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A Self-Observable Learning Cinema in the Classroom

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Abstract: In this study, we introduce a new method to perform educational drama in the classroom. Different from conventional drama in that the actors are performing in the scene and facing the audience so that the actors cannot see the performances of themselves. We develop a digital educational drama stage. The actors can see, face, and perform the scene and can see their performance in the digital scene like a mirror room. Other classmates can see their performing on the screen. The educational drama method is applied on English as a Second Language course in fifth grade students of a local primary school. In the beginning two months, 2 teachers and 2 classes with 62 students used our approach. After that, the two teachers reported that the students are more engaged and concentrated on the learning activities of the drama than conventional educational drama they used before. According to the interviews, teachers suggested applying digital educational drama stage to the fifth grade due to improving concentration in class.

Keywords: Authentic learning, educational drama, digital learning playground

1. Introduction

In a traditional classroom, a teacher may use "educational drama" as a tool for situated learning. By role playing in the drama, a student can experience the usage of the knowledge in the textbook. However, existing educational drama has many problems which need to be solved. A teacher may spend a lot of effort to arrange the scene of the drama for each lesson. Due to limited situational feeling on the dais, it's not easy for students to immerse themselves into the drama scene. Students may be nervous and lack of self-confidence when they face their classmates as audience. Moreover, it is also hard for them to reflect on their learning by watching and comparing with performance of classmates. Therefore, the level of involvement is low and effectiveness of drama learning is restricted.

We developed a digital educational drama stage in the classroom and applied on English as a Second Language course in fifth grade students of a local primary school. Teachers can utilize textbook's content to arrange the scene of the drama with our system according to their needs. Different from conventional drama teaching, we use Microsoft Kinect to have actors get into the digital scene. Performers and audience can see the performance on the screen simultaneously. Because performances of the students will be recorded and uploaded to the learning website, students can review their performance and reflect on themselves after class.

2. Related Work

2.1 Authentic Learning

Authentic Learning means that learning associates with real or lifelike situation. Through interacting with situation, learners would apply what they have learned to life more efficiently. (Brown, Collins, & Duguid, 1989) put forward situated cognition theory and considered that people's knowledge is developed through situation and activity. They emphasized that learners should learn in a real environment. (Moore et al., 1994) thought that the authenticity of learning activities is a significant part

of authentic learning. A learning activity is authentic if it is related to the real situation and is goal-oriented, for example, learning cooking and learning sewing. (Lave, & Wenger, 1991) proposed the situated learning theory named Legitimate Peripheral Participation (LPP) which emphasizes a teacher or a senior learner will lead a beginning student to learn. By imitating and absorbing specialized knowledge from the old-timer, newcomers will understand how to solve problems in an authentic process.

Authentic learning attaches importance to the interaction between learners and learning environment. Self-Observable Learning Cinema helps teachers construct a learning situation which corresponds to teaching content in a classroom. Students can experience the situation of textbook or daily life by getting into the virtual stage.

2.2 Learning Language through Drama

In language teaching, students use languages in order to convey real meaning and solve real-world problems. Learning languages through drama, students can express the language in a genuine way (Dodson, 2000). (Zyoud, 2010) considered that drama is an attractive teaching method. Drama can be a bridge between textbook and real life, it connects students' actions and thought. At the same time, drama advances participation of students and bring enjoyment to the classroom. (Booth, 1985) mentioned that children's perceptions are altered and expanded because of externalized representations, such as drama. As they grow in their acting skills, they will improve their ability of learning and communication. (Miccoli, 2003) made use of drama for teaching English oral skill in a Brazilian university. By recording students' voices and interviews as portfolios, she hoped to promote their ability of reflection and change. After three phases teaching, most students thought that they were not afraid of performance in class and had made great progress in English.

Self-Observable Learning Cinema applies the idea of educational drama in the classroom. Performers and audience can see the performance simultaneously in a digital way. It attracts students to watch their classmates' performance and enhance their participation in the classroom. Since actors do not need to face their classmates as audience, it can cultivate students' self-confidence and courage.

2.3 Digital Learning Playground

L-shaped Digital Learning Playground (DLP) is an interactive learning stage composed of vertical projection screen and horizontal tabletop. The projection screen shows various textbook materials with videos and sound effects and the horizontal tabletop used as an interactive platform for performing learning tasks.

(WANG et al., 2010) used textbook content to construct a task-oriented learning scenario. They placed a robot on the horizontal tabletop as a learning companion which assisted students with various tasks. They found that robot make students interested in learning. (Chen, Wu, & Chen, 2011)combined board game with DLP and used interactive whiteboard as manipulation tool. They invited some senior high school students to utilize their system and found that student have better effectiveness and engagement on learning compare to traditional teaching. However, the learners would spend more time exploring and being familiar with board game.

(Lin et al., 2014) established an immersive learning environment based on the content of English textbook. By integrating students' image into the virtual scene and letting them interact with the virtual character (an alien), it can promote students' immersion in class and help them learn when to use English sentence from textbook in daily life. Nevertheless, it was hard to adopt in classroom practically because the system could not let whole class participate in learning activities and was limited to particular lessons. In order to adapt to different teaching activities, (LUO et al., 2014) created an authoring system which helped teachers edit situation scene in DLP conveniently. They replaced the horizontal tabletop with tablet and use it as a manipulation tool for making teaching procedure easier. The result of prototype evaluation for university students and primary school teachers pointed out that students have higher learning motivation in the situation and teachers thought they can apply it to different teaching topics.

Above researches reveals that authentic learning in classroom cannot be limited by some specific topics or activities. In this study, we introduce Learning Cinema to primary school on fifth

grade students during an academic year. Learning Cinema makes educational drama activity more convenient and elastic. According to teaching progress, teachers can edit situational scripts for different topics. Furthermore, teachers also utilize tablet for controlling students' acting procedure. Students can see themselves in the virtual scene when they are acting on virtual stage. It not only enhances the pleasure of educational drama but provides a chance to reflect on their performance.

3. Methodology

In addition to utilizing existing equipment in the classroom, we use Microsoft Kinect and tablet to construct a self-observable Learning Cinema. As shown in Figure 1, teachers can use the Learning Cinema app on the tablet to edit situational scripts. At the same time, this app also helps teachers control students' preforming progress. The Learning Cinema program on computer is combined with Microsoft Kinect which embeds students' image into the virtual scene and makes students have the feeling of being there virtually.

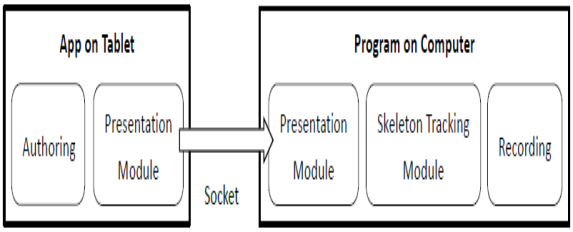

Figure1. The Module of Learning Cinema.

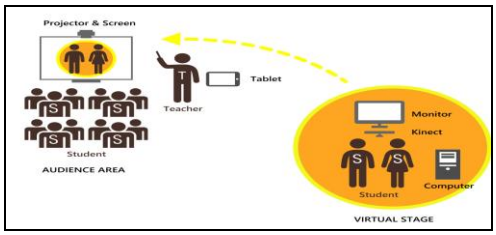

Figure 2. Device Setting of Learning Cinema.

3.1 Design of Device Setting in the Classroom

Actual device setting in classroom is shown in Figure 2. We divide the classroom into two zones: virtual stage and audience area. The former is used for students' performance. We set up a Microsoft Kinect and a monitor connected to computer. Performers can see their performance on the monitor in front of the stage. Audience area is the original seating area of students, and we use existing projector in the classroom which projects the screen of computer. Therefore, both performers and audience can watch the performance simultaneously.

3.2 System Architecture

Learning Cinema system consists of the program on computer and the App on tablet. The Learning Cinema program utilizes Microsoft Kinect to integrate students' image into the virtual scene, and the Learning Cinema App offers scripts editing and performance controlling features.

3.2.1 Learning Cinema App on Tablet

The Learning Cinema app on tablet helps teachers to edit situational scripts and control the progress of performance. Besides modifying existing scripts, teachers can create their own situational scripts. There are many digital scenes in situational script, and every digital scene is composed of background image, sound effect and subtitles.

During the drama performance, the teacher switches between scenes depend on the progress of performers, and show subtitles along with virtual scenes for different level of students. Playing the audio also makes performers have more authentic feeling when they are in the virtual scene.

3.2.2 Learning Cinema Program on Computer

During drama activity, performer will get into the virtual stage. The program on computer would integrate image of performers into virtual scene, and performers will experience the feeling of appearing in the virtual scene. Moreover, the program receives controlling command from the tablet

app and deal with each corresponding message (e.g. displaying notifications, switching between scenes and showing subtitles). The program will record the drama of students and students can watch their drama performance after class.

3.3 Teaching Procedure of Digital Educational Drama

At first, the teacher teaches English textbook content, and explains the meaning of every sentence to students. Next, the teacher analyzes characteristics of each role and reminds students of some key points to performing. Students were divided into groups, and discuss the distribution of roles. The teacher lets students perform until next class so students can practice learning their lines and presenting in English. During the performance, each group take turns performing on the virtual stage. In addition to watching the performance, the classmates as audience can learn through reflecting strengths and weaknesses of other groups. The teacher will discuss the performance with audience after each group finishes their drama, and let other classmates give advice and encouragement to performers. Finally, the performance videos will be uploaded to the learning website for reflection after class.

4. Experiment

4.1 Background

The experiment was held in a primary school in Taoyuan, Taiwan. Two fifth grade classes participate in our experiment, one class as the experimental group (31 persons using digital educational drama), and another as the control group (32 persons using traditional educational drama). Each class has forty-minute English courses twice a week. Two classes were instructed by the same English teacher.

