The Impact of Various Types of Project-Based Teaching on the Guidance and Cultivation of Prosocial Behavior in University Students

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Abