



# Application of Mobile Intelligent Classroom in Teaching and Analysis of the Teaching Effect—Take the “Management Accounting Practice” Course as an Example

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**Abstract.** The classroom teaching reform in the era of “Internet plus” has become an irreversible trend of the times. The mobile intelligent classroom is a representative of new technology and is being built in the universities. This paper makes a case study on the course of Management Accounting Practice to expound how to applied the online software to improve learning efficiency and teaching methods. And then, this paper analyzes how mobile teaching technology is embedded in class teaching. Also, paper conducted a questionnaire survey on the teaching effect of online courses for students, which made a multiple regression model with SPSS and further analyzed the factors affecting online teaching. Finally, the result shows that even the mobile intelligent technique can improve the efficient of teaching, the course construction still need to be continued to satisfy students. The teaching content, teaching methods and online teaching environment remain to be the most important factors that students concerned.

**Keywords:** Mobile Intelligent Classroom · Teaching Effect · Multiple Regression Analysis

## 1 Introduction

### 1.1 Intelligent Classroom Based on Mobile Teaching

Mobile intelligent teaching is a new teaching mode that combine mobile phone and learning platform/software. This new mode breaks the traditional teaching concept, it embeds information technology and mobile devices into the teaching process to realize the dynamic interaction across time and space. At the same time, this teaching mode uses information technology to reform teaching methods to build a personalized, intelligent and digital classroom environment to students.

### 1.2 The Implementation of Mobile Intelligent Classroom

Management Accounting Practice is the professional core course for the junior accounting students of our university. From 2019, the mixed teaching mode which embedded online and offline teaching is carried out. The details of the teaching methods and resource as followed:

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X. Yuan et al. (Eds.): ICEKIM 2023, AHCS 13, pp. 1934–1941, 2023.

[https://doi.org/10.2991/978-94-6463-172-2\\_214](https://doi.org/10.2991/978-94-6463-172-2_214)

### 1.2.1 Course Platforms and Resources

The Superstar APP is the main teaching platform used in the class which can be logged on through mobile phone and computer. Online websites or platforms such as MOOC Online, Accounting Cloud Platform, teaching videos, and Xueyin Online, etc. can also be linked or established modules in the APP. For students, Superstar APP provides functions to preview teaching materials, upload exercises, interact with teachers, consolidate knowledge and feedback learning effect at any time anywhere; For teachers, they can upload learning materials, interact with students, and arrange academic activities after class to expand the scope of studying. Background in Superstar APP can derive learning data to help quantify final scores and get students' feedback, which can also design questionnaires in the software and analyze the indicators of teaching evaluation [1].

### 1.2.2 Teaching Process

The micro-class activities can also be carried out through multiple information technologies in intelligent class, such as QQ, WeChat, Tencent Conference and other online teaching software. These have become the channels for teachers to carry out diversified online teaching activities. The teaching process of this course is implemented in three phases: before class, in class and after class, the details as follows:

#### 1. *Before Class.*

In order to encourage the exploration of knowledge points, teachers upload study tasks and teaching resources on Superstar APP before the class. Then the task notifications will be sent to the mobile phones or computers of students who have to follow the guide to finish case studies and expand reading to become familiar with the theoretical concepts of new lessons.

#### 2. *In Class.*

Skill training activities for students such as online quizzes, discussions and presentations are operated in intelligent class through software/platforms, such as Superstar APP, QQ, WeChat and Tencent Conference to realize communication and performance assessment. At the same time, this course also combines the "Accounting Cloud Platform" to examine the application of students' comprehensive knowledge and ability to deal with enterprise problems through case studies.

#### 3. *After Class.*

This course has built a practical chain-combined school, second-class, course competition, certificate learning and enterprise cooperation to implement the comprehensive practical activities in intelligent class, such as online expert lectures, workshops, salons and other academic activities which can be held through the Superstar APP, ZOOM and Tencent Conference. Table 1 shows the details about relevant software and platforms used in the mobile intelligent class.

**Table 1.** Relevant Software and Platform Used in the Mobile Intelligent Class (Author drawn by self)

Teaching Phases	Teaching Methods	Students' Activities	Teachers' Activities	Applied Software/Platform
Before Class	Task driven and reference reading	Receiving tasks, read materials, preview, watch videos, and complete discussions	Assigning preview tasks, reference materials, teaching videos and discussion topics	Superstar APP, mobile phone, MOOC Online, Xueyin Online and other online resources
In Class	Interactive teaching, case discussion, group work, test, etc.	Using mobile phone to participate in discussion, answer questions, do exercises and take exams in class	Using computers or mobile phones to display teaching content, sent study tasks, interact with students, and summarize learning achievements	Tencent Conference, QQ, We Chat, Superstar APP, Accounting Cloud Teaching Platform
After Class	Practical teaching, lectures, salons and workshops	Participate in lectures and share, online review and Inquiry	Invite experts to carry out teaching activities on the platform	ZOOM, Tencent Conference, Superstar APP

## 2 Analysis on the Teaching Effect

### 2.1 Research Questions and Methods

In order to further understand the factors that affect the teaching, this paper adopts the "Questionnaire Star" online questionnaire to investigate the satisfaction of the online teaching effect with the aim that collect feedback data and provide reference for further improving on the teaching quality.[2].

