Design and Evaluation of an Online Interactive Story Game for Learning the Theory of Love Attachment Style

Zi-Ying Li, National Taiwan University of Science and Technology, Taiwan
Yu-Chi Chen, National Taiwan University of Science and Technology, Taiwan
Huei-Tse Hou, National Taiwan University of Science and Technology, Taiwan

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Abstract
Love is one of the most important issues in life, and everyone may have different attachment styles of love, including their behaviors and attitudes in relationships. Learning to identify one's attachment style of love can help us understand our needs and build good relationships with others. This study proposes a multi-path contextual interactive story game for distance learning. The online Google form-based game "First Love" was designed with situated learning and the conceptual scaffolding to increase learners' knowledge of attachment styles and to provide opportunities for self-awareness and reflection. Participants were 16 adults in Taiwan, and the goal of learning activity is to continue the contextual script story in the game, in which students became the protagonist of the story, and depending on the options they choose, the protagonist then showed different attachment styles. Students could learn about attachment styles through the development of story situations. The game uses a four-quadrant diagram to present different style dimensions as the conceptual scaffolding, combined with situational examples, which allows students to understand the concepts of different attachment styles of love in a simplified diagram. At the end, it enhanced students' self-awareness and reflection on attachment theory. The results indicated that, the motivation was significantly higher than the median of the scale (i.e., 3), and the post-test was significantly higher than the pre-test, indicating that the game design had a positive effect on the motivation of students to learn attachment style knowledge and could be used to improve their learning performance.

Keywords: Love Educational Game, Situated Learning, Scaffolding

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Introduction

Attachment theory was designed to explore interactions with primary caregivers during infancy and is now used to research romantic relationships between partners. Attachment has a positive effect on the development of interpersonal skills because it helps people learn how to maintain intimate relationships and develop a positive self-concept, which helps to enhance their sense of self-worth and thus their interpersonal skills (Honghao et al., 2021), and attachment styles influence behaviors and feelings in relationships (Hazan & Shaver, 1987). Therefore, understanding the attachment style of the self and how to deal with attachment needs is important for establishing and maintaining good romantic relationships, so knowing the attachment style of the self can help people understand themselves better and can help build relationship and maintain good romantic relationships, emotional health, and interpersonal relationships (Martin, 1988).

Situated Learning emphasizes the connection between knowledge and real-life situations (Brown et al., 1989), and situation gives "meaning" to the learning content.

In this study, an online romance script game was designed using an online form to allow learners to learn about attachment styles through the relationship situation simulated in the game and to help learners understand themselves through self-awareness. "First Love" is a love script game to understand attachment styles (Figure 1-a). Learners will make different choices to express the attachment styles of the main characters and integrate them into the story with the realistic story to learn about the attachment theory and the four types of attachment styles (Figure 1-b) through the concept scaffolding and understand the characteristics of each attachment style. At the end of the game, additional information will be provided to guide the learners in self-reflection and self-awareness, so that the learners can have more knowledge about themselves after the game.

Figure 1. Love script game "First Love" game interface
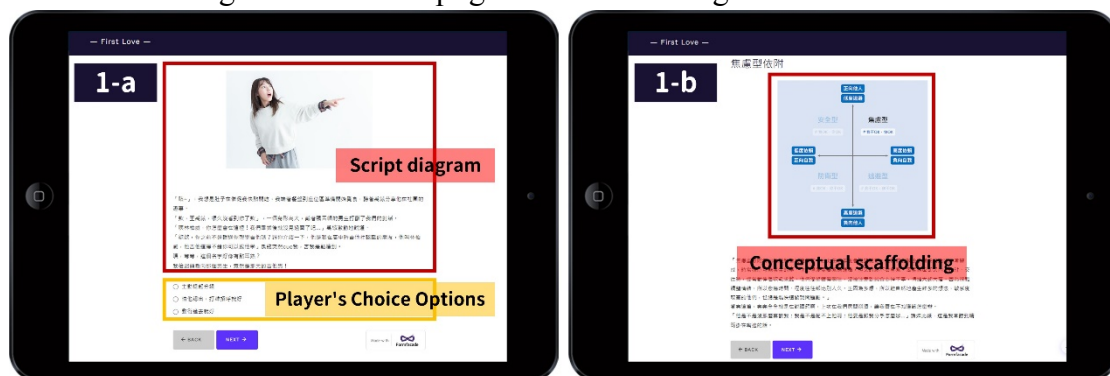
Methods

A total of 16 participants (9 females and 7 males) were enrolled in the study. Students and community members over 20 years old were recruited through the Internet. Each participant used a personal computer and participated in the First Love in their own space.

