Exploring Students' Learning Outcome and Gender Differences in a Digital Video Clip Course

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Abstract: This study explores whether gender differences have significant impact on learning outcomes in the course of digital video clips. The subjects of the experiment were third-year students of the University of Science and Technology of Southern Taiwan. The learning goal of the course is to complete the 18-week course with all function operations and the project of digital video clips. The course adopts Project-Based Learning (PBL) teaching method. The midterm test includes several digital video clip discipline concepts and practical implementation. The final exam consists of several digital video clip works and project production. The project scoring method is peer-to-peer evaluation. There are 50 valid samples, including 25 boys and 25 girls. The experimental results show that girls' learning performance are higher than those of boys are. Therefore, in the digital video clip course, how to design suitable teaching strategies for different gender students' needs and improve the learning performance of students of different genders is a research topic worth exploring in the future.

Keywords: Digital video clip, gender differences, learning performance, project-based learning (PBL), peer review

1. Introduction

Due to the popularity of Internet, the rise of mobile devices, and the increasing diversity of messaging, of which video messages play a very important role. Facebook's founder, Mark Zuckerberg, also constantly emphasizes that it is the era of "film priority" now (Kalogeropoulos et al., 2016), and the world's 2016 statistics will play the videos an average of about three mega-minutes per month. On Internet, the average number of people uploading Facebook videos per person increased by 75% (Kalogeropoulos et al., 2016). The era of film communication has become the mainstream. Understanding the characteristics of video transmission and designing high-quality video content become a must-have professional skill (Birbeck et al., 2015; Sergeant, & MacDonald, 2017).

Professional production of video includes pre-recorded material and post-production. The post-production includes material selection, light adjustment, editing, special effects synthesis, animation production, dubbing, and soundtrack. Professional post-production can make the video vivid so that enhance readers' impression and resonate. The cultivation of video clip related talents also needs to have a suitable editing software for teaching. There are a lot of video clip software on the market. After comparing the related functions, the current mainstream software is Adobe Premiere Pro CC. It is powerful because the functions provided by Premiere Pro CC are enough to cope with the needs of video clips. Recently, some scholars used Adobe Premiere Pro CC in their researches. For example, Chan, Churchill and Chiu (2017) explored the use of digital storytelling in higher education to achieve digital number learning by using Adobe Premiere. Past research has confirmed that the Premiere Pro tool has a complete function in the production of videos. Therefore, this study used Premiere Pro CC as a software for exploring digital video clip courses for students of the University Science and Technology.

On the other hand, many studies in the past have used information technology to integrate teaching to enhance students' learning outcomes. Some studies have pointed out that the teaching process using problem-based learning (PBL) can help students to improve their learning outcomes (Jamali, Md Zain, Samsudin, & Ale Ebrahim, 2017; Sedaghat, 2018). The use of PBL teaching in digital video clip courses is primarily intended to drive students to explore, collaborate, research and create projects that reflect their knowledge (Bell, 2010; Cervantes, 2013; McGrath, 2004). Students will experience responding to questions, asking questions or other challenges. Rigorous programs help students learn key academic content, practice 21st century skills, such as communication and critically thinking (Nordstrom & Korpelainen, 2011).

However, many digital learning related literatures have confirmed that, with the application of information technology in various fields of teaching, boys and girls have a certain degree of difference in learning motivation and learning performance. For instance, Wu et al., (2016) pointed out boys spend more time completing tasks than girls, and boys pay more attention to the functional orientation of the platform, while girls pay more attention to the feeling of animated content when using an animated e-book. Chipangura and Aldridge (2017) also explored the impact of students' multimedia environmental cognition in mathematics classroom learning. The results showed that boys have maintained a higher intrinsic value in mathematics than in girls in the middle school. As mentioned above, through the aid of information technology, learning could effectively improve students' learning outcomes and gender differences are an important human factor. We should consider the learning differences caused by human factors in the learning process. However, the influence of learning effects caused by human differences is rarely discussed in the field of digital video editing.

Based on the mentioned above, the purpose of this study is to explore whether gender differences will significantly affect the learning performance of university students by using Adobe Premiere CC software and the PBL teaching method to learn digital video editing courses.

2. Research Method

2.1 Participants

This study uses quasi-experimental research to explore the impact of gender differences on digital video clip courses. The study is aimed at 50 students in the third-grade university students in Taiwan. The participants is 25 boys and 25 girls, and their ages are between the ages of 18 and 25. Among the students involved, only about one-tenth of the students in the past had the basis of several digital video clip courses. Thus, most of them are beginners.

2.2 Instruments

Adobe Premiere Pro CC is very useful. It provides paragraph editing, tone adjustment, volume adjustment, noise removal, transition effects, inspection, special effects, and speed adjustment. Besides, there is a pen tool, by which students can draw different graphics directly on the movie, such as the black background that is often used for subtitles. Students could use the pen tool to finish painting, and then change the size according to the subtitles. It is obviously more convenient and faster (Jago, 2017; Sampurna, Audira, Juniardi, Lai, & Hsiao, 2018; Xiaolei et al., 2018). In addition, Adobe Premiere Pro CC could easily edit different colors, and we could adjust the color of the film directly and quickly. Other software, such as Final Cut Pro X, can also achieve the function, but not as obvious and direct as Premiere Pro. It is worth mentioning that Premiere Pro CC is more accurate when aligning movies. For example, some source videos are often replaced during editing. Premiere Pro can be easily adjusted to avoid the film being clearly closed, but some backgrounds or drawings are still much more. One or two seconds (Jago, 2017; Sampurna et al., 2018; Xiaolei, 2018). The new Premiere Pro CC 2018 has officially added support for 360 and Virtual Reality movie clips. Now that so many 360 shooting accessories have appeared, it is getting cheaper and cheaper. This is another attraction of Premiere Pro CC (Jago, 2017; Sampurna et al., 2018).

2.3 Procedure

The experimental process of this study is to use Premiere Pro CC as the software used by students to learn digital video clip courses. The curriculum planning uses the Project-Based Learning (PBL) teaching method. Through course recording, the content of the class is placed on the teaching platform for users to review after class. The course is an 18-week course, including a week for midterm, a week for final exam, and 16 weeks for course theme. There are 4 lessons per week, and 50 minutes per lesson. Course content includes basic functions of video clips, introduction of advanced functions, implementation of video clip licenses, and video clip project reports.

The midterm examination is divided into the discipline concept test of video clips and the project-based practical test. The final grades include the operation test and the final film-editing project. The final project score is to invite students to set a digital video film theme, and meet the functions covered by the digital video editing course. The project scoring method is peer-to-peer evaluation, using ZUVIO Platform for mutual evaluation. Figure 1 is the teaching activity photo of the final exam.

Figure 1. The teaching activity photo of the final exam

2.4 Data Analysis

The semester grades are divided into three parts. The usual scores are given according to the progress of the weekly project, which accounts for 40% of the semester results. The results of the midterm exam are divided into academic subject and technical subject, accounting for 30% of the semester results. The final grades are the final practical test and the final project scores of peer review. Grades, accounting for 30% of the semester.

The usual results are based on weekly progress. Students should finish the unit project and upload to the learning platform. The results of the midterm examination are divided into two parts. The first part is the midterm academic achievement, which is related to the concept of digital video clips. The second part is the midterm operation results. The examination scope includes the teaching progress before the midterm examination, and the students are required to complete the relevant surgical operations. The final grade is based on the Computer Skills Foundation TQC+ Nonlinear Editing Certification. The final grades referred the Premiere Pro CC technical test. The technical score is based on the computer foundation license score.

This study explores whether existing gender differences while college students using Adobe Premiere CC software to learn digital video editing courses. This study used independent sample *t*-Test to verify the difference of aforementioned scores between different genders. Moreover, this study also used Pearson correlation analysis to analyze the relationship for different genders in learning facets, including usual score, mid-term subject score, mid-term practice score, mid-term

performance score, final performance score, project performance score, and semester performance score.

3. Results

As shown in Table 1, girls' performance is significantly better than that of boys in terms of midterm practical ($t=2.361$, $p=.022$), midterm performance ($t=2.449$, $p=.018$), project performance ($t=2.889$, $p=.006$), and semester performance ($t=2.251$, $p=.029$). Conversely, girls and boys have no significant difference in the scores of usual score, midterm subject, and final performance.

Table 1

t-Test of learning performance in gender difference

Variables	Male (n=25)		Female (n=25)		Independent *t*-Test	
	M	SD	M	SD	t	p
Usual score	49.00	33.25	63.12	32.48	-1.519	0.135
Midterm subject	34.40	18.50	41.20	14.53	-1.445	0.155
Midterm practice	48.60	41.37	73.80	33.70	-2.361	0.022*
Midterm performance	45.76	34.54	67.28	27.14	-2.449	0.018*
Final performance	45.68	44.11	49.16	41.86	-1.931	0.059
Project performance	62.03	33.16	84.25	19.66	-2.882	0.006**
Semester performance	49.53	31.00	68.18	27.47	-2.251	0.029*

**p<0.05, *p<0.01

We used the Pearson correlation analysis to analysis the correlation of usual score, mid-term subject score, mid-term practice score, mid-term performance score, final performance score, project performance score, and semester performance score in the digital video editing course. As shown in Table 2, the results show that there were significant correlations among usual score, mid-term practice score, mid-term performance score, final performance score, project performance score, and semester performance score. In addition, the mid-term subject scores were significantly correlated with the boys' mid-term scores, but were not significantly correlated with others facets, while the girls' mid-term subject scores were not significantly correlated with other learning outcomes.

Table 2

Pearson Relationship for learning related constructs

		Usual	Mid Sub.	Mid Prac.	Mid.	Final	Project	Semester
Usual	F	1						
	M	1						
Mid Sub.	F	.232	1					
	M	.050	1					
Mid Prac.	F	.682**	.007	1				
	M	.737**	.343	1				
Mid.	F	.683**	.114	.994**	1			
	M	.731**	.436*	.995**	1			
Final	F	.668**	.100	.486*	.494*	1		
	M	.664**	-.019	.488*	.466*	1		
Project	F	.611**	.298	.662**	.689**	.476*	1	
	M	.540**	.297	.437*	.451*	.454*	1	
Semester	F	.938**	.107	.820**	.826**	.809**	.719**	1
	M	.948**	.266	.843**	.837**	.771**	.644**	1

*At a significant level of 0.05 (two-tailed), the correlation is significant.
**At a significant level of 0.01 (two-tailed), the correlation is significant.

4. Discussion and Conclusion

From above results, this study shows that girls have better learning performance than boys do in the digital video clip course. The results are similar to some past researches. Due to gender differences, different gender students have different physical, psychological and learning characteristics. The academic achievement may be quite different (Manero, Torrente, Fernandez-Vara, & Fernandez-Manjon, 2017; Garber, Hyatt, & Boya, 2017; Nassaji, 2017). In general, boys have better distance, spatial and visual acuity than girls do. Conversely, girls generally appreciate art more than boys do (Ariel & Moffat, 2018; Reilly, Neumann, & Andrews, 2017). The digital video clip course has many aesthetic and artistic concepts. Girls may be willing to spend more time immersed in it. Thus, the learning performance of girls is better than that of boys.

The final project uses personal reports and peer-to-peer online assessments to maintain the objectivity of the ratings. The results of the study confirmed that female students use digital video editing software to learn relevant knowledge and practical skills, and girls' performance is obviously better than that of boys. This is in line with past research. Women's learning and learning preferences for aesthetics are better than those for boys are. In addition, this study also confirms the performance of girls in terms of creative thinking, creation, project design and production.

In this study, PBL learning strategy is used to enhance the learning performance of students. However, this learning strategy cannot reduce the difference of learning performance in different genders. Therefore, in the digital video clip course, how to design suitable teaching strategies for different gender students, and how to improve the learning performance of students with different genders are the goal of joint efforts in the future.

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