

Learning Experience of Game Poetry: A New Approach for Poetry Education

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Abstract: Poetry is a creative language which enhances imagination and self-reflection. However, the ambiguity of poetry increased the difficulty in interpretation, which builds students' negative learning perception and demotivates most students to read poetry. Previous research implied the positive relationship between the ease of interpretation and learning perception. Besides, many studies showed the positive effect of active participation on interpretation. Meanwhile, game is able to improve the interpretation by rich feedback and narratives. Previous research also suggested game-based learning positively improves students' learning perception and motivation. To the end, this study develops a game-based learning system for students. Both quantitative and qualitative analyses are applied to evaluate the improvements of students' perception. Besides, Spearman's correlation was applied to explain the relationships among learning perceptions, such as interpretation, active participation, and playfulness. The results argued active participation was significantly related to interpretation. However, the improved attraction was positively related to students' participation, interpretation, and learning perception.

Keywords: Game-based learning, poetry, user perception, interpretation.

1. Introduction

Many literature workers believe poetry is a creative language which is able to provoke reflection of the self and society (Wainwright, 2004). However, the ambiguity of poetry increases the difficulties for students to interpret the enjoyment of poetry. In other words, the difficulties of interpretation build students' negative perception of poetry and in turn demotivate them to read poetry. Therefore, the interpretation of poetry positively affects learning perceptions (Hill & Newall, 2004). To improve students' perception and motivation, the interpretation needs to be highlighted. However, some studies argued the effectiveness to improve the interpretation in traditional learning (TL). That is, in a TL context, students passively listen to the explanations without active interpretation of poetry, which limits the effects to improve students' interpretative skills of poetry (Siemens & Schreibman, 2008).

Meanwhile, game-based learning (GBL) shows positive effect on learning. Many studies indicate GBL significantly improve students' participation and learning performance (Hwang, Wu, & Chen, 2012). GBL provides rich and clear feedback to support student learning in a flexible environment. In other words, the freedom and rich interactions of GBL attract students to learn actively (Bleumers, All, & Marien, 2012). Moreover, the playfulness of GBL also strongly improves students' learning perception and motivation (Connolly, Boyle, MacArthur, Hainey, & Boyle, 2012). Previous research indicates GBL can enhance students' self-efficacy, which improves students' frustration in learning and their negative perceptions of the specific subjects, such as health management and public participation (Bleumers et al., 2012). Due to the aforementioned benefits, GBL is considered as useful learning tools, which have potential to improve students' interpretation, active participation, and perceptions to interpret poetry.

To the end, this study develops a GBL system for students. To examine the improvement of active participation, interpretation and negative perceptions of learning poetry, students' subjective feedback was examined by comparing the learning effectiveness of the traditional and game-based learning. Moreover, spearman's correlation was applied to analyse the relationships among learning perceptions, such as active participation, interpretation, and playfulness. In brief, this study attempts to find answers for the following two research questions:

- (a) How GBL improve learning perceptions of poetry in the context of GBL?
- (b) What are the relationships among learning perceptions in the context of GBL?

2. Methodology

2.1 System Design of the Game-based Learning System: Skysea

A game-based learning system named Skysea was developed to present “The interpretation of digital poetry” for university students. To improve the active participation, interpretation, and negative perception of poetry, the GBL was designed as a 2D side-scrolling Action Role-Playing Game (ARPG). In other words, this GBL includes two characteristics: action game and role playing qualities. More specifically, ARPG was able to demonstrate both of the interactive and linguistic qualities of digital poetry (Figure 1). Moreover, the immediate feedback and rich interactions of action game were able to improve the playfulness and student’s immersion in gaming, while the simulative narratives of role-playing qualities were able to help students interpret poems(Ryan, 2009; Wolf, 2006).



Figure 1. The game design to present linguistic (left) and interactive (right) qualities of digital poetry.

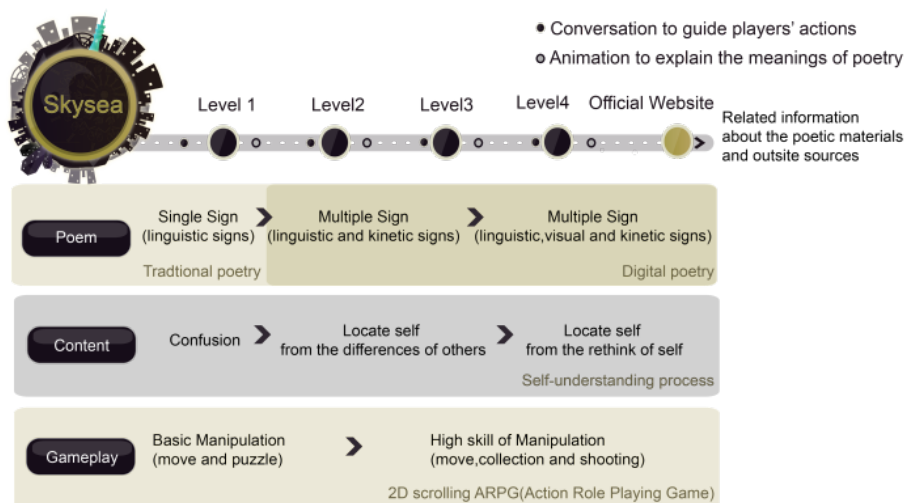


Figure 2. The design model of Skysea.

Figure 2 displays the design model of this system which covers the aforesaid aspects. Regarding the improvement of active participation, the active interpretation of poetry was considered as the key to clear each level. For example, a short poem was applied as the level goal and students had to interpret the meanings of the poem to clear the level (Figure 3). In this way, it was less possible for students to skip the poems while gaming. Therefore, students were able to practice their interpretation skills of poetry.



Figure 3. The poem as level goal of level 2 in Skysea.

Regarding the improvement of interpretation, the level design focused on the two aspects of improvement. One is to develop students' interpretative skills while the other is to improve the ease of understanding. To improve students' interpretative skills of poetry, each level was designed as a digital poem written from single (i.e., the linguistic signs) to multiple sign systems (i.e., the linguistic signs plus the visual and kinetic signs). By doing so, students were able to learn poetry from the familiar linguistic form to the digital form of poetry, and they were able to develop their understanding of digital poetry during the process of playing the GBL.

Regarding the improvement of ease of interpretation, the simulative narratives were able to guide students to interpret the meanings of poetry by themselves (Rutten, van Joolingen, & van der Veen, Jan T, 2012). More specifically, there are both conversation and animation to translate the meanings of each poem, which facilitate students to understand the meanings of each level without direct explanations to limit their imagination (Figure 4). Therefore, this design provided students with the flexibilities to rethink and learn the other concepts from their interpretation of this game (Yevin, 2006).

