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ORIGINAL ARTICLE

Correlation effects of self-regulation on academic performance and self-efficacy in college physical education MOOC learning

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ABSTRACT

At present, MOOCs have gradually become a part of daily teaching in colleges and universities, but domestic physical education curriculum research has not yet covered the content of the relationship between college students' learning self-regulation, self-efficacy, and physical education performance in the MOOC learning environment. Therefore, it is necessary to study the correlation between self-regulation and self-efficacy in the study of physical education MOOCs through a questionnaire survey and analysis of 52 college students majoring in physical education at a BSU university in Beijing. The study found that there is a significant correlation between self-regulation and academic performance, but the impact of self-efficacy on academic performance is not significant, and the relationship between self-regulation and self-efficacy needs to be further explored.

Keywords: Physical education, MOOC, Self-regulation, Self-efficacy.

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INTRODUCTION

With the deepening of the "*Internet* +" era, the role of Massive Open Online Courses (MOOCs) in promoting the overall reform of education and restructuring the educational ecosystem has become increasingly prominent, and college physical education is no exception (Chang et al., 2022). Compared with the traditional teaching mode, the MOOC platform opens up the course learning content, promotes the sharing of excellent educational resources, and better reflects the principle of teaching students in accordance with their aptitude and fairness in teaching (Venitz & Perels, 2019). However, some experts and scholars have also found that the application effect and influence of MOOCs in college physical education courses are not as good as expected (Dembo & Seli, 2004). Many theoretical approaches have emphasized that the effectiveness and impact of MOOC courses are influenced by self-regulation and self-efficacy, and traditionally successful college students are often described as "*self-regulation and management students*". Educational research involving MOOCs at home and abroad often focuses on the promotion of self-regulation in the MOOC learning environment, with the purpose of analyzing whether self-regulation affects academic performance and learners' learning self-efficacy (Milligan & Littlejohn, 2016). Empirical studies in other disciplines such as mathematics and foreign languages have proved that the MOOC learning of the above subjects is affected by the learners' own self-regulation and self-efficacy, and the MOOC learning environment itself also has an impact on the learners' own self-regulation and self-efficacy. Influence. However, at present, there is no empirical analysis of relevant aspects of MOOC research on domestic physical education courses. Based on this, this study intends to investigate whether college students' physical education performance is affected under the MOOC learning environment and to explore the correlation between college students' learning self-regulation, self-efficacy, and physical education performance under the MOOC learning environment, with a view to providing a basis for college sports MOOCs. Provide research support for course application effects and influence enhancement (Milligan & Littlejohn, 2016).

Literature review

Flipped learning is a form of student-centered instruction in which students are in charge of studying the course materials in advance and taking part in activities that the teacher has planned for the class (Rosen et al., 2017). Flipped learning has recently received strong support from researchers in education from a variety of sectors. The training is moved to the pre-class activities so that the in-class activities, such role-playing, debates, quizzes, and group projects, may be more interactive and student-centered (Godoy Garraza et al., 2019). Incorporate several active learning techniques, such as recorded lectures, quizzes, and student participation in cognitive processes, into a blended learning course to create flipped learning (Zainuddin & Halili, 2016). We examined numerous flipped learning styles and the advantages of such classes. Additionally, they stated that contextual learning is crucial for healthcare and medical education since it offers opportunities for practice and circumstances where information can be applied (Godoy Garraza et al., 2019).