In order to analyze the participants' flow status during the experience, the questionnaire used in this study included of 22 questions Likert five-point scale flow scale translated and modified from Kiili (2006) by Hou and Li (2014), which contains two dimensions: flow antecedents and flow experience. The reliability of the flow scale is 0.897 (Cronbach's

alpha=0.897). In order to understand the anxiety of the learners during the game, the activity anxiety scale of the learning experience scale translated and adapted by Hong (2001) and Han (2002) were used, and a five-point Likert scale was used with a reliability of 0.703 (Cronbach's alpha=0.703) for 8 questions. In order to understand the participants' motivation in the game, the motivation scale was adapted from Keller's (1987) ARCS motivation model scale, and a five-point Likert scale was used. In order to understand the participants' understanding of the conceptual content of the attachment theory before the activity, the participants were given a pre-test and a post-test before and after the game experience to analyze the participants' learning effectiveness. The test has 20 multiple choice questions and a total score of 100. The questions were reviewed by experienced psychologists with 15 years of teaching experience. The flow of the learning activity phase of the study began with an activity presentation and pre-test (15 minutes), followed by a game experience (20 minutes), and finally a post-test and completion of the flow, anxiety, and motivation inventory questionnaire (15 minutes).

Results and Discussions

Table 1 shows the results of the analysis. Based on the results, it was found that the overall heart flow of the participants (M=4.50, SD=0.52) was significantly higher than the median 3of the scale (p=.000 < .001). Both dimensions of the flow scale, flow antecedents (M=4.38, SD=0.45) and flow experience (M=4.48, SD=0.40), were also significantly higher than the median 3 of the scale, indicating that the activity design and experience allowed participants to clearly understand the goal of the game and that most participants were focused on the activity. Based on the analysis of anxiety, it was found that participants' anxiety about the activity (M=1.85, SD=0.55) was significantly lower than the median 3 of the scale (p< .05). This suggests that the play mechanism of this activity does not cause excessive anxiety in participants, which is also consistent with previous studies (Hung et al., 2015; Lin & Hou, 2022). In the descriptive statistics of motivation, the participants' motivation to learn (M=4.40, SD=0.45) was significantly higher than the median 3 of the scale (p=.000<.001), indicating that the activity in this study encouraged students' learning motivation.

Table 2 shows the results of the learning achievement analysis. According to the results, The post-test is significantly higher than the pre-test, indicating that the participants' learning achievement could be improved by the activity experience.

Table 1. *Flow, Motivation, and Anxiety Analysis (Wilcoxon Signed-rank Test, median = 3)*

Dimension	M	SD	p
Overall Flow	4.50	0.52	.000[***]
Flow antecedents	4.38	0.45	.000[***]
Flow experience	4.48	0.40	.000[***]
Motivation	1.85	0.55	.001[**]
Activity anxiety	4.40	0.45	.000[***]

[*]p <0.05，[**]p <0.01，[***]p <0.001

Table 2. *Descriptive Statistics Analysis of Learning Effectiveness*

	Pre-test		Post-test			
N	M	SD	M	SD	z-score	p
27	54.38	14.71	63.75	9.20	-1.985	.047[*]

[*]p <0.05

Conclusions and Limitations

This study developed an online romance script game "First Love" with the theme of learning attachment styles. The game uses a realistic and multifaceted situation to allow learners to experience the story generated by different attachment styles, and to learn attachment style knowledge through story progression to achieve self-awareness and reflection. The above statistical analysis shows that the learners' flow experience and motivation are significantly higher than the median 3 of the scale, indicating that the design of the game enables the learners to achieve a certain degree of flow experience and has a positive effect on motivation. Learners' anxiety in the activity was significantly lower than the median 3 of the scale, indicating that the game mechanism did not cause excessive anxiety in the learners. The learning effectiveness section also reached a significant level, indicating that learning attachment style knowledge through "First Love" can improve learning performance. In the future, we will increase the sample size, add the attachment style guide suggestions and design more scaffoldings to compare the effectiveness of the love script on learning attachment style knowledge and scaffolding assistance with or without scaffolding assistance in a quasi-experimental design.

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Contact email: hthou@mail.ntust.edu.tw