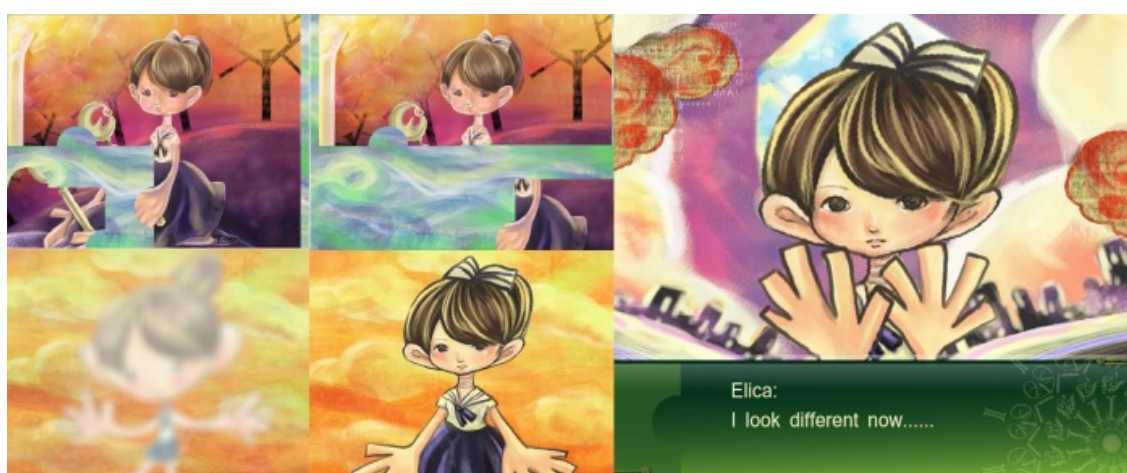


Figure 4. The animation and conversation to support students' interpretation of poems in Skysea.

Moreover, previous studies suggested the wrong selections of poems which described the unfamiliar experience from students' life experiences may increase the difficulty to interpret poetry. Hence, the poems of this game were selected to match to students' life experiences (Hughes, 2008).

Regarding the improvement of negative perception of learning poetry, previous studies suggested the fruitful narratives and interactions were able to improve the playfulness (Rutten et al., 2012; Wolf, 2006). More specifically, the storytelling of indirect explanation of poems can evoke students' creativity and indeed they are able to gain more fun from the different views of interpretation (Yevin, 2006). Regarding the interaction design, many game designers indicated that there is a need to provide students with various choices and surprises so that the playfulness of learning poetry can be promoted (Schell, 2008). Therefore, Skysea supplied a variety of qualities of gameplay in each level. For example, a puzzle was put into the first level as a code door, and the collection and other qualities were applied in the next levels (Figure 1). Besides, the rich feedback and stimulus, such as visual and sonant effects were also provided to attract students (McDougall & O'Brien, 2008).

2.2 Experiment Design

2.2.1 Research Model

To find the answers for the two research questions described in Section 1, an experiment was conducted to evaluate the GBL system: Skysea. Figure 5 displays the research model of this study. More specifically, the comparison of learning preferences, performance, and effectiveness between TL and GBL were conducted. Students' subjective feedback was categorized and was analysed to examine the relationships among these categories.



Figure 5. The research model of this study.

2.2.2 Research Instruments

Two questionnaires were employed in this study. The first questionnaire was used to identify students' basic information, such as age and gender. The second questionnaire included three open-ended questions, which were employed to assess their subjective feedback to compare the learning effectiveness between TL and GBL.

The learning effectiveness was assessed from preferences, perceptions and performance. , Students' had to compare the learning preference, performance, and perceptions between TL and GBL, and they had to provide the reasons for their choices.

2.2.3 Experiment Procedure

A total of 30 graduate students from the National Central University in Taiwan participated in this experiment. The participants included 20 male and ten female non-poetry readers, and they did not have any experience and understandings of digital poetry. However, these students had the basic understandings of poetry and computing skills necessary to play a GBL system.

Regarding the experiment procedure, the participants were asked to complete a questionnaire to describe their basic information in the beginning. After they completed the questionnaire, they had to play the GBL and clear all the levels. After they finished playing the game, they were requested to complete another questionnaire to assess their subjective feedback. The total time for the experiment was about 60-80 minutes.

2.2.4 Data Analysis

To understand whether the GBL improves the interpretation and perceptions of poetry, students' subjective feedback was analysed in a quantitative way. In addition, the students' responses were examined in a qualitative approach to identify the differences between GBL and TL. To understand the strengths and weaknesses of GBL, students' feedback was categorized based on their similarities. Furthermore, these categorized data were analysed by spearman's correlation to identify the relationships among various dimensions of perceptions.

3. Results and Discussions

The quantitative result shows most students (N=21) preferred to learn poetry by GBL, instead of neutral (N=7) or TL (N=2). Table 1 displays the strengths and design issues of GBL. Figure 6 demonstrates the relationship among these categories. As shown in Figure 6, the improvements and relationships among learning perceptions will be discussed from three aspects, participation, interpretation of poetry, and learning perceptions. Indeed, the influences of design issues on each aspect will be also discussed in the follow sections.