Numerous studies have demonstrated that students may benefit from being led into real-world situations by adopting effective teaching techniques. Students now have access to a variety of learning opportunities and resources thanks to the integration of educational technology into the classroom, enabling them to quickly find learning materials for practical scenarios (Muñoz-Merino, 2015). employed simulation learning techniques to assess student performance and allow students to conduct situational learning. In this environment, students encourage their classmates to apply their knowledge, foster creativity, engage in teamwork, study collaboratively, exercise critical thought, increase the efficacy of their learning, and acquire information and skills outside of their discipline (Chang et al., 2022). Self-regulated Learning (SRL) is a method of learning that calls for goal-setting, the application of techniques, self-monitoring, and self-adjustment. According to researchers, learners may use metacognition and motivational techniques to

actively generate knowledge and increase their capacity for learning (Chang et al., 2022). characterized SRL as students' self-generated ideas, perceptions, and planned activities for accomplishing their self-set objectives based on the assessment of and reflection on their own performances. This definition was included in a proposal for an SRL architecture. High-achieving students create specific learning objectives for themselves, employ more learning techniques during the learning process, self-supervise the learning process more frequently, and modify their learning rhythm in response to their outcomes, according to research on SRL (Wu et al., 2020). According to researchers, self-regulation is a conscious process that naturally shapes a person's behavior based on their motivation and is strongly linked to their long-term objectives or ideals (An et al., 2016).

OBJECTS AND METHODS

Object

A university student in Beijing. After excluding the causes of physical fitness and disease, this study randomly selected 52 college students from a BSU university in Beijing, majoring in physical education and training. Among the surveyed students, 28 boys and 23 girls were divided into a control group and an experimental group. A total of 52 questionnaires were distributed, and 51 valid questionnaires were recovered, for an effective recovery rate of 98.1%. All tests were conducted with the consent of those who filled out the questionnaires. The age of the subjects ranged from 17 to 21 years old, with an average age of 18.7 years.

Processes

The tastes in the control group and the experimental group all normally choose courses to study in the spring semester of the aerobics physical education course for college students. Different from the control group, the tastes in the experimental group studied in the MOOC learning environment, practiced independently after class, and took the test with the tastes in the control group after 16 weeks. In order to evaluate the self-efficacy of the tastes, a self-efficacy questionnaire was issued and filled out in the first week of the course, and after the 16-week physical education course was over, the final assessment of the aerobics physical education course was completed.

Questionnaire and survey content

1. Basic personal information, including subjects' age, height, weight, whether they have fitness habits, etc.
2. General Self-Efficacy Questionnaire (GSES) The Chinese version of the scale was compiled by Schwarzer et al. There are 10 test items in this form, which are mainly used to test the teste's judgment on the ability to cope with difficulties in daily life or study. Respondents rated themselves on a scale of 1–4. The Chinese version of GSES has good reliability and validity; its internal consistency coefficient Cronbach a = 0.87; test-retest reliability r = 0.83 (p < .001); and half-way reliability r = 0.82 (n = 40, p < .001).
3. Aerobics MOOC courses for college students the university's self-developed aerobics MOOC and assessment data are used as the basis for students' learning content and performance assessment.
4. Self-regulation. The subjects answered the question of whether to carry out self-regulation methods and efficacy as the basis for whether to carry out effective self-regulation in the process.

Data processing and analysis

This study uses the SPSS 26.0 social statistical analysis package for analysis.

RESULTS

Analysis of the basic situation of college students' self-efficacy in physical education MOOCs the self-efficacy scores of the college students under test were compared with the norms of existing college students (see Table 1). Overall, a normal sense of self-efficacy the self-efficacy scores of the control group and the experimental group were statistically analyzed, and the difference was not significant, indicating that there was no significant difference in the self-efficacy level between the experimental group and the control group, which met the requirements of random allocation and the effects brought about by MOOC learning and self-regulation. no change It is caused by individual reasons.

Table 1. Comparison of characteristics of college students' self-efficacy.

Item	Mean self-efficacy	Standard deviation	F	Sing.
Control group	1		2.395	.128
Test group	0.113	1		

Comparative analysis of college students' independent practice after class

Count the number of times students practice independently after class every week, and compare and analyze the situation of autonomous contact between the control group and the experimental group after class (see Table 2). The difference is not significant, indicating that both the experimental group and the control group can practice independently in order to complete the course requirements.

Table 2. Comparison of self-directed practice after class of college students (weeks).

