Evaluating an Online Role Playing Game for Promoting the Elementary School Students' English Speaking Abilities

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Abstract—*Learning how to speak in foreign language has been identified as a big challenge. Constructing an interesting environment can reduce the learners' speaking anxiety and enhance their motivation. Digital game can be used for building such an attractive learning environment, and it can make the player to be actively involved in their learning. Nevertheless, little research focuses on enhancing the EFL learners' speaking ability by means of digital game. This study adopted an online role playing game-Talking Island as a platform in online speaking activities, conducted a learning experiment in an elementary school, and evaluated its suitability by experienced teachers and the students.*

Keywords-online Role Playing Game; speaking ability; evaluation; elementary school; EFL

I. INTRODUCTION

English is the most popular language in the world; many countries adopt it as a primary foreign language. Most of Students in Taiwan begin to learn English as a foreign language from third grade. Among all the elements of learning a foreign language, the most important ability is speaking. However, teaching how to speak has been identified as one of the biggest challenges in foreign language education [1], and developing oral skill is the most frustrating experience for foreign language learners [2]. Moreover, speaking in the target language poses particularly great difficulties for the anxious student [3, 4].

In most traditional teaching environments in Taiwan, English teachers often adopt test-oriented and teacher-centered pedagogy, emphasizing reading and writing abilities, so students have little chance to use spoken English [5], not to mention that when this type of pedagogy is relied on, individual needs and difference cannot be addressed satisfactorily [6]. All of disadvantages of English teaching environment will reduce the learners' motivation. Other aspects of the environment add to the problems of teaching speaking. In large classes, English teachers cannot schedule enough time for activities that increase oral communication skills [5, 6]. In addition, the social context is inhospitable to promoting English speaking. Even though many schools hire native English speakers to teach English classes, most students in Taiwan feel great shame at talking with their native-English-speaker teacher face to face [7]. Moreover, In particular, most students' parents have little or no English speaking ability themselves and therefore cannot offer opportunities in the home for enhancing their children's speaking competence in real life conditions.

Motivation is a key factor of successful learning [18], and anxiety will hinder the learners from practical drill such as speaking to native-English-speaker face to face. According to Sato [8], to reduce speaking anxiety and to enhance students' motivation, the learning atmosphere should be encouraging and the topics or oral activities should be interesting for the students [8, 9]. Also, learner anxiety can be reduced by designing interesting activities and constructing a learning environment without learning pressure [8, 9].

Game is a fundamental part of human life, and the original purpose of game-playing is to learn [19]. Based on the research of Garris, Ahler, and Driskell [20], game-based educational programs are more effective on learning and teaching if incorporating game features for enhancing the student's motivation.

Information and communication technology has a powerful potential to eliminate some of the obstacles to English learning [1], especially using digital games to construct an interesting and low-pressure learning atmosphere. Many possible ways of using information technology for improving the learning environment in EFL class have been proposed. One focuses on designing digital game-based systems for enhancing the student's vocabulary ability [10, 11]. Prior research has also aimed at developing small digital games for promoting elementary and secondary students' sentence-writing abilities [12, 13, 14], and at employing mobile device and IRT to design a personalized English vocabulary learning system [15]. Some of previous results revealed significant positive effect on the students' abilities [13], but the other research did not have such results [12].

As a whole, most of the previous research in this area has focused on enhancing the learners' writing and vocabulary ability. Little study attention has been paid to using digital game-based learning to improve the student's speaking ability and to reduce the dilemma of speaking in the learning process.

How to integrate game-based learning and information technology to enhance the learners' English speaking motivation and ability in EFL class is thus an important issue. The study described here seeks to evaluate the potential of an online RPG game (named Talking Island) for promoting English-speaking ability. This study employed Talking Island as a speaking environment, and conducted an experiment for assessing its suitability.
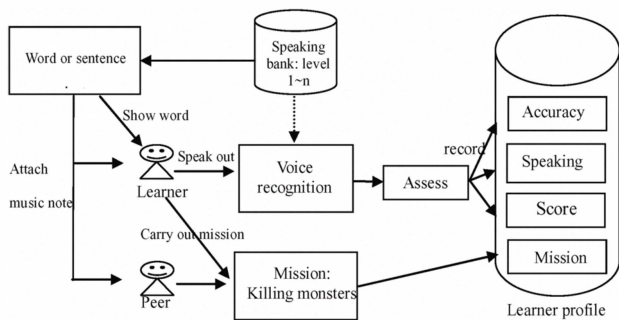