3.1 Active participation in learning

As shown in Table 1, GBL strongly improved the active participation of student learning (N=17). Many students (N=16) considered that the GBL provides a simulative experience by providing both visual and sound attractions, which enhances their immersion to play the GBL ($p < 0.05$). In other words, the GBL positively affects students' immersion to make them take an active way for their learning. Therefore, this result demonstrates the positive influences of visual and auditory presence on students' active participation. This result also supports the previous research, which indicated that presence positively affects the active participation (Hou, Nam, Peng, & Lee, 2012).

Besides, a positive relationship exists between active participation and freedom of choices ($p < 0.01$). Some students (N=12) mentioned that the GBL provides freedom of choices to explore the meanings of poetry, which enhances their controllability in learning. Indeed, the improvement of empowerment encouraged them to have positive engagement. The result supports the positive effect of empowerment in students' active participation (Bleumers et al., 2012). In turn, the improved attractions and participation also improved students' impression of poetry (N=13). For example, a male student (No.27) explained the active participation helped him understand the poetic experiences of poetry, and indeed the gaming experience was able to help him memorize the content of poetry. Another female student (No.15) also described the various visual and sonant effects enhanced her impression of poetry. Moreover, she was able to understand the poems better through gaming. Such results implies the positive relationships among active participation, attraction, and impression ($p < 0.05$). Besides, there is a positive relationship between clear learning focus and active participation ($p < 0.01$). This may be due to the fact that the clear goal and feedback can reduce students' confusion so that they are able to immerse into the game better (Adams, 2010). Therefore, to improve the active participation, there is a need to provide clear goals and feedback to prevent disorientation in GBL.

Although previous studies believed there was a positive effect of active participation on learning performance, there was no significant relationship between interpretation and active participation in this study ($p > 0.05$). This may be due to several design issues. Firstly, some students indicated the improved attraction enhanced their participation in gaming, however, the unclear learning focus (N=2) or improper matched content and gameplay (N=7) influenced their learning performance. Moreover, few students (N=4) complained the manipulative difficulties made them be unable to focus on the learning content while gaming. Thus, they hardly improved their interpretive skills during the process of the participation. The aforementioned results suggest that the proper gameplay and challenges should be considered in GBL design to improve the learning effectiveness (Kiili, 2005).

3.2 The Interpretation of Poetry

Regarding the interpretation of poetry, GBL slightly improved students' interpretative skill of poetry and the ease of interpretation by providing simulative attractions and rich feedback (N=14). Regarding the ease of interpretation, many students (N=14) explained they are easier to infer the meanings of poetry through the simulative experience in the GBL. In particular, GBL provides fruitful visual and sonant narratives for them to interpret poetry, which helps them imagine the poetic experience and understand the meanings of poems. Previous studies also suggested simulative experiences enhanced students' empowerment and reflection in the learning-by-doing process, which, in turn, could improve the motivation and interpretation of concepts (Tao, Yeh, & Hung, 2012). Therefore, the results implies the positive effect of simulative attractions on the ease of interpretation ($p<0.05$), and impressions ($p<0.01$).

There is another reason to explain the positive effect of simulative attractions on the ease of interpretation and impression. That is, according to the visual communication theory proposed by Jamieson (2007), the visual and sonant attractions communicate more instinctively and are easier to be recognized than the linguistic signs. For example, a female student (No. 5) explained she were able to understand the poetic experience better through the visual narratives and music. However, she hardly interpreted the poetic experiences from the linguistic signs in the TL context. To the end, it was less possible for her to memorize the content due to the lack of interpretation. Such results address the positive effect of visual attractions on the ease of interpretation and impression. Besides, there are also the positive relationship between ease of interpretation and impression ($p<0.01$). Hence, there is a need to provide proper visual attractions to improve the ease of interpretation so that their impression can be enhanced.

