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Explore the Impact of Collaborative Tendencies in the Flipped Classroom on Taking Basketball Teaching

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Abstract: Along with the development of internet and mobile technology, wireless communication expands the scope of communication improve portability and convenience. Student can get into and try to integrate into the learning environment, for validate the benefit of learning. The research based on three on three cooperative learning basketball games that focus on flipped classroom concept and develop one suitable basketball. Different teaching strategies understand the students' learning collaborative tendency. This research takes 401 students in the central university of Taiwan to participate in the experiment which using a tablet (on pre-class, during the class, and after- class). The teams conduct observed in the classroom every week, and took questionnaire method as empirical data to analysis student's behavior.

Keywords: collaborative tendencies, basketball teaching, flipped classroom

1. Introduction

The advancement of internet technology and the application has been developing rapidly, and the technology in the 21st century has fulfill human needs, people demand and reliance on information technology become increasingly close, while in the learning field, also receive the impact emerging of technology, opening up more possibilities than traditional teaching methods. The role of technology in education is gradually important from the policy of various disciplines, it is easy to see the trend of globalization. In the field of physical education, through the integration of information, not just can combined health education, but also can induce student's interest, and provide student to the self-learning environment and cultivate self-learning ability, such can enhance the learning effectiveness and professionalism of physical and health education (Hall, Brajtman, Weaver, Grassau, & Varpio, 2014).

Motor skill learning is the main course of physical education, in the past physical education use direct guidance method, attached importance to the demonstration of action and instructed students to imitate and practice, rarely through mobile devices induce encourage student to try different change of body movement, of course student also difficult to experiment different function of body movement. If the course add information and integrate to the arrangement and the operation of multimedia teaching, understand the process of movement skill, skill of insight, build a concept, and what get from movement's experiment, can make the learning results achieve more with less (Raiola, & Tafuri, 2015).

The basketball teaching is divide into basic training movement and more advance skill application. While, three on three basketball's competition regulation is belong to skill application, besides need the right and accurate movement, still need defense and offense of proficiency process, in the face of different condition of teamwork's defense and offense, it need more advanced and rapid resilience, while it important to spatial balance and their relation in the condition change quickly. In addition, basketball movement is belong to teamwork movement, each teamwork must interworking, and know very well about basketball knowledge and the regulation of competition, thus make people who participate can understand basketball knowledge and regulation, should become familiar important issues (Severini, 2014).

In conclusion, on design of basketball flipped classroom must include deep content and assisted materials by the use of multimedia to understand motor skills, build skill and concept. This design hope through application program, with the different teaching strategies whereby understand the impact of

different teaching strategies to the tendency of cooperation and learning motivation. At the same time, hope student can in-depth understand basketball movement, then enhance learning's motivation and achieve in-depth cooperation in the learning experiment, and get better basketball experience (Huang, Tu, Wang, Chen, Yu, & Chou, 2017).

This experiment question research as follow:

- Observe the collaborative behavior in the flipped classroom on taking basketball teaching
- The implementation of basketball flipped classroom learning activities, to explore the differences in student cooperation.

2. Literature Review

In the application of human society, internet gradually expand, deepen, there are many different from the past face to face teaching model of learning mode, such as MOOC (Massive Open Online Course, large-scale open online classroom). A new Large-scale free online open course with 5 to 10 minutes of small unit segmentation video course, with occasional online discussion and feedback during the passage, online peer learning and discussion, virtual online experiment and online practice and assessment of the course, students can schedule their studies at their own pace. Flipping classroom is a new line of science and technology, and the current higher education is becoming more personal and adaptable, and through the assessment of practice models to ensure that cohesive learning experience is equally valued. (Wanner, & Palmer, 2015)

2.1 Flipped Classroom

The focus of the classroom is not on whether the teacher has a recording video to teach, but to flip the classroom to create a framework for students to get personalized and suitable learning. Even teachers and students can have more interaction and discussion in the classroom (Sams and Bergmann, 2013). Flipped classroom is not intended to replace the teacher, but to allow students in the classroom. It can be more independent inquiry and collaboration, build peer interaction, the teachers in the classroom can play a guide and the role of assisting, rather than being completely dominant, the flipped classroom is to redefine the role of teachers and students, so it refer to move the problem on traditional teaching method to outside classroom (Lage, Platt, & Treglia, 2000).

The flipped classroom contains many benefits, including the interaction between the teacher and the student, and the practical application of the classroom in many disciplines, such as economics (Roach, 2014) and nutrition studies (Gilboy, Heinerichs, Pazzaglia, 2015), and even paper-making cranes, can indeed lead to better learning outcomes.

Flipped classroom is not intended to replace the teacher, but to allow students in the classroom can be more independent inquiry and collaboration. By peer interaction, the teachers in the classroom can play a guide and the role of assisting, rather than being completely dominant, the flipped classroom is to redefine the role of teachers and students, so it refer to move the problem on traditional teaching method to outside classroom (Lage, Platt, & Treglia, 2000). Thus this research develop digital game based on programming learning system with high interaction than video based teaching strategies, and is use to flipped classroom, and attempting to compare the result differences of using flipped classroom teaching strategies.