FIGURE 1. Scenario of game-based speaking activities and system processing in Talking Island

II. TALKING ISLAND: ONLINE RPG GAME

A role playing game consists of six components including display, combat, episode, skills and gifts, enemy, and non-player character [16]. Talking Island is an online RPG game system, developed by iSland Technology Company for potential use in promoting English speaking ability. Based on Rollings and Adams [16], the main components of this digital game system are depicted as follows: (1) Display: This game is a kind of web-based environment of two-dimension display; (2) Combat: The monsters will actively fight with the players; (3) Episode: The game is a scenario of super-kids attacking the monsters and defending their pets; (4) Skills: The system will ask the players to show their English speaking skills, and upgrade the level of the player if the players speak loud and accurately. (5) Enemy: The enemies of the players are monsters with different power.

In the Talking Island system, the player can play a role of "superkid" with a mission of protecting his virtual pets and attacking monsters. Players earn rewards such as virtual coins for finishing a mission. In the game playing process, the system will post musical notes on the player based on the students' level before carrying out a mission, as shown in Figure 3. Every musical note stands for a task in speaking activity. Before each game mission, the player has to speak aloud a word or sentence specified by the game system, as shown in Figure 2, For instance, the first mission, named "Superkids and the Secret News", will ask the player to speak "There is a monster.". As the player speaks, his/her

voice will be recorded into the system and analyzed to assess speaking accuracy. The system scores the student's level of accuracy of speech by star numbers, from 5-star (excellent level) to 1-star (worst level), as shown in Figure 3. When the player gets over 3 stars, he passes this task. After finishing all of task posted in her/his music notes, the player can execute his mission such as killing a virtual monster.

When multiple players work as a team in a RPG system, they can develop social skills including communication, collaboration and resource allocation [17]. Because this system offers social environment, the players can carry out their missions cooperatively with other peers and they can acquire more social skills eventually. Nevertheless, the purpose of this study will enhance the players' speaking skills in the social atmosphere; on the contrary, this study does not emphasis the learners' social skills.

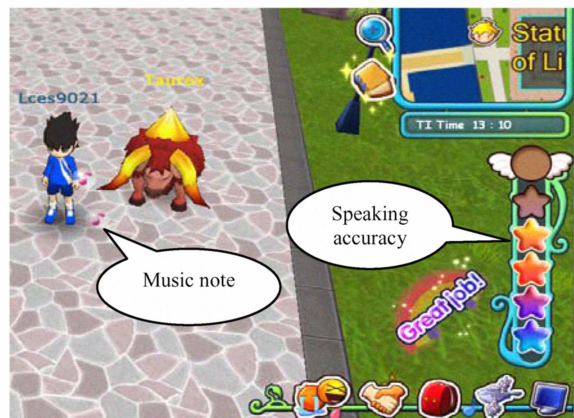Figure 2. A game player is asked to speak loud "people"

Figure 3. A played gets 4-star after speaking

Based on the Preskey's viewpoint [18], an effective educational game design has to balance between fun and learning value. Due to this consideration, there are 53 main missions and 140 auxiliary missions in this digital game system. The total number of English words and sentences used in the game environment are 15,000 and 2,632 respectively. The speaking activities consist of 1037 word patterns and sentences which will be spoken by the players in

order to pass all the tasks. All of a player's performance on each task, including accuracy level, score, and speaking times will be shown in a music book (as shown in Figure 4) and recorded in each player's individual user profile, The scenario of this game system is depicted as Figure 1.

FIGURE 4. A PROFILE OF A PLAYER IN SPEAKING ACTIVITIES

III. METHODOLOGY

A. The subjects

In order to evaluate the suitability of this model, this study conducted a learning experiment. The subjects were 24 third grade students from one class in New Taipei City at the school's computer room. The students had studied English from their first grade. Their English classes in first and second grade were two hours per week, and three hours in third grade. They had basic computer skills including operation of Ms-windows and web browser.

In this experiment, the students were asked to sign into Talking Island to play the online RPG game for two hours per week, and to do this for three consecutive weeks. They could play the game either individually or invite their peers to carry out their missions cooperatively. After the 3-week experiment, they were asked to complete a questionnaire of the online RPG game for learning to speak English.