4.2 Hypothesis

We want to investigate the effect of Learning Cinema on students' attention and study. We proposed the following hypothesis: Compared to performing on the dais, performing in the Learning Cinema enhances students' attention and students can more easily find their strengths and weaknesses.

4.3 Procedure

The English teacher assisted us with our experiment for a semester. There are five lessons in the textbook, and each lesson has a role-play activity. After dividing into groups and practicing performing the story of the lesson, students would have a role-play performance. Students in the experimental group perform on the virtual stage of Learning Cinema, while students in the control group perform on the dais as traditional setting. At the end of the semester, two classes conducted a questionnaire.

4.4 Questionnaire

The 37-question questionnaire is adapted from the Instructional Materials Motivation Survey (IMMS) designed by (Keller, 2006) which investigates students' motivation in teaching content. The participants had to rate each question according to the Likert five-point scale ranging from strongly agree to strongly disagree (strongly agree=5, strongly disagree=1).

4.5 Interview

We interviewed 6 students who have performed role-play on the virtual stage, and we also interviewed 2 English teachers who used our system for digital educational drama activities in class.

5. Result and Discussion

5.1 Instructional Materials Motivation Survey (IMMS) Questionnaire

After experiment, we received 54 valid questionnaires (27 questionnaires from experiment and control group respectively). The reliability tests and result of our questionnaires are shown in Table 1, and the reliabilities of all subscales are over 0.7.

Table 1. Reliability Test, Mean and Standard Deviation of ARCS Questionnaire

	Experimental Group			**Control Group**		
Subscale	**Cronbach's α**	**Mean**	**SD**	**Cronbach's α**	**Mean**	**SD**
Attention	.885	4.37	.605	.864	3.78	.662
Relevance	.901	4.42	.596	.811	3.8	.628
Confidence	.713	4.05	.618	.721	3.52	.614
Satisfaction	.858	4.41	.631	.742	4.02	.632

The result of attention subscale shows that performing in the Learning Cinema is more attractive to students. Students on the virtual stage concentrate on performing their drama, since they can see themselves in the virtual scene of textbook. Playing sound effects which correspond to the situation during the drama can attract students too. Furthermore, the audience also pays close attention to watch the performance of others.

In the relevance subscale, by role-playing in the drama, students can understand the occasion for applying knowledge they have. Although the result is not notable, students are easier to connect what they have learnt to daily life. Students considered that backgrounds and sound effects in the scenes are important in digital scene. Without backgrounds and sound effects, traditional performers are not easier to immerse themselves in the situation. Conversely, performing in the virtual stage is more interesting to students. At the same time, students thought that performing and practicing speaking English on virtual stage are helpful for learning English.

After 5-lesson English drama in a semester, students in experimental group gradually felt easier to perform on the virtual stage, and were more confident when learning English. Because everyone would perform in turns, both students in experimental group and students in control group felt a sense of achievement.

Compared to traditional educational drama, students in experimental group would practice more before performing and they were glad to perform on our virtual stage. The audience also enjoyed watching the performance. In student interview, one student thought that seeing classmates in the virtual scene is joyful, and another felt honored to perform on the virtual stage.

5.2 Interview with Students

All the students we interviewed think that they will look forward to English class owing to the Learning Cinema. They will practice more before formal acting in order to have better performance. Most students love to perform in Learning Cinema since students are bored with performing on the dais and they're curious about the virtual stage. One of shy students thinks that she feels less nervous during performing in Learning Cinema because she can focus on her presentation without being stared by the audience. A student also pointed out that he had more courage to speak in English after performing digital educational drama for a semester.

5.3 Interview with Teachers

We cooperated with 2 English teachers (Teacher A and Teacher B) in a primary school. Teacher A mentioned that fewer students would reject the virtual stage, and students can find their mistakes when performing on virtual stage. On the other hand, Teacher B considered that there is a great benefit of Learning Cinema for taking care of different level of students. By distributing the roles, high achievers will help low achievers so low achievers would learn better.

Teacher A thinks that the visual and sound effects of Learning Cinema are better than usual and students pay more attention to watching others' performance. Because students can see themselves on the screen, teacher B considers that they feel themselves like stars and have a better motivation in learning. Students can also see their weaknesses obviously and learn what they can improve more easily. In addition, teacher B found that students spent more time preparing for the performance and they cared about their performance result since they knew that all the drama performance would be recorded.

6. Conclusion

In this research, we constructed a digital educational drama stage which enables students to perform role-play in various situations and provides opportunities for them to practice speaking English under the situation. The result of questionnaires and interviews show that Learning Cinema is attractive to students. Students not only more concentrate on learning in the classroom but enjoy watching other peers' performance. Since performers can see themselves on the screen, students are easier to find where they can improve. Teachers also think that performing in Learning Cinema promotes students' learning motivation and their enthusiasm in learning. However, after getting accustomed to the virtual stage gradually, students are less attractive to virtual stage of Learning Cinema. In order to keep their attention, we can add virtual objects to the digital scene with which learners can interact in the future.

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