2.2 Mobile and Ubiquitous learning

Mobile and ubiquitous learning computing concept is refer to via wireless network, ubiquitous space that allow everyone a small node in a huge computing network that interacts with people on a wireless mobile devices. Thus, mobile and ubiquitous computing are not concern only with individuals or objects, but our interaction with mobile devices, it also can correspond to the life needs, and all information can become a module, through search, mixed and remake to become person information, make the human nature of the technology develop and achieve U-oriented society. Mobile and ubiquitous learning include freedom and convenience, personalized learning, spontaneous learning and sharing the resources and interaction (Hwang, & Tsai, 2011).

2.3 Collaborative Learning

Collaborative learning refers to in order to student understand deeper the knowledge of social construction in the social negotiation process (Dillenbourg, 1999), and through information exchange, get the feedback interaction with peer, together construct knowledge. Collaborative learning train the communication skill and social awareness, and produce different awareness and the ability of solving problem. (Scardamalia, 2002; Stahl, Koshmann, & Suthers, 2006) recent years more research point out that collaborative learning can help to enhance learning achievement (Yang, & Chen, 2012)

3. Research Method and Design

The purpose of this research is to understand the difference between collaborative tendencies, learning motivation and learning achievement in different teaching strategies and contexts of traditional teaching and mobile learning. The course includes four parts: (Basketball Vision), (Basketball Justice), (Basketball Venus) and (Taiwan Fans Meetings). It aims to establish the cognitive ability of learners in common sense, techniques and rules. For three on three basketball the necessary knowledge of a better understanding, it lead to their participation in the motive of basketball. Through the information media and curriculum interaction, student can have to appreciate, review and comment on a variety of the movement of the kind of appearance, in order to exercise, communication, science and technology convergence of the curriculum philosophy, to provide student to diverse learning environment.

3.1 Research Framework

The design of Independent variables is suitable for different teaching strategies. This research will divided into three different classes: (APP flipped classroom group), (APP big screen teaching group), and (traditional teaching group). APP flipped classroom group is allow the student download the APP and shall be prescribed reading first, retain 10 minutes to review at the classroom, immediately get into exercise. APP big screen teaching is make the APP projection into big screen, so that students can learn the relevant knowledge in the classroom before get into exercise. Traditional teaching group be directly oral teaching on the court and help the strategy board, then get into exercise.

3.2 Research Tools and Analysis Method

The research use collaborative tendencies scale method design, proposed by Hwang, Shi, and Chu (2011). which focus on collaborative tendencies to conduct survey, and using Cronbach's α coefficient as verification scale, the reliability of 0.91. The topic of this research using Likert five scale to give score, 5 points on behalf of very agree, 1 points for very disagree). This research will count on 10 questions when proceed statistics analysis, with maximum score is 50 points.

4. Experimental Design

The participants of the study were students of the "physical education- basketball" course at University in the central region. There were eight classroom participate the experiment among with two classrooms using (traditional classroom), three classrooms using (APP big screen teaching), three classrooms using (APP flipped classrooms). Eight classes are taught by one teacher, the courses aims to take three on three basketball competition as end of term the class, the content of course is all about basketball skills, rules, offensive and defensive courses, all of the class level and teaching time are same.

Focused on the participants using teaching strategies then eliminate missing value, the result as shown Table 1.

Table 1: The frequency table of teaching method

Teaching strategies	Frequency	Percentage
APP flipped classroom	149	37.20%
APP big screen teaching	149	37.20%
Traditional classroom	103	25.70%
Total	401	1.001

5. Experimental Results and Analysis

The purpose of this research is to explore the impact of different teaching strategies on student's collaborative learning tendencies and teaching achievement. In order to verify the effectiveness of the learning model, this research uses quasi-experimental design. It will bring on experiment participants divided into APP flipped classroom group, APP big screen group (experiment group) and traditional teaching (control group), conduct different teaching learning activities, and through before and after scale test of the collaborative tendencies and the achievement test of three on three competition, analysis the change of before and after test of teaching activities. If experiment group and control group has significant differences, it can infer that APP teaching method, for student's learning achievement and collaborative tendencies has positive impact, and also as a basis for the development of adaptive teaching system. The confidence level of the research is 0.05.

In order to understand the collaborative tendencies of three groups in the learning activities whether has significant differences or not, will take independent sample T-test of collaborative tendencies to assess the cognitive basis of the three groups before the experiment. The result of the experiment shown as Table 2 shows, the statistics result of the collaborative before the test found that, the average score of APP flipped classroom group is 26.81 points, the average score of APP big screen group is 28.52 points, traditional teaching group is 29.06 points. There is no significant differences between APP flipped classroom group and APP big screen group before the test ($t=-0.984$, $p = 0.326>0.05$). There is no significant differences between APP flipped classroom group and traditional teaching group before the test ($t=1.172$, $p = 0.243>0.05$), there is no significant differences between APP big screen group and traditional teaching group before the test ($t=0.283$, p 0.777 >0.05). Based on statistics above, it have not reached significant level, showing that each group of student in the experiment before the experimental collaborative tend to have same basis.