This study employed 30 experienced elementary school teachers to evaluate the game. We first demonstrate to the teachers the operation and core concepts of this online role playing game, and then all of them login to the system to experience the game themselves. Thereafter they complete a questionnaire assessing online RPG as a device for affecting English speaking ability.

In the pilot study stage of this research, we investigated the current teaching situation in elementary school English classes by interviewing 10 experienced English teachers. The results indicate that (1) the most difficult element to teach is: speaking (50%). Listening (20%), and reading (20%); (2) the most difficult to learn is: speaking (80%), reading (20%). These results depict the dilemma of teaching and learning English in elementary school in Taiwan.

B. The instruments

This study developed an inventory of the suitability of this online RPG game for promoting the students' speaking ability. We employed experts on e-learning to evaluate this instrument and to advice on how to revise it. This inventory consists of four dimensions: easiness of game, interest of game, helpfulness, confidence enhancement, attractiveness for continuous playing. This instrument contains 26 items. The Cronbach's Alpha coefficient of whole instrument is .943, and all facets of it are greater than 0.7, indicating that this measurement tool is reliable.

In order to investigate the learners' feelings and perception about the online RPG game for promoting their speaking skills, this study designed a questionnaire which contains four facets: easiness of game operation, helpfulness in teaching, helpfulness on learning, negative effect of online RPG. This instrument consists of 28 items. The Cronbach's Alpha coefficients of the four facets range from .719 to .830 (greater than 0.7), indicating that the reliability of this instrument is adequate.

IV. RESEARCH RESULTS

A. Student's learning behaviors in the process of online speaking activities

TABLE I. THE STATISTICAL RESULTS OF STUDENT'S BEHAVIORS IN ONLINE RPG GAME DURING 3-WEEK EXPERIMENT

Behavior type	min	max	Mean	SD
Speaking times	50	432	221.81	111.33
Words or sentences numbers spoken by game player	38	202	115.5	41.98
Frequency of attaining 5-star after speaking	9	124	47.58	27.04
Frequency of attaining 4-star after speaking	10	92	52.46	24.75
Frequency of attaining 3-star after speaking	12	122	49.15	32.28
Frequency of attaining 2-star after speaking	4	119	50.58	32.29
Frequency of attaining 1-star after speaking	2	59	22.04	15.62

This study conducted a 3-week learning experiment in an elementary school, and the statistical results of student's behaviors in online RPG is shown Table I. This study divides the learner's behavior into three categories: (1) Speaking times: The average of speaking frequency in the online game-based speaking activities is 221.81, its range is between 50 and 432.; (2) Words or sentences numbers spoken in online game: When the learners want to carry out a mission, the learners have to speak words or sentences specified by the system. The same word or sentence may be

asked to speak out several times randomly. The results of their behaviors show that the average of word or sentences spoken by the learners is 115.5; (3) Accuracy of speaking: The accuracy of English speaking ranks from 5-star to 1-star, indicating that 5-star is the most excellent performance after system recognition, 1-star and 2-star mean worse performance in speaking, shown as Figure 3. For instance, the system asked the participants to speak "hello" randomly, and the frequency of the learners' performance ranked from 5-star to 1-star is 20, 14, 13, 11, 1 respectively. If we adopt speaking times as divisor, 45.1 percent of speaking is assessed as great performance and 32.7 percent of speaking is evaluated as worse performance. The previous statistical result reveals that the learners are immersed in their online speaking activities.

B. Students perception about English speaking activities in online RPG

The results concerning student perceptions about English speaking activities in Talking Island, is shown in Table II, indicating that: (1) Easiness of game (item #1~4): Most of the students think that this game is easy to use and control. In addition, they agree that they can easily invite their peers to form a team for playing this online game cooperatively. (2) Interest of game (item #5~9): About 86 percent of the students like to play this game, and over 70 percent of them like to speak out the word or sentence specified by this game system. As a result, 76 percent of them like to learn English under the environment of this game. (3) Helpfulness (item #10~15): Over 80 percent of the student regard this game as a helpful tool for promoting their listening and speaking abilities, on the other hand, about 76 percent of them think that this game can help them to improve their reading competence. About 80 percent of them think that this game can increase their interest in learning English. About 60 percent of them agree that this game can reduce their terror about speaking English. (4) Confidence enhancement (item #16~18): About 90 percent think that they became more confident in speaking English after playing this game. (5)attractiveness for continuous playing (item #19~26): In order to attain more rewards for their pets or upgrade their level, over 90 percent of the learner like to go on playing this game. In addition, over 80 percent hope to learn English or other subjects through game-based learning environment. This statistical result shows that the digital game can promote the learner' active participation and enhance the sustainability of learning resource.

