

## THE DESIGN AND IMPLEMENTATION OF “FOUR-IN-ONE” BLENDED LEARNING MODEL IN DIGITAL MEDIA TECHNOLOGY CLASSROOM

Ping Xu<sup>1</sup>  
Yibo Guan<sup>2</sup>

**Abstract:** In a digitally driven world, many educators are using face-to-face and online methods to improve teaching and learning because of blended-learning’s availability and convenience. This study serves two purposes. The main purpose of this research was to identify the academic achievement difference between students who studied through “Four-in-One” blended learning model (official website, WeChat official account platform, official Weibo, and cloud database) and students who studied through traditional learning. And second, to investigate the opinions and feedbacks about “Four-in-One” blended learning model. The mixed methods both qualitative and quantitative methods including quasi-experimental research, direct observation and semi-structured interview were applied. The participants were 88 undergraduate students (67 males and 21 females) from a Chinese Computer Application Technology Department. The subjects were selected by purposive sampling and separated into a control group and an experimental group. The data were analyzed by using mean, standard deviation, dependent t-test, and independent t-test. The outcomes of research showed that the experimental group had higher academic achievement scores than the control group. The results of research also revealed that blended learning outcomes related to tailored teaching, technology readiness level, scaffolding learning, and self-regulated learning.

**Keywords:** “Four-in-One” Blended Learning Model; WeChat Official Account Platform; Cloud Database

### Introduction

Due to the flexible, dynamic, and self-regulated learning approach, blended learning become increasingly popular in higher educational institutions over the years. Pietro and Danila (2019) study the determinants of blended learning adoption on faculty’s satisfaction in one of the most ancient University in Europe. The researchers administered a questionnaire to the professors that

---

<sup>1</sup> Associate Professor, Teacher Education College, Zunyi Normal University, China, xupprivate@hotmail.com

<sup>2</sup> Network Engineer, School of Computer Science, Guangdong University of Technology and Commerce, China, dxyhaohao1183@163.com

used blended technologies and conducted clinical interviews with some of the key people involved in the implementation process. Kyleigh and Jillian (2019) examined how blended learning impacts high school learners' community of inquiry and perceived learning in comparison to online instruction. Dolores, Maria, and Ayuela (2019) conducted a research about how traditional face-to-face learning can be transformed into blended courses so as to develop student engagement with both in-class and online approaches, whilst being time effective for the instructor. Alev (2018) conducted a research at a western Turkish educational faculty. The findings indicated that 70.4% of student teachers prefer blended learning. Although less than a quarter of participants found blended learning useless, most held positive notions for blended learning practices.

Ilhaam, Lawrence and Eunice (2019) implemented blended learning in mathematics classrooms from the perspectives of two South African educators working in an international school in Saudi Arabia. Trisha (2018) conducted an evaluative study to explore E-learning as a medium for facilitating learners' support services under open and distance learning. Liaw, Tan and Wu (2019) conducted a research indicated that the instructional sequence of a blended learning approach can have a significant impact on students' learning outcomes. Hamde, Usmaan, and Zachariah (2019) investigated the impact of a blended learning teaching approach to teach pharmacy law. However, the combined use of different technology enhanced learning activities has not been fully examined. The research intended to propose and explore "Four-in-One" Blended Learning Model in Digital Media Technology Classroom.

### **Research Objectives**

1. To identify the academic achievement difference between computer application technology students who studied through "Four-in-One" blended learning model (official website, WeChat official account platform, official Weibo, and cloud database) and students who studied through traditional learning.
2. To investigate the opinions and feedbacks from computer application technology students who studied through "Four-in-One" blended learning model.

### **Research Questions**

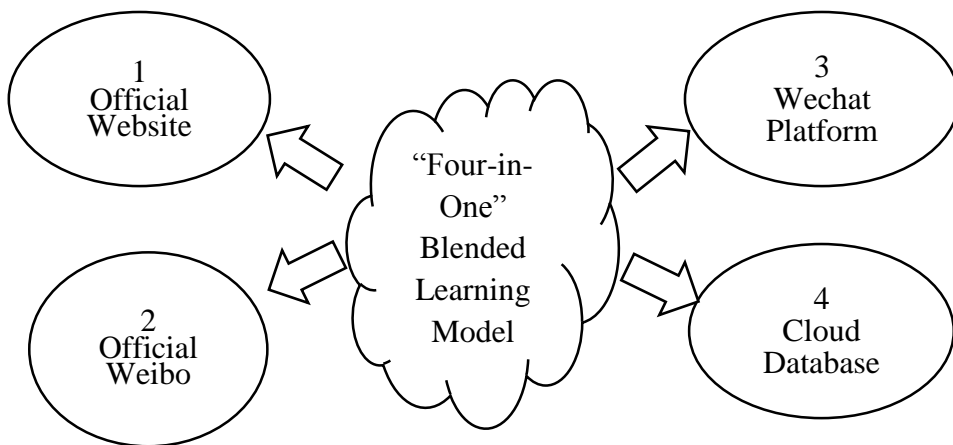
1. What are the academic achievement differences between computer application technology students who studied through "Four-in-One" blended learning model (official website, WeChat official account platform, official Weibo, and cloud database) and students who studied through traditional learning?