Item	Number of exercises per week	Standard deviation	F	Sing.
Control group	1.944	1.944	0.401	.153
Test group	1.711	1.711		

The comparison of college students' aerobics examination results

Comparing the test scores of college students' final aerobics assessment (see 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 the aerobics course have a significant impact on There is no significant effect on students' test scores. The standard deviations of the assessment scores in the experimental group and the control group are both large, indicating that there are large differences between individual students in both the experimental group and the control group.

Table 3. Comparison of college students' aerobics assessment results.

Item	Test results	Standard deviation	F	Sing.
Control group	58.20	20.037	0.000	.998
Test group	62.96	21.310		

Analysis of the correlation between college students' self-regulation and physical performance

Correlation analysis was carried out on whether the college students were subjected to experimental treatment, self-efficacy, aerobics assessment results, and self-regulation (see Table 4), and 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 scores, indicating that whether students can self-regulate in the process of MOOC learning will affect the final assessment scores, and also That is to say, it will affect the effect of learning.

Table 4. Correlation between experimental treatment and self-efficacy, assessment performance and self-regulation (r).

Item	Experimental treatment	Self-efficacy	Test results	Self-regulation
Experimental treatment	1			
self-efficacy	0.113	1		
Test results	0.117	0.231	1*	
self-regulation	0.114	0.057	0.553**	1

*Note: *significantly correlated at .05 level (two-sided), **significantly correlated at .01 level (two-sided).*

DISCUSSION AND ANALYSIS

First of all, the self-regulation requirements of college students are very high in the study of physical education MOOCs. In the absence of a significant difference in self-efficacy, self-regulation directly affects the academic performance of college students. Compared with traditional physical education teaching, MOOCs lack teacher feedback, and students need to give feedback and adjust their own performance. There is no significant difference in self-efficacy between the experimental group and the control group, and the difference in performance between students does not come from self-discipline. difference in effectiveness Therefore, the level of self-regulation directly affects the academic performance of college students. Self-regulation helps students reflect on and adjust their behavior and actions. It also helps students adjust their actions, training methods, and training time in a timely manner. Without the assistance of teachers, self-regulation is necessary for students to achieve good academic performance through MOOC learning. Secondly, compared with traditional physical education teaching and learning, there is no research basis for the improvement of physical performance in physical education MOOC learning, and there is also no evidence of an obvious performance decline. Compared with traditional physical education teaching and learning, there is no significant difference in the performance of students studying physical education MOOCs, which shows that students can complete the requirements of physical education courses through a certain learning mechanism rather than only knowledge-based courses as traditionally believed. Skill-based courses are not suitable for MOOC learning. Therefore, for skill-based courses in physical education, on the basis that students meet certain conditions, teachers can use MOOC learning to more flexibly adapt to students' individual learning styles, complement traditional teaching methods, and meet students' learning needs. Finally, the test subjects of this study are college students majoring in physical education and training, and the research results may not be applicable to college students who are not majoring in physical education. Due to the particularity of skill-based physical education courses such as aerobics, it is still recommended for students who do not have a certain sports foundation to focus on traditional physical education teaching and learning to avoid sports injuries caused by blind training. The test subjects of this research are college students majoring in physical training. The students themselves have a certain sports foundation and master the self-regulation methods of physical exercise. The results of this study cannot be predicted or explained for college students who are not majoring in physical education. Further research is needed. Conduct investigations to draw more adaptive conclusions. In addition, the test in this study was carried out in the practical physical education class, and further research on the differences existing in the physical education theory class may be considered in the future.

CONCLUSION

Ordinary college students study physical education courses in a physical education MOOC learning environment, which requires high personal self-regulation. In the absence of a significant difference in self-efficacy, self-regulation directly affects the academic performance of college students. Training students to

improve self-regulation Competence can improve the academic performance of learners in MOOC teaching environments.

AUTHOR CONTRIBUTIONS

Hizbullah Bahir; literature Review, research method and design, research analysis, and generally completed most of this research. Wang Xiaoyun; She collected the primary data and presented a general idea about the research.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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