TABLE II. STUDENTS' PERCEPTION ABOUT LEARNING ENGLISH IN AN ONLINE GAME

Items	5(%)	4(%)	3(%)	2(%)	1(%)	M	SD
1. This game is easy to use.	63.3	26.7	10	0	0	4.53	.68
2. I can quickly learn to how to use this game?	53.3	20	20	3.3	3.3	4.17	1.09
3. I can easily organize a team for playing this game cooperatively.	43.3	40	13.3	0	3.3	4.20	.93
4. I can easily complete some mission of this game.	33.3	23.3	26.7	13.3	3.3	3.70	1.18
5. I like to play this kind of RPG game.	56.7	30	13.3	0	0	4.43	.728
6. I like to speak out the word or sentence specified in this game.	36.7	36.7	23.3	3.3	0	4.07	.87
7. I like to collaborate with my peers for finishing some missions.	60	23.3	10	6.7	0	4.37	.93
8. I like to learn English in this game.	63.3	13.3	20	0	3.3	4.33	1.03
9. I like to take care of my pets of this game.	60	36.7	3.3	0	0	4.57	.57
10. This game is helpful in promoting my listening ability.	60	23.3	13.3	3.3	0	4.40	.86
11. This game is helpful in promoting my speaking ability.	60	23.3	16.7	0	0	4.43	.77
12. This game is helpful in promoting my reading ability.	60	16.7	20	0	3.3	4.30	1.02
13. This game is helpful in promoting my motivation of learning English.	43.3	30	16.7	3.3	6.7	4.00	1.17
14. This game can reduce my terror about speaking English.	36.7	23.3	13.3	6.7	20	3.50	1.55
15. This game can promote my interest in learning English.	70	10	13.3	3.3	3.3	4.40	1.07
16. I became more confident in speaking English after playing this game.	66.7	23.3	6.7	3.3	0	4.53	.78
17. I became more confident in speaking English in class after playing this game.	50	33.3	10	3.3	3.3	4.23	1.01
18. It is no longer hard for learning English after playing this game.	50	20	20	6.7	3.3	4.07	1.14
19. I will grasp chance for playing this game.	90	6.7	3.3	0	0	4.87	.43
20. In order to possess higher level of virtual pets, I will go on playing this game.	83.3	3.3	13.3	0	0	4.70	.70
21. In order to attain more objects for my pets, I will go on playing this game.	76.7	20	3.3	0	0	4.73	.52
22. In order to learn English better, I will go on playing this game.	83.3	10	6.7	0	0	4.77	.57
23. I will play other game in place of this one if there are more selections.	16.7	10	26.7	13.3	33.3	2.63	1.47
25. I wish that I can learn English by digital game in	76.7	13.3	6.7	3.3	0	4.63	.77

the future.							
26. I wish that I can learn other subjects by digital game.	70	10	13.3	0	6.7	4.37	1.16

(1): strongly disagree, (2): disagree, (3): neutral, (4): agree, (5): strongly agree

C. The result of teacher evaluation about English speaking activities in online RPG

The results of teacher evaluation about English speaking activities in online RPG are shown in Table III, indicating that:

(1) Easiness of game operation (item #1~3): Over 90 percent of the teachers agree on the easiness of operating the game of Talking Island including the back-end system. They also think that their student will spend little time on learning how to use this game.

(2) Helpfulness in teaching (item #4~11): Over 96 percent of the teachers agree on the positive effect of this digital game for promoting the students' interest in class (100%) and suitable for self-directed drills after class (96.7%). In addition, over 80 percent of them agree that this game can enhance teaching effectiveness (90%) and it is suitable for remedial learning (86.7%). The priority of applying this game on teaching and learning is ordered: after-class learning> integrating into teaching in class > remedial learning.

(3) Helpfulness on learning (item #12~24): This game is more helpful in promoting the student's listening and reading abilities than in promoting their reading competency. For different attribute of student, this game can enhance speaking confidence and interest of the shameful student and high achievement students than those of low achievement students. This game can reduce the shameful student's anxiety of speaking English.

(4) Negative effect (item #25~28): As to negative effect of online game on the learners, first of all, the teachers worry that the eye-sight of students will became worse; in the next place, they are concerned for the student's game addiction after long term playing and over use of computer. On the contrary, they don't worry about the violent behaviors affected by this game.