2. What are the opinions and feedbacks from computer application technology students who studied through “Four-in-One” blended learning model?

### Research Methodologies

This paper used both qualitative and quantitative methods including quasi-experimental research, direct observation and semi-structured interview. A total of 88 Chinese first-year undergraduate students (67 males and 21 females) from Department of Computer Application Technology, Guangdong Vocational and Technical Institute of China participated in this study. The research was conducted at the second semester of academic year 2018. The subjects were selected by purposive sampling and separated into a control group and an experimental group: group 1: forty-four Chinese students from 2018 Digital Media Class 1 as an experimental group; group 2: another forty-four Chinese students from 2018 Digital Media Class 2 as a control group. In 2018 digital media class 1, there are 36 male students account for 81.82%, 8 female students account for 18.18%. In 2018 digital media class 2, there are 31 male students account for 70.45%, 13 female students account for 29.55%. The data were analyzed by using mean, standard deviation, dependent t-test, and independent t-test.

### Discussion



**Figure 1: “Four-in-One” Blended Learning Model**

In order to measure the testing results, “Four-in-One” Blended Learning Model was used in teaching the experimental group. “Four-in-One” means official website, WeChat official account platform, official Weibo, and cloud database. Experimental group students could learn online basic course of

computer application at university's WeChat official account platform. For example: if students open Chapter 3 learning word processing software. WeChat official account platform offers three sections: theory, case study or read the case explanation for self-learning. In addition, three tasks are waiting for students to explore the word processing techniques: task 3.1 perform basic editing functions in Word, task 3.2 edit text and images in Word 2010, and task 3.3 make flow chart in word 2010. Three tasks are arranged from basic level to advanced level.

The researchers designed 48-session digital media course into: 24-session classroom face-to-face instruction, 12-session digital media extension training and 12-session enterprise digital media program comprehensive training.

Table 1: *48-Session Digital Media Curriculum Design*

<b>Total Session</b>	<b>Curriculum</b>
12-Session	Enterprise Digital Medial Program Compressive Training
12-Session	Digital Media Extension Training
24-Session	Classroom Face-to-Face Instruction

During 24-session classroom face-to-face instruction, students learned four core subjects: Computer Aided Design, Image Processing, Advertisement and Photography, Post Production for Film and Television. The details are as follows:

1. Computer Aided Design (CAD) for beginners: AutoCAD, Adobe Photoshop and Illustrator which are the basic computer programmes needed for 3D product design.
2. Image Processing for beginners: Image filtering, image smoothing and sharpening, Image Sensing and Representation , Image Analysis, Human Visual Perception, Image Enhancement, Image Transforms, Image Restoration, Image Compression
3. Advertisement and Photography for beginners: Introduction of digital advertising and photography, commercial advertising and photography, programmatic advertising and photography, socia media advertising and photography, advertising and photography targeting, advertising and photography serving, digital advertising and photography trends and future development
4. Post Production for Film and Television courses: Starting from the script, through the shooting period up to the post production, knowledge on film and television, the duties of the film crew members, editing of audio and visual materials to create a film and television.

Table 2: *Assignment Descriptions and Grading Criteria*

Grading Criteria	Assignment Descriptions
60-70	Be able to master basic knowledge and skills
70-80	Be able to use knowledge and skills flexibly
80-90	Be able to achieve design aesthetic criteria
90-100	Be able to express smart and innovative ideas

The grading criteria was announced to help students have a concrete understanding and visualization of what they need to do to achieve their desirable grade. Each criterion also includes a gradation scale of quality. The researchers use grade to evaluate students' progress, if students master basic knowledge and skills, they will get 60 points. If students use knowledge and skills flexibly, they will get 70 points. If students achieve design aesthetic criteria, they will get 80 points. If students express smart and innovative ideas in their assignments, they will get 90 points. Not only teacher evaluated students' performance, but also classmate evaluated and self-evaluation as well. In addition, class participation also was calculated: attendance, frequency of contributions, and quality of contributions (0=disruptive, 5=off-topic, 10=insightful).