### 2.2 Research Object

The students in grade 2019 who had studied "Management Accounting Practice" in accounting major in the university were randomly sampled. The number of sample was 200, including 46 males and 154 females. A total of 200 questionnaires were distributed and 196 valid questionnaires were taken back express that the questionnaire recovery rate was 98%,The Cronbach's  $\alpha$  coefficient is 0.812, which shows the reliability is good.

### 2.3 Design of Questionnaire

In order to ensure the reliability of the survey, the questionnaire is designed based on the suggestions from relevant research and the opinions of experts. There were nine contents in the questionnaire: students' information, students' learning attitude, autonomous learning ability, teaching environment, teaching content, teaching attitude of teacher, teaching methods, teaching assessment and overall evaluation of teaching effect. The measurement scales of this study are 5-likert scales.[3].

## 3 Model Building

This study uses SPSS 22.0 statistical software for data analysis. There are seven factors are chosen to be the key variables which will be included in the multiple regression equation for testing whether have an impact on the evaluation. The equation is:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \varepsilon$$

In the equation, Y represents the satisfaction of online teaching effect;  $\beta_0$  is a constant term; X1 represents students' learning attitude; X2 represents students' autonomous learning ability; X3 represents teaching environment; X4 represents teaching content; X5 represents teachers' teaching attitude, X6 represents teaching methods; and X7 represents teaching assessment methods.[4].

### 3.1 Multiple Regression Analysis

#### 3.1.1 Correlation Analysis.

The Pearson correlation of variables was tested, which laid the foundation for further regression analysis. The greater the absolute value of Pearson correlation coefficient, the greater the degree of linear correlation between variables. The analysis result in Table 2 shows the correlation coefficient of X1 students' learning attitude and X2 students' autonomous learning ability are not pass the significance test and the value both less than 0.4, which indicated that they are not the factors affecting online teaching effect and these two variables can be deleted in the following analysis. The correlation coefficients of other five variables are greater than 0.7, indicating that there is a certain correlation, which may affect the effect of online teaching.

#### 3.1.2 F-test, t-test and Regression Coefficient of the Model.

According to the result of correlation test, the modified equation is:

$$Y = \beta_0 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \varepsilon$$

The results of F-test, t-test and regression coefficient calculation in Table 3 as followed:

The correlation coefficient  $R^2$  value of the regression model is 0.802 and the value of adj  $-R^2$  is 0.762, the results indicates that the fitting degree of the model is good.

**Table 2.** Correlation Test Results of Each Variable in the Model (Author drawn by self)

Variables	Y	X1	X2	X3	X4	X5	X6	X7
Y	1.000							
X1	0.217	1.000						
X2	0.342	0.005	1.000					
X3	0.710***	0.011	0.003	1.000				
X4	0.872**	0.145	0.041	0.519	1.000			
X5	0.748**	0.024	0.018	0.405	0.853**	1.000		
X6	0.851**	0.016	0.001	0.254	0.316	0.843**	1.000	
X7	0.728**	0.107	0.008	0.678	0.672**	0.114	0.752**	1.000

**Table 3.** F test, t test and Regression Coefficient of Regression Model (Author drawn by self)

Independent Variable	$\beta$ Value	VIF	$R^2$	Adj- $R^2$	F	F0.05	P
Constant	51.067	-	0.802	0.762	6.239	5.205	0.001
X3	0.061***	7.016					
X4	0.083***	5.101					
X5	0.034**	8.113					
X6	0.054**	8.802					
X7	0.031***	6.008					

The F value is 6.239 and greater than the F0.05 value of 5.205, indicating that the model is reliable. The P value is 0.001, indicating that the linear relationship between the dependent variable Y and each independent variable is significant, the correlation coefficient between each variable and the dependent variable is significant, and the VIF value is less than 10. Therefore, the multiple regression model of influencing factors of online teaching effect is:

$$Y = 50.067 + 0.061X3 + 0.083X4 + 0.034X5 + 0.054X6 + 0.031X7 + \epsilon$$

### 3.2 Analysis of Regression Results

From the analysis results, we can see that X3 online teaching environment has a significant positive impact on the teaching effect, and the marginal impact on the satisfaction of improving the online teaching effect is 6.1%; X4 teaching content has a significant positive impact on the online teaching effect, and its marginal impact is 8.3%; X5 teachers' teaching attitude has a significant positive impact on the online teaching effect, and its marginal impact is 3.4%; X6 teaching method has a significant positive impact on the online teaching effect, and its marginal impact is 5.4%; X7 teaching assessment

method has a significant positive impact on online teaching, and its marginal impact is 3.1%. To sum up, we can see that the factors that have the greatest impact on the teaching effect are the online teaching environment, teaching content and teaching methods, and the marginal impact is more than 5%. Therefore, if we want to improve the effect and satisfaction of online teaching, we need to make more efforts in the above three aspects.[5].

