Vol.1 No.12 2020
https://doi.org/10.37420/j.cer.2020.126

Study on the Correlation Influence of Self-Regulation and Self-Efficacy to Academic Performance in College Physical Education MOOC Learning

Yiting Tang[1]*, Chengyu Wei[2], Junpeng Chen[3], Jing Zhang[4]
[1] Southwest Petroleum University, Chengdu, China
[2] Ya'an Polytechnic College, Ya'an, China
[3] Southwest Jiaotong University, Chengdu, China
[4] Capital Normal University, Beijing, China
*Corresponding author, e-mail: 438250482@qq.com

Abstract: *Based on a questionnaire survey and analysis of 52 college students majoring in physical education in a comprehensive university located in a first-tier city of southwestern China, this paper studies the correlation influence of self-regulation and self-efficacy to academic performance in college physical education MOOC learning. The study found that self-regulation and academic performance are significantly related to each other, while self-efficacy has no significant impact on academic performance. In sports MOOC learning, the supervision of third parties (such as teachers, etc.) can be strengthened to guide learners to properly prompt self-regulation to improve their learning efficiency, and better their learning methods, reduce the negative impact of PE MOOC learning, thereby improving their academic performance.*

Keywords: *PE MOOC; Self-regulation; Self-efficacy; Academic performance*

Introduction

With the deepening of the "Internet plus" era, the role of Massive Open Online Courses (MOOC) has become increasingly prominent in promoting the overall reform of education and restructuring the educational ecosystem. MOOC in college physical education is no exception. Compared with the traditional teaching model, the MOOC platform makes its courses content public, promotes the sharing of excellent educational resources, and better reflects the principles of teaching students in accordance with their aptitude and fairness. However, some studies also found that the application effect and influence of MOOC in college physical education are not as good as expected. Therefore, how to improve the application effect and influence of MOOC in colleges and universities is a problem that colleges and universities need to face.

Many theoretical methods emphasize that the application effect and influence of MOOC are affected by self-regulation and self-efficacy. Traditionally, college students with excellent academic performance are usually found to be good at "self-regulating". Self-regulation refers to self-generated thoughts, emotions, and actions. These thoughts, emotions, and actions are planned and performed to achieve personal goals (Zimmermann, 2005). Self-regulation is considered to be an important factor in learning success in various learning environments (Jonsson & Botella, 2017; Schwonke, 2015). Bandura (1997) defines self-efficacy as "a per-

Vol.1 No.12 2020
https://doi.org/10.37420/j.cer.2020.126

son's ability to organize and perform the actions required to produce a given achievement". It is considered to be a mature incentive structure in the field of educational psychology and an important part of self-regulating motivation (Zimmermann, 2005). There are three stages of self-regulation in the learning process according to goal-setting and cognition: foresight, performance and self-reflection. During the self-reflection period, meta-cognitive aspects such as self-judgment and self-reaction are initiated. The use of monitoring the learning process can effectively evaluate the learning status of learners (Bjork, 2013). Therefore, self-regulation is regarded as an important factor for successful learning in various learning environments (Panadero & Botella, 2017). Domestic and foreign education researches involving the act of learning often focus on the promotion of self-regulation in the learning environment of the act of learning. The purpose is to analyze whether self-regulation will affect academic performance and learners' learning self-efficacy. There are empirical studies in other subjects such as mathematics and foreign languages, which prove that the MOOC learning of the above subjects is affected by the learner's own self-regulation and self-efficacy, while MOOC itself helps the learner to develop self-regulation and self-efficacy.

From the perspective of school physical education, Chinese college physical education is mainly based on sports technique teaching. Although the online teaching form of MOOC teaching breaks the limitations of time and space, realizes the nodal teaching of free space-time weak connection and the time-space conversion of physical education in the remote environment, the impact of this new type of "artificial intelligence plus" education system, and the learning platform of smart sports virtual reality sports technology have on the teaching effect has no empirical analysis to testify. From the perspective of the characteristics of physical education, it is different from literature, history and philosophy where the metaphysical knowledge system relies on imagination and is easy to realize virtual teaching. Physical education is a subject characterized by physical movements and practice, which is more dependent on field teaching. There are different opinions as to whether the online teaching of MOOC is suitable for physical training and technical movement learning. Based on this, this study intends to investigate whether college students' physical learning performance would be affected under the MOOC-based learning environment, and to explore the relationship between college students' self-regulation, self-efficacy, and physical performance in the MOOC-based learning environment, with a view to providing evidence for the application effect and influence enhancement of MOOC in college physical education. In the post-epidemic era, emphasis on maintaining effective social distancing may make online learning methods such as MOOC the norm in campus teaching. Therefore, the conclusions of this research are of great significance for practical applications.

Methodology

Subject

University students in a comprehensive university located in a first-tier city of southwestern China.

Excluding some with poor physical condition, 52 college students majoring in physical education and training from the university were randomly selected and divided into two groups: control group and experimental group. 52 questionnaires were distributed, 51 valid questionnaires were returned, and the effective recovery rate was 98.1%. Among the surveyed students, 28 were males and 23 were females. The age of the subjects was between

17-21 years old, with an average age of 18.7 years. All tests asked for their consent to fill out the questionnaire.