TABLE III.   THE RESULT OF TEACHER EVALUATION

items	5(%)	4(%)	3(%)	2(%)	1(%)	M	SD
1. Overall, I think that this online game system is easy to use.	26.7	73.3	0	0	0	4.27	.45
2. How to operate this game is easy.	26.7	63.3	10	0	0	4.17	.59
3. I can quickly learn how to operate this game including back-end system.	50	40	10	0	0	4.40	.66
4. Integrating this game into teaching can promote the learners' interest.	70	30	0	0	0	4.70	.47
5. Integrating this game into teaching can increase the learning achievement.	53.3	36.7	6.7	3.3	0	4.40	.77
6. This game is suitable for remedial teaching.	36.7	30	16.7	16.7	0	3.87	1.11
7. This game is suitable for self-directed drills after school.	56.7	40	3.3	0	0	4.53	.57
8. This game can promote the learner's speaking ability.	50	50	0	0	0	4.50	.51
9. I am willing to adopt this game system in my class if I am an English teacher.	36.7	46.7	13.3	0	3.3	4.13	.90
10. I am willing to adopt this game system for after-class learning guidance if I am an English teacher.	56.7	40	3.3	0	0	4.53	.57
11. I am willing to adopt this game system for remedial learning if I am an English teacher.	36.7	30	23.3	10	0	3.93	1.02
12. This game is helpful in promoting the learner's listening ability.	36.7	56.7	6.7	0	0	4.30	.60
13. This game is helpful in promoting the learner's speaking ability.	53.3	40	6.7	0	0	4.47	.63
14. This game is helpful in promoting the learner's reading ability.	20	43.3	26.7	10	0	3.73	.91
15. This game is helpful in promoting the learner's motivation.	76.7	20	3.3	0	0	4.73	.52
16. This game can promote the shamed learner's speaking confidence.	36.7	50	13.3	0	0	4.23	.68
17. This game can promote the high achievement learner's speaking confidence.	36.7	50	13.3	0	0	4.23	.68
18. This game can promote the low achievement learner's speaking confidence.	43.3	33.3	23.3	0	0	4.20	.81
19. This game can promote the shamed learner's interest.	46.7	43.3	10	0	0	4.37	.67
20. This game can promote the high achievement learner's interest.	43.3	50	6.7	0	0	4.37	.62
21. This game can promote the low achievement learner's interest.	53.3	33.3	13.3	0	0	4.40	.72
22. This game can reduce the shamed student's anxiety in speaking.	40	50	10	0	0	4.30	.65

	(1)	(2)	(3)	(4)	(5)		
23. This game can reduce the high achievement learner's anxiety in speaking.	36.7	36.7	16.7	10	0	4.00	.98
24. This game can reduce the low achievement learner's anxiety in speaking.	43.3	43.3	10	3.3	0	4.27	.79
25.I worry that game addiction will be imposed on the students over this game.	23.3	43.3	30	3.3	0	3.87	.82
26. I worry that the student's violent behaviors became worst than before.	3.3	23.3	43.3	26.7	3.3	2.97	.89
27. I worry that the student will waste more time in doing task unrelated to learning.	16.7	33.3	33.3	16.7	0	3.50	.97
28. I worry that this game will make the student's visual acuity worst.	26.7	46.7	23.3	3.3	0	3.97	.81

(1): strongly disagree, (2): disagree, (3): neutral, (4): agree, (5): strongly agree

V. CONCLUSION AND SUGGESTION

The online role playing game in Talking Island offers an interesting and attractive environment that makes the player speak loud the word or sentence in English for carrying out their mission individually or cooperatively. This kind of digital game-based learning environment can reduce the learners speaking anxiety in target language, and enhance their motivation and confidence. The statistical result from the learning profile in this online game experiment reveals that most of the learners get immersed in their speaking activities and show more confident in speaking English. After experiencing this game, most of the teachers agree that this game can have a positive effect on promoting English speaking ability, and can be used for after-class self directed learning and integrating it into teaching in EFL class. On the contrary, it is not adequate for the at risk students. In addition, the teachers also concern the negative effect on the learners including eye-sight and game addiction.

In order to survey the authentic effect of online role playing game on enhancing the learners' speaking ability, this study will go on conducting a long term experiment in an elementary school. Moreover, we will investigate the effect of learning attitude on English speaking including motivation and confidence.

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