#### 4 Analysis on Students's Self Learning Situation

At the same time, this questionnaire also has a survey on students' self learning situation, such as learning attitude and autonomous learning. The final examination scores of students are expressed by  $(\bar{X} \pm s)$ . Wilcoxon rank sum test or Kruskal wallis H test in Table 4 are used to compare the differences between the final examination scores of two or more groups,  $P < 0.05$  is a significant difference.

In general, 62% of the students showed that they were interested or very interested in this course, and the average final score of these students was 81.45, which was in a good level. The analysis results show that the former has significantly higher academic performance than the latter ( $P = 0.003$ ); At the same time, 64.8% of the students always complete the learning tasks in time, whose average final score is 82.54 and it in a good level. The analysis results show that the former has significantly higher academic performance than the latter ( $P = 0.021$ ); There are 14.2% of students often initiative

**Table 4.** The Influence of Students' Own Factors on Academic Performance (Author drawn by self)

Content	Number of Respondents (%)	Final Exam Score ( $\bar{X} \pm s$ )	P
<b>1. Are you interested in "Management Accounting Practice" ?</b>			
Very Interested/Interested	62%	81.45 ± 10.54	0.003
Ordinary	38%	74.09 ± 12.41	
<b>2. Did you complete the online task in time?</b>			
Always	64.8%	82.54 ± 10.63	0.021
Occasionally	35.2%	76.48 ± 12.37	
<b>3. Will you take the initiative to learn by yourself?</b>			
Often	14.2%	82.73 ± 9.27	0.032
Occasionally	50.8%	80.53 ± 9.15	
Will not	35%	70.11 ± 17.49	

to learn by themselves, and the average final score is 82.73 which is in a good level. The analysis results show that the former has significantly higher academic performance than the latter ( $P = 0.032$ ). Finally, it can be seen that not only the teachers' curriculum design, online learning environment and teaching methods have a great impact on the teaching effect, but also the students' efforts and learning attitude have a certain positive impact on the learning effect [6].

## **5 Conclusion**

Even this course used mobile intelligent technique which had improved the efficiency of teaching and learning, however, the research shows that technology can not completely solve the improvement of teaching effect. According to the data analysis results, the following suggestions are made for the course construction:

### **5.1 Stimulate Students' Interest in Learning and Improve Their Learning Initiative**

The course also needs to further think about its orientation, for example, how to increase students' interest in learning through the teaching design of the course, and at the same time, teachers also need to further think about enhancing students' awareness of autonomous learning. In order to stimulate students' interest, we can improve from the following points: (1) Increasing the cases studies which close to students' life, adding more interesting elements which students sensitive to the teaching content, and increasing the students' reflection. (2) Enriching teaching resources, increasing resources of references, lectures and projects, and strengthen students' participation. (3) Guiding students to establish good online learning habits in online learning [7].

### **5.2 Continuous Curriculum Construction**

The core part of teaching satisfaction is course construction. The course construction is the basis for satisfaction of students' learning. Efforts will be made to solve the problems feedback from this research, such as the combination mechanism of online and offline, the assessment method with the learning situation and the training effect. However, the course can not only achieve the teaching objectives, but also make real achievements.

### **5.3 Innovation of Teaching Methods**

The methods of online teaching and offline teaching should be different. Teachers should learn more about the teaching forms of accounting courses in other schools, further improve the quality of teaching interaction, such as online discussion quality, posting quality, video viewing quality, etc. at the same time, the innovation of teaching methods should also match the corresponding teaching evaluation system. These are the places where online teaching can be further improved in the future.

## References

1. Li Huisi. “Problems in Financial Accounting Teaching and Improvement” [J]. Commercial Accounting, 2014, (03).
2. Jiang Weidong. “Application of Oriented Teaching Method in Advanced Financial Accounting Teaching”. Accounting Journal of the Chinese Academy of Sciences [J], 2005, (30).
3. Haihai. “Current Situation, Existing Problems and Future Development of Accounting Talents Training in China Thinking” [J]. Commercial Accounting, 2014, (01).
4. Ma Gaiyan, “University Online Teaching in the COVID19 Pandemic: Teaching Effect and Cause”, [J] Yangzhou University (Higher Education Study Edition), 2022, (26).
5. Wong Alex and George Sendirella and Tanima Farzana Aman. Operationalising dialogic accounting education through praxis and social and environmental accounting: exploring student Perspectives [J]. Accounting Education, 2021, 30(5): 525–550.
6. Coman Dan Marius et al. Digitization of Accounting: The Premise of the Paradigm Shift of Role of the Professional Accountant[J]. Applied Sciences, 2022, 12(7): 3359–3359.
7. Rodrigues Luísa Ana. Integrating Digital Technologies in Accounting Preservice Teacher Education: A Case Study in Portugal [J]. International Journal of Technology and Human Interaction (IJTHI), 2022, 18(1): 1-19.

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