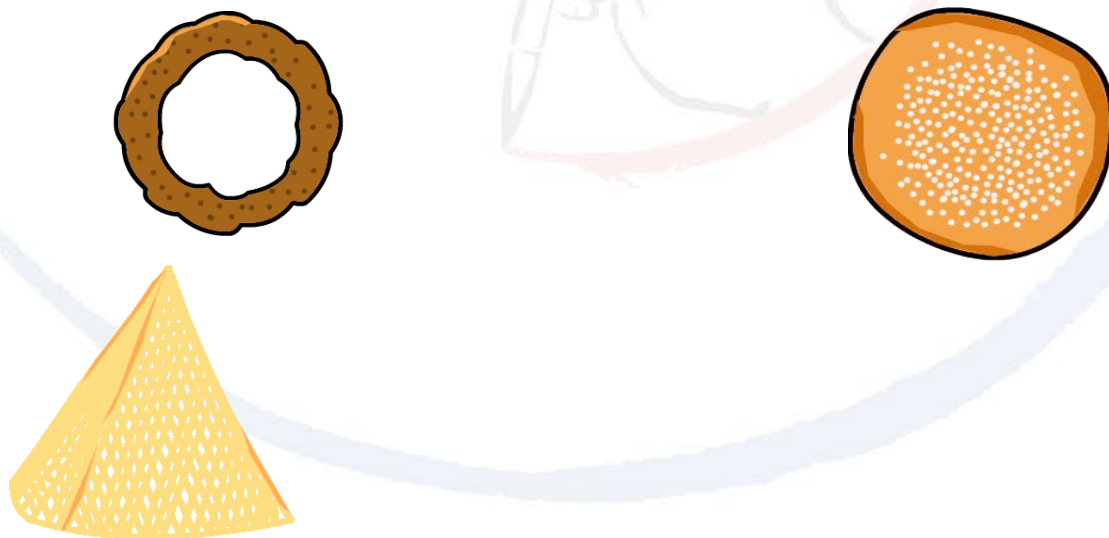Figure 4. The monsters in the level-1 to the level-5

Figure 5. The merit-making desserts called '*desum*', '*ba*', and '*la'* respectively