Instrument

Through the pre-test, experimental operation and post-test on the research subject, conclusions are drawn from the analysis of the experimental data by SPSS. Excluding some with poor physical condition, 52 college students majoring in physical education and training from the university were randomly selected and divided into two groups: control group and experimental group. The testees both in the control group and the experimental group learn aerobics sports MOOC for college students. Each class records self-study reports and electronic data monitoring of online learning behaviors, such as the testees' MOOC webpage browsing time, frequency and order. The difference from the control group is that the subjects in the experimental group are prompted by the teacher to conduct self-regulation every half an hour, and a lesson contains at least two reminders. After 8 weeks, the two groups of subjects filled out self-efficacy questionnaires and took the exams to complete the assessment of aerobics physical education courses. The main research instruments are:

Questionnaire. By conducting the survey, conclusions are drawn from using appropriate statistical methods to process the collected data. The research tools are self-reporting questionnaires and PE MOOC courses, which consist of the following parts:

(1) Basic personal information, which includes subjects' age, height, weight, and whether they have exercise habits and other items.
(2) Self-study report, which includes variables such as study time, frequency and mood.
(3) General Self-Efficacy Scale (GSES). The Chinese version of the scale is compiled by Schwarzer et al. and revised by Wang Xiangdong et al. There are a total of 10 test items in this scale, which are mainly used to test the testee's judgment on the ability to cope with difficulties in daily life or study. The subjects were self-assessed on a scale of 1-4. The Chinese version of GSES has good reliability and validity. Its internal consistency coefficient Cronbach α is 0.87, test-retest reliability r is 0.83 ($p<0.001$), and half-time reliability r is 0.82 ($n = 40l$, $p < 0.001$).
(4) Physical education MOOC, which includes the course itself and its assessment standards. This is used as the basis for learners' academic performance.

Mathematical statistics. Use SPSS 17.0 to analyze.

Result

Analysis of the Self-Efficacy in College Students' Physical Education MOOC Learning

Comparing the self-efficacy scores of the tested college students with the existing standard score norm (2.69 for male students, and 2.55 for female students) of college students by taking advantage of the General Self-Efficacy Scale (WANG Caikang, Department of Psychology, South China Normal University, Guangzhou, 510631), the self-efficacy level of the tested students is in the normal range, indicating that the tested college students have a normal sense of self-efficacy as a whole. (Table 1) The self-efficacy scores of the con-

Vol.1 No.12 2020
https://doi.org/10.37420/j.cer.2020.126

trol group and the experimental group are statistically analyzed. The difference between the two is not significant, indicating that there is no significant difference in the self-efficacy level of the experimental group and the control group, which meets the requirements of random allocation. The change is not due to individual reasons.

Table 1. Comparison of the Characteristics of college students' self-efficacy

	Average Score	Standard Deviation	F	Sig
Control Group	2.60	0.489	2.395	.128
Experimental Group	2.72	0.603		

Comparative Analysis of College Students' Self-Regulated Learning with and without Teacher's Prompt

Record the frequency of students' self-learning after being prompted by the teacher in each class, and compare and analyze the frequency of students' initiative contact with the teacher between the control group and the experimental group after class (Table 2). The average weekly time of initiative exercises in the experimental group is slightly higher than that of the control group. However, the difference between the two is not significant, indicating that both the experimental group and the control group can practice initiatively in order to complete the course requirements.

Table 2. Comparison of Students' After-Class Initiative Exercise Frequency (Week)

	Frequency	Standard Deviation	F	Sig
Control Group	3.71	1.944	.401	.153
Experimental Group	4.17	1.711		

Comparison of College Students' Aerobics Examination Performance

As can be told from table 3, the average score of the experimental group is slightly higher than that of the control group, but the difference is not significant, indicating that MOOC teaching and traditional teaching in aerobics courses have no significant difference in terms of students' academic performance. The standard deviations of the assessment scores in the experimental group and the control group are both large, indicating that there are large differences in individual differences in both groups.

Table 3. Comparison of Students' Aerobics Examination Performance

	Score	Standard Deviation	F	Sig
Control Group	58.20	20.037	.000	.998
Experimental Group	62.96	21.310		

Analysis of the Correlation Influence between College Students' Self-Regulation and Sports Performance

Correlation analysis was conducted on whether the tested college students performed experimental treatment, self-efficacy, aerobics assessment scores and self-regulation (Table 4). There was no significant correlation between traditional teaching and MOOC teaching and self-efficacy, assessment scores and self-regulation; There is no significant correlation between self-efficacy and assessment results and self-regulation; there is a significant correlation between self-regulation and assessment results, indicating whether students can self-regulate during the MOOC learning process will affect the final assessment results. In other words, it will affect the effect of learning.

Table 4. Correlation among Experimental Treatment, Self-Efficacy, Academic Performance and Self-Regulation (r)

	Average Score	Standard Deviation	F	Sig
Experimental Treatment	1			
Self-Efficacy	.113	1		
Academic Performance	.117	.231	1	
Self-Regulation	.114	.057	.553**	1

Note: * is significantly correlated at 0.05 level (bilateral), ** is significantly correlated at 0.01 level (bilateral)

Discussion

(1) MOOC in physical education has high requirements for college students' self-regulation. When there is no significant difference in self-efficacy, self-regulation directly affects college students' academic performance. Therefore, supervision and prompting from the third party is very important.

Compared with traditional physical education, MOOC students need to reflect and adjust their performance. There is no significant difference in self-efficacy between the experimental group and the control group. The difference in performance between students does not come from self-efficacy. Therefore, the level of self-regulation directly affects the academic performance of college students. Self-regulation helps students reflect on and adjust their own behaviors and movements, and promptly help students adjust their movements, training methods and training time. With the assistance of teachers, self-regulation is essential for students to achieve good academic performance through MOOC learning. In this situation, the teacher's prompt supervision plays an important role in the self-regulation of students' learning.

(2) Compared with the traditional physical education teaching, MOOC learning has no obvious research basis to testify its role on improving the physical performance, but there is also no obvious evidence of its declining the performance.

In this study, the self-regulated learning and the improvement of academic performance after being prompted by teachers are regarded as indicators of self-regulation results, and the process of self-regulation is not

Vol.1 No.12 2020
https://doi.org/10.37420/j.cer.2020.126

directly measured. Compared with traditional physical education teaching and learning, there is no significant difference in the performance of students in MOOC learning, indicating that students can also complete the requirements of physical education through a certain learning mechanism. The notion that only knowledge-based courses are suitable for MOOC learning is overturned. Skill-based courses in physical education can use MOOC learning on the basis of students meeting certain conditions, which are more flexible and adapt to the individual learning methods of students. It can be complementary to traditional teaching methods and meet the learning needs of students.

(3) Subjects of this study are college students majoring in physical education and training, and the research results may not be suitable for college students who are not majoring in physical education.

Due to the particularity of aerobics and other skill-based sports courses, students who do not have a certain sports foundation are still recommended to focus on traditional sports learning to avoid sports injuries caused by blind training. Subjects of this research are college students majoring in physical education, they all have a certain physical foundation and know the self-regulation methods of physical exercise. The results of this research cannot be predicted and explained for college students whose majors are not physical education. More studies are required in order to draw more adaptive conclusions. In addition, this research test is carried out in practical physical education classes. In the future, we may consider furthering studies in theoretical classes.

Conclusion

MOOC in physical education has high requirements for college students' self-regulation. When there is no significant difference in self-efficacy, self-regulation directly affects college students' academic performance. Therefore, supervision and prompting from the third party is very important. Students can be trained to improve their academic performance by improving self-regulation ability in the MOOC teaching environment. Under the guidance of teachers, self-regulation is a necessary psychological quality for students to achieve good academic performance through MOOC learning. Therefore, third-party supervision must be strengthened in the act of learning, which is important for the self-regulation of students' act of learning. However, in this study, relying on teachers' prompts for autonomous learning and improvement of academic performance are regarded as indicators of self-regulation results. The self-regulation process has not been directly measured and has not been tested on students whose majors are not physical education. In addition, this research test is carried out in practical physical education classes. In the future, we may consider furthering studies in theoretical classes. Also, more detailed information about the learning process should be provided as a way to evaluate the self-regulation.

Funding

This paper was supported by the following two projects:

[1] Sichuan Mental Health Education Research Center 2020 General Funding Project [No. XLJK-JY2011B];

[2] National Research Center for Early Childhood Sports Development 2019 General Funding Project [No. YETY2019B06].

References

Cai, Z. B., & Liu, Z. W. (2017). Mooc Construction in Colleges and Universities: Current Situation, Problems and Trend. *Higher Education Exploration*, (11), 45-49.

Li, X., & Rao, Z. H. (2017). Practice and Prospect of MOOC Teaching in Colleges and Universities. *Jiangxi Social Sciences*, 37(1), 236-242.

Tang, Y. T., & Wei, C. Y. (2018). Study on the Influence of Attribution Style, Self-Consistency and Congruence and Fitness Behavior of College Students. *Sichuan Sports Science*, 37(6), 52-56.

Wang, H. R., Zhao, H. H., & Yu, J. B. (2019). Current Situation and Development Countermeasure of Sports Curricular Construction for MOOC Platform of Chinese Universities. *Journal of Wuhan Institute of Physical Education*. (8), 69-75.

Wang, X. D., Wang X. L., & Ma, H. (1999). *Handbook of Mental Health Assessment Scale (updated version)*. Beijing: Chinese Mental Health Journal, 33-35.

Xu, H., Zhang, S. Y., & Luo, J. H. (2018). Research on the Concept Evolution of Online Curriculum Construction in Chinese Universities—Some views on the Construction of the "Internet Plus Education" Ecological System. *Modern Distance Education Research*, 153(3), 59-65.

Zhang, J. W., & Tang, W. D. (2016). Exploration and Contemplation on the MOOC-Based College Sports Teaching Model. *China School Physical Education(Higher Education)*, (1).