Regarding the interpretative skills, there are the positive relationships among interpretative skills, playfulness, attraction, ease of interpretation, and impression ($p<0.01$). Many students (N=14) believed they were able to improve their interpretative skills of poetry better through the gaming process. In particular, the fruitful feedback of the simulative attractions and interactions were able to help students interpret poetry, which, in turn, supported students to build their interpretative skills. For instance, a female student (No.1) described she could interpret the poetic experiences directly through the gaming process because the attractions and interactions were able to provide her with immediate feedback to improve her interpretation. Another female student (No.29) explained the passive learning in the TL context was less attractive. Therefore, she was easier to lose concentration in learning and hardly improved the interpretative skills of poetry. Conversely, the playfulness of GBL could improve the immersion in learning and in turn build her interpretative skills better. To the end, the playfulness and attractions of GBL are able to build students' interpretative skills neutrally.

In brief, the aforementioned results demonstrate GBL improved both ease of interpretation and the interpretative skills of poetry through the rich feedback and simulative narratives. However, there is a negative relationship between attraction and freedom of imagination ($p<0.01$). A male student (No.6) explained the simulative attractions might limit students' freedom of imagination, which influenced the enjoyments of interpretation. Therefore, he did not prefer GBL because the simulation limited the other possibilities of interpretations in poetry. To the end, there is a need to consider students' different preferences while providing simulative experience.

3.3 The Perceptions of Poetry

Regarding the improvements of negative perceptions of poetry, GBL strongly improved the negative perceptions that poetry is joyless and hard-understanding. As shown in the previous section 3.2, many students confirmed the positive effect of GBL to improve the interpretation of poetry. Regarding the enjoyment, Over the half of students (N=16) described the gameplay and visual attractions improved the playfulness of learning, which enhanced their motivation to interpret poetry. A male student (No.14) described he was attracted to interpret poetry by the rich interactions and various surprises of game. Furthermore, GBL also provided an entertaining environment with less tension on learning. Such "learning through playing" process attracted students interpreting poetry in a natural way. Therefore, many students preferred the positive learning experience from GBL when compared with the traditional approach.

To examine the improvement of playfulness in GBL, our results also find a positive relationship among playfulness, attraction, and interpretative skills ($p<0.01$). Besides, there is a negative

relationship between playfulness and lack of clear learning focus ($p < 0.05$). Previous studies indicated the lack of learning focus may make students feel confused, and such confusion negatively affects students' perceptions and learning performance (Webster & Ahuja, 2006). Hence, to improve the perceptions and interpretative skills of poetry, there is a need to provide students with clear learning focus to guide their actions.

Regarding the positive relationship between attraction and playfulness, many students ($N=16$) described the fruitful stimulus and interactions not only attracted them, but also enhanced the enjoyments in learning. These findings are coherent with those of previous studies, which showed the positive effect of rich stimulus and various gameplays on the satisfactions of enjoyments (McDougall & O'Brien, 2008). Therefore, to improve the positive perceptions of GBL, there is a need to provide sufficient attractions to satisfy students.

Table 1: The strengths and design issues of Skysea.

Game-based learning ($N=21$)	
Strengths	Improve playfulness ($N=17$)
	Active participation ($N=17$)
	Rich interaction ($N=17$)
	Freedom of choices ($N=12$)
	Improvement of controllability ($N=12$)
	Improve attraction ($N=16$)
	Improve immersion ($N=16$)
	Improve interpretation skill ($N=14$)
	Ease of understanding ($N=14$)
	Easy to memorize ($N=13$)
Design issues	Lack of clear learning focus ($N=2$)
	Lack of freedom of imagination ($N=1$)
	Content should be matched to gameplay ($N=7$)
	Manipulation Difficulty ($N=4$)
	Consider the qualities of target audience ($N=2$)
	Lack of Human interaction ($N=1$)

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