Table 2: The summary pre-test table of Independent sample T-test of collaborative each group

	Experiment	Frequency	Mean	SD	T
Collaborative tend Pre-test	APP flipped classroom	149	26.81	15.083	-0.984
	APP big screen teaching	149	28.52	14.947	
	APP flipped classroom	149	26.81	15.083	-1.172
	Traditional classroom	103	29.06	14.896	
	APP big screen teaching	149	28.52	14.947	-0.283
	Traditional classroom	103	29.06	14.896	

In order to compare the collaborative tendencies of each group whether has significant differences or not, focused on post-test result to conduct ANCOVA analysis. To meet the basic hypothesis of covariance analysis, homogeneity test of variance and homogeneity test of regression coefficients in three groups were performed. There is no significant differences between experimental group and control group ($F= 1.012$, $p=0.365 >0.05$), shown as Table 3, it means that the slope of the regression lines was same. By two kind test above, it can be learned that the experimental group and control group of the three groups have the homogeneity, consistent with basic assumptions of covariance analysis, can proceed ANCOVA analysis.

Table 3: The pre-test table of two way ANOVA of different teaching strategies

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Teaching strategies * Collaborative tendencies Pre-test	373.180	2	186.590	1.012	0.365
Error	72853.195	395	184.438		

After the end of the experiment, three student groups take collaborative tendencies post-test, then analysis each group in the different teaching model, different learning strategies which cause by learning differences. According to the result of one-way analysis of covariance shows, after student use different teaching strategies, the post-test score of collaborative tendencies which after eliminate the pre-test effect, there was significant differences between each group ($F= 21.169$, $p < .05$), it shows it produce significant differences for the student collaborative learning after using different teaching strategies. Hence, by the analysis result of the research experiment shown on Table 4, can find that APP flipped classroom student group has significantly higher differences than APP big screen group, while traditional student group also has significantly higher differences than APP big screen group, and there is no significant differences between APP flipped classroom group and traditional teaching group.

Table 4: The summary post-test table of ANCOVA between different teaching strategies and collaborative learning

Teaching strategies	Frequency	Mean	SD	Adjusted mean	Std. Error	Sig.
APP flipped classroom	149	32.27	11.931	32.635	1.116	0.000*
APP big screen teaching	149	26.62	16.881	26.527	1.113	
APP flipped classroom	149	32.27	11.931	32.635	1.116	0.859
Traditional classroom	103	32.49	11.844	32.326	1.341	
APP big screen teaching	149	26.62	16.881	26.527	1.113	0.001*
Traditional classroom	103	32.49	11.844	32.326	1.341	

*$p < .05$

6. Conclusion

The research the impact of using different teaching strategy on student's collaborative learning tendencies and learning achievement. Thus the research try to find out the reverse significant differences and explore collaborative tendencies, learning motivation and learning motivation through APP flipped classroom teaching model, APP big screen teaching and traditional teaching mode

About the student's collaborative tendencies, the result of this research shows, APP flipped classroom and APP big screen can help enhance student's collaborative tendencies, the hypothesis in this research is supported (there is significant differences on different basketball student respectively using different traditional teaching, APP big screen, and APP flipped classroom to the collaborative tendencies). Through different teaching strategies, the collaborative tendencies of student who adopt APP flipped classroom is superior than the APP big screen teaching, while the collaborative tendencies of student who adopt APP big screen is superior than the student who adopt traditional teaching strategies. Advisor point out that because of in the video explaining time will emphasize teamwork, by adopting APP teaching can clearly present collaboration, teamwork action; while using traditional teaching, are more likely to ignore the relevant teaching at the scene.

The teacher reveal, because the flipped classroom can allow students to preview enough to prepare course. Most of the time can be used for discussion and practice, which is a great help for learning achievements; because traditional teaching need tactical board and other teaching tools, plus more practical operation, and whether teachers or students is also more familiar with traditional teaching, and therefore it get good teaching effect. As for the APP big screen teaching, it may be more difficult to take into account the progress of all students, nor if the traditional teaching mode can carry out a lot of practical operation, so whether it is APP flipped classroom or traditional teaching model, the improvement of learning achievement is significantly higher than APP big screen teaching.

This research explores the impact of different teaching strategies on cooperative tendencies, learning motivation and learning achievement. In addition to different teaching model, should consider the personality traits of students themselves, such as pre-prepared knowledge and learning preferences, and provide corresponding ones. Learning strategies, so that in line with the different characteristics of students, to provide students with real assistance, especially in the development of science and technology, new teaching model continuously arise, and more accurate to give students the most suitable learning model.

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