Figure 6. The light showing life power value

Figure 7. The dangerous objects
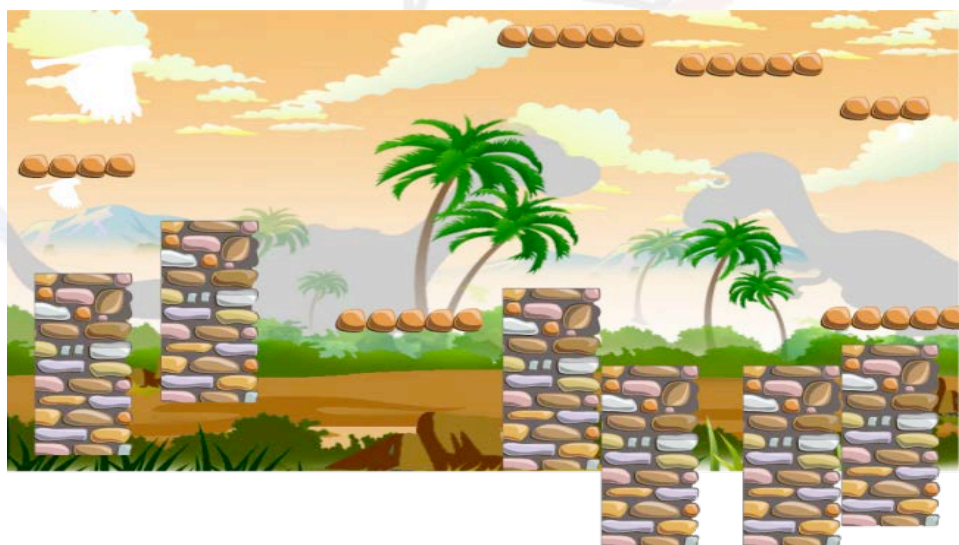

Figure 8. The screen of level-1 reincarnation

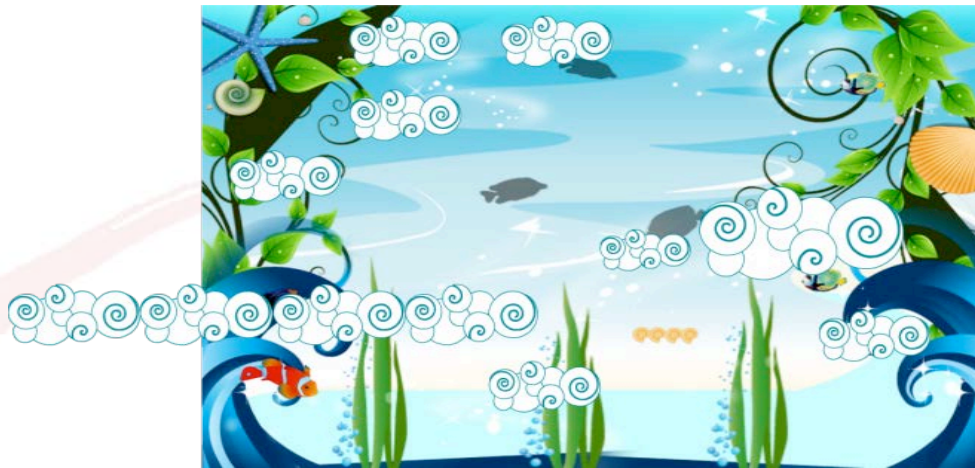Figure 9. The screen of level-2 reincarnation

Figure 10. The screen of level-3 reincarnation

Figure 11. The screen of level-4 reincarnation

Figure 12. The screen of level-5 reincarnation

4.2 Process Analysis and Design

After characters and story boards were designed for the proposed computer game, the computing states corresponding to its goals, rules, and story boards, were analyzed and designed for its implementation. Some examples of the computing state diagrams are shown as Figure 13 to Figure 16.
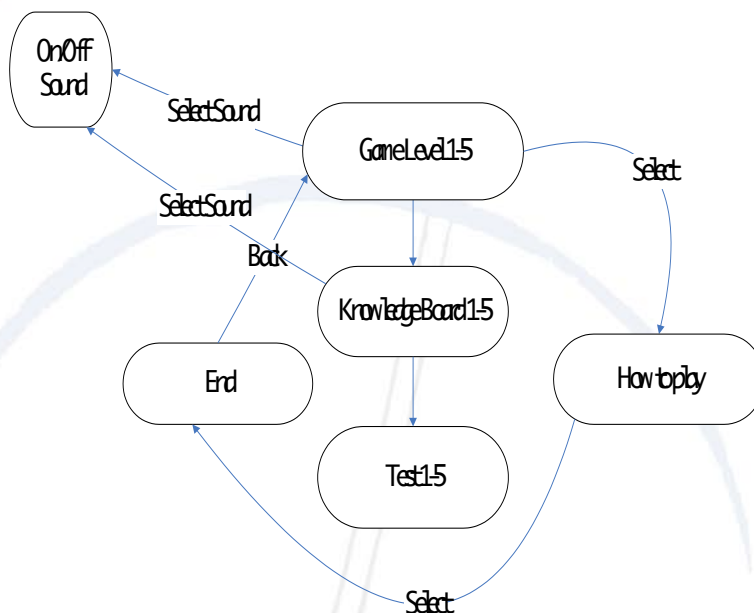
Figure 13. The state diagram for game playing process
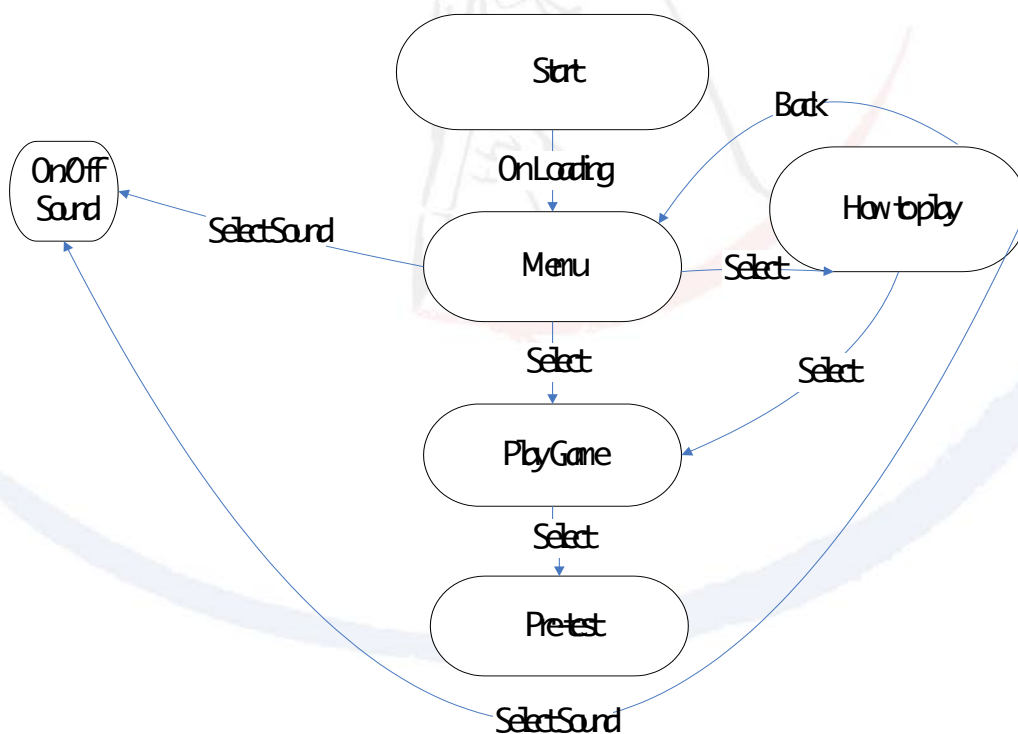
Figure 14. The state diagram for the main process
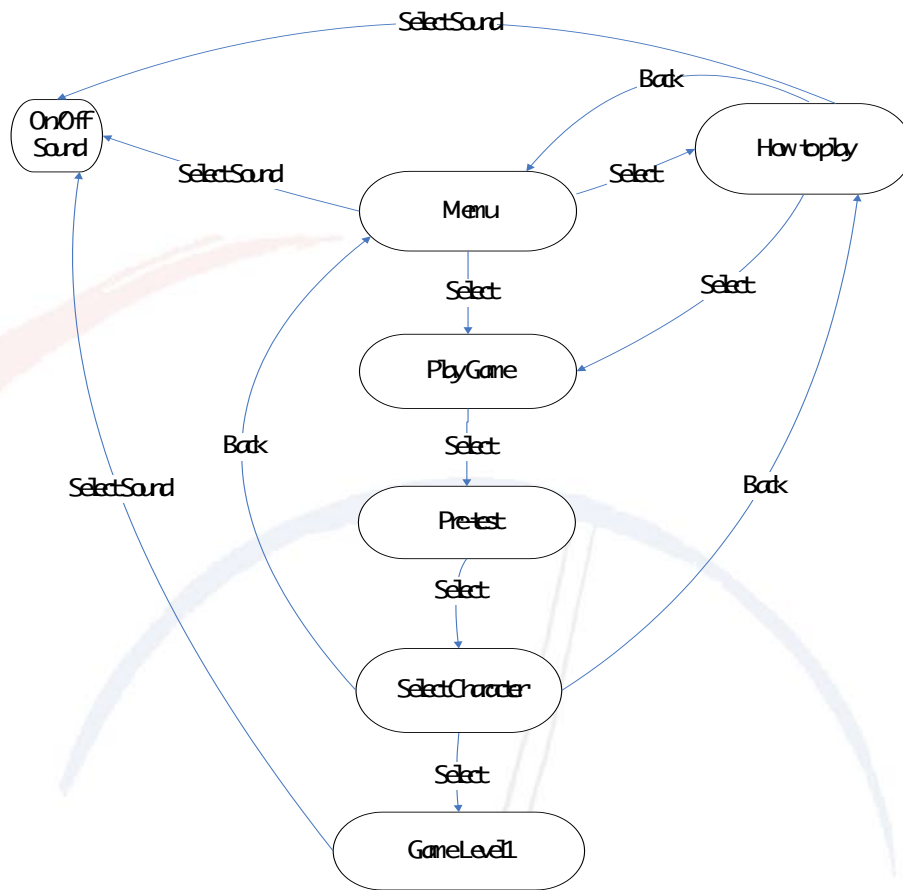
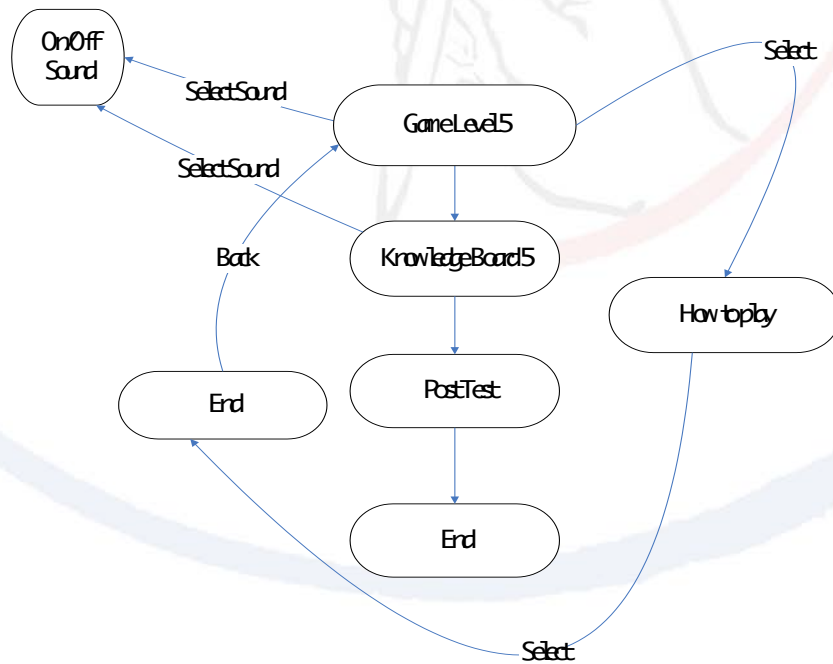Figure 15. The state diagram for character selection process

Figure 16. The state diagram for pos-test administration process

5. Game Implementation

From character analysis and design, storyboard design, process analysis and design, the proposed game was developed. Some examples of user interfaces are shown as Figure 17 to Figure 20. Figure 17 shows the main menu. Figure 18 shows the '*pret*' spirit's adventure going through monsters and dangerous space over the fire at the level-1 of game while Figure 19 shows the final goal of this level where the '*pret*' spirit finds a box of knowledge asset and appearing as a knowledge board as shown as Figure 20. After reading this knowledge, the player will answer the level-1 questions to go to the next level.
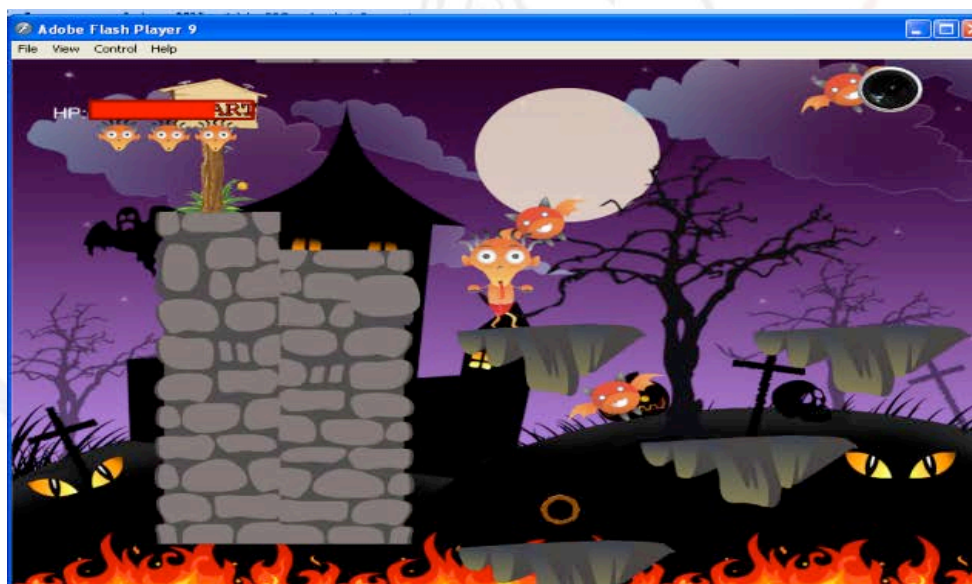

Figure 17. The main menu of game

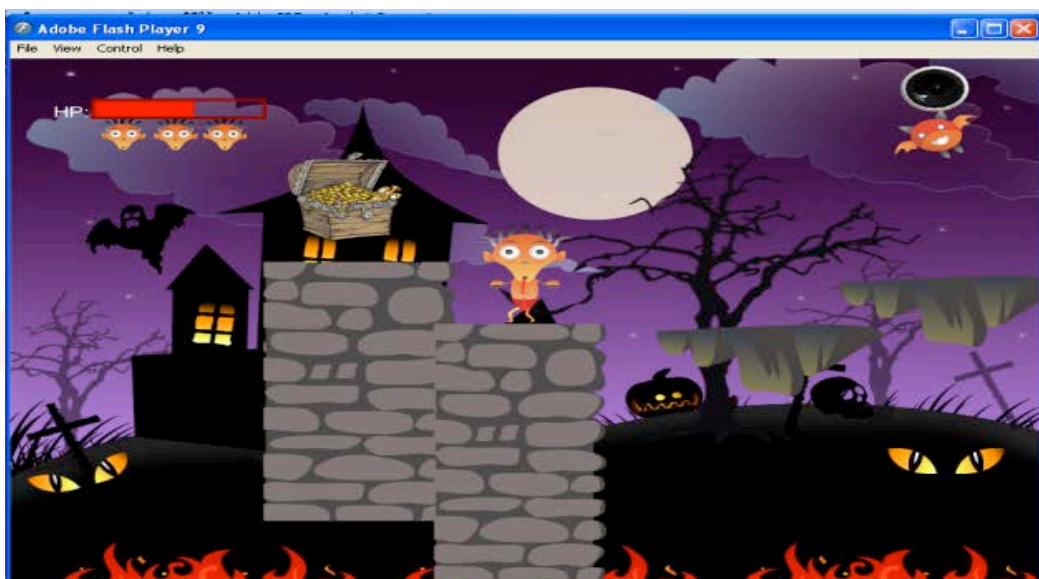Figure 18. The '*pret*' spirit's adventure at the level-1

Figure 19. The '*pret*' spirit got knowledge asset at the level-1
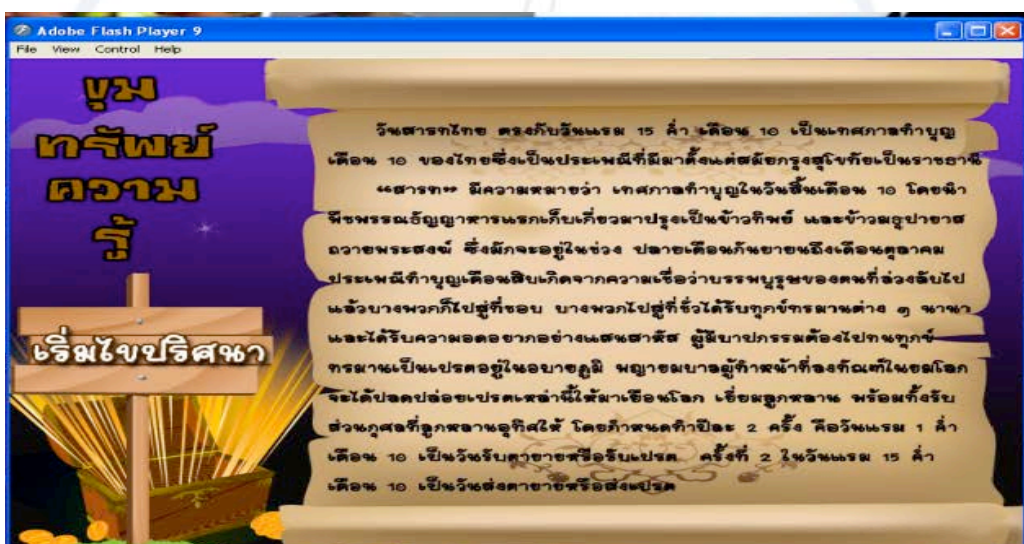

Figure 20. The level-1 knowledge board

6. Evaluation of the Proposed Computer Game

The proposed computer game was evaluated in our laboratory for users' satisfaction in terms of three categories: (1) its component and graphic design, (2) efficiency, and (3) learning-added value. Each category consists of related questions in a given questionnaire. Ten subjects were voluntarily drawn from students at the Information and Communication Technology Program at Prince of Songkla University, Thailand. They were asked to complete the questionnaires after playing the proposed computer game. The overall results of each category are shown in Table 1.

TABLE 1.   The results of Evaluation

Evaluation Items	AVERAGE	SD
1. Components and graphic design	4.62	2.86
2. Efficiency	4.62	2.86
3. Learning-added value	4.66	2.96
Overall results	4.63	2.89

7. Conclusions

A computer game was developed for cultural learning and promotion. The Thai risk-loss tradition known as the dead ancestor merit-making days called the Thai Sart-day festival was used as a case study for cultural game-based learning. Cultural and knowledge elements as well as entertainment elements were integrated for the game design. This proposed computer game was elementarily evaluated by ten subjects for users' satisfaction in terms of its component and graphic design, efficiency, and learning-added value. The overall result of users' satisfaction was rated as very good quality. In future, this computer game and its evaluation should be redesigned in order to better reflect on learning results in the sense of cultural learning and promotion. It should be applied to schools for cultural learning in classrooms. Moreover, it can be used to promote risk-loss cultures to the new Thai generation.

8. Acknowledgment

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