## Results

### Research Question 1

What are the academic achievement differences between computer application technology students who studied through "Four-in-One" blended learning model (official website, WeChat official account platform, official Weibo, and cloud database) and students who studied through traditional learning?

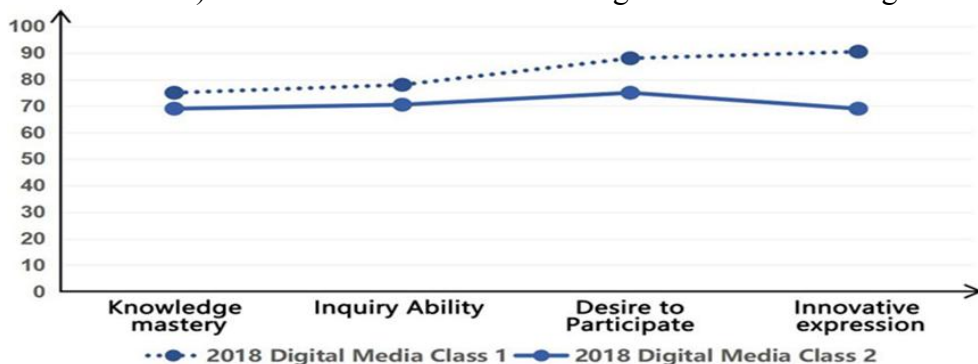
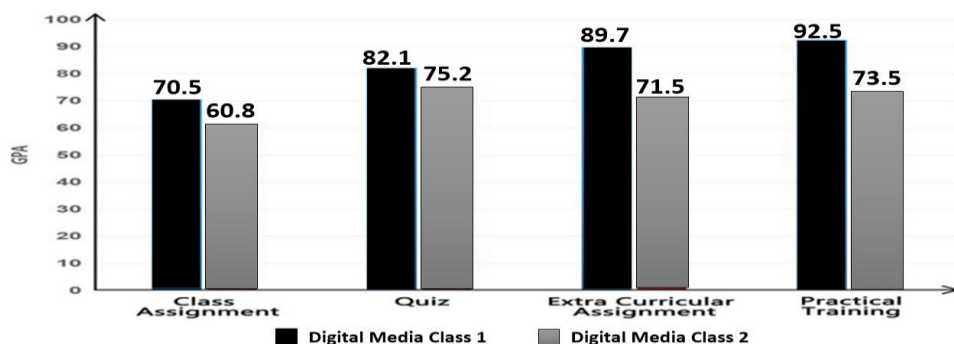


Figure 2: *Learning Outcomes in Blended Learning Compared to Face-to-Face*

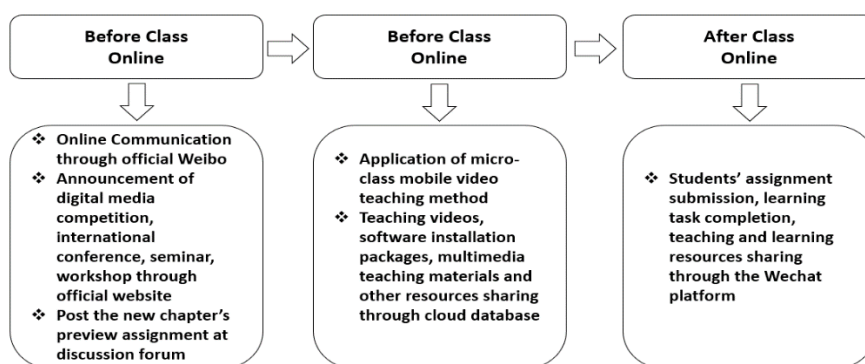


**Figure 3: Mean Comparison between Two Groups**

When comparing students' grade on class assignment, the mean score of 2018 Digital Media Class 1 was 70.5 and 2018 Digital Media Class 2 was 60.8. When comparing students' quizzes score, the mean score of the experiment group was 82.1 and control group was 75.2. When comparing students' grade on extracurricular assignment, the mean score of 2018 Digital Media Class 1 was 89.7 and 2018 Digital Media Class 2 was 71.5. When comparing students' grade on practical training, the mean score of the experiment group was 92.5 and control group was 73.5. There is significant difference between 2018 Digital Media Class 1 and 2018 Digital Media Class 2 in terms of extracurricular assignment and practical training. After blended teaching and learning, the experiment group's score was higher than control group.

### Research Question 2

What are the opinions and feedbacks from computer application technology students who studied through "Four-in-One" blended learning model?



**Figure 4: From Online to Face-to-Face to Blended Learning**

To answer the research question two, the direct observation and semi-structured interview were applied. The research results confirmed the positive

feedbacks of combining “Four-in-One” blended learning model and face-to-face teaching. Before class, students can communicate with their teachers through official Weibo. Teacher announced digital media competition, international conference, seminar, workshop through official website. Teacher posted the new chapter’s prereview assignment at discussion forum. During class, teacher met the student face-to-face and shared the videos, software installation packages, multimedia teaching materials and other resources through cloud database. After class, students submitted assignment, completed tasks, and searched the teaching and learning resources through the WeChat official account platform. Learning can be delivered via a variety of different channels: classroom instruction, official website, WeChat official account platform, official Weibo, and cloud database, etc.

### **Conclusion**

A significant contribution of this study was the development of a “Four-in-One” Blended Learning Model. The outcomes of research showed that the experimental group had higher academic achievement scores than the control group. The difference was statistically significant at the .01 level. The research results confirmed the positive feedbacks of combining “Four-in-One” blended learning model and face-to-face teaching. The results of research highlighted the fact that blended learning enrich educational environment with multiple technology-enabled communication forms in both face-to-face and online teaching.

### **Suggestion**

However, through interview, teachers reflected they spent more time on optimizing the design and format of the course and online teaching materials in order to suits different students’ needs from struggling, moderate, to advanced level. Blended learning required teachers’ higher technology readiness level and tailored instruction skills. All level students need scaffolding tools to achieve their learning outcomes and enhance their learning performance. Blended learning is often called hybrid learning, web-enhanced instruction. Meanwhile, students’ technology readiness plays a very important role during the technology learning process. Hence, students spend a lot of time in front of the screen and using mobile devices. Therefore, self-regulated learning is needed to take control and evaluate one's own learning. Students’ ability to direct themselves in learning and to utilize learning technologies can affect student learning effectiveness. Further researches could explore a wider application of this research approach to several universities and different countries.

### Acknowledgement

We would especially like to thank all the participants from Department of Computer Application Technology, Guangdong Vocational and Technical Institute of China. We sincerely appreciate your help and candidness in attending the experimental group, control group, and answering what are sometimes uncomfortable or awkward questions during interview time. Your contribution to this important research is invaluable for helping blended learning in the future.

### REFERENCES

- Alev. A. Ç. (2018). Student teachers' satisfaction for blended learning via Edmodo learning management system [J]. *Behaviour & Information Technology*, 37(2): pp133-134
- Dolores. R. S, Maria A. D., & Ayuela. E. G., et al. (2019). Technology-enhanced learning in higher education: How to enhance student engagement through blended learning [J]. *European Journal of Education*, 54(2): pp273-286.
- Hamde. N., Usmaan. O., Zachariah. N., et al. (2019). A study to investigate the impact of a blended learning teaching approach to teach pharmacy law [J]. *International Journal of Pharmacy Practice*, 27(3): 303-310.
- Ilhaam. A., Lawrence. M., & Eunice. I. (2019). Implementing Blended Learning in Mathematics Classrooms: Perspectives of Two South African Educators Working in an International School in Saudi Arabia [M]. Springer International Publishing: 2019-05-28. Pp234-244.
- Kyleigh. B. H., & Jillian. L. W. (2019). The Impact of Blended Learning on Community of Inquiry and Perceived Learning among High School Learners Enrolled in a Public Charter School [J]. *Journal of Research on Technology in Education*, 51(3): pp259-272.
- Liaw. S. Y., Tan K. K, & Wu. L. T, et al. (2019). Finding the Right Blend of Technologically Enhanced Learning Environments: Randomized Controlled Study of the Effect of Instructional Sequences on Interprofessional Learning [J]. *Journal of Medical Internet Research*, 21(5): pp e12537.
- Pietro. P., & Danila. S. (2019). Blended learning adoption: a case study of one of the oldest universities in Europe [J]. *International Journal of Educational Management*, 33(5): pp990-998.
- Trisha. D. B. (2018). E-Learning as a Medium for Facilitating Learners' Support Services under Open and Distance Learning: An Evaluative Study [M]. Springer Singapore: 2018-09-27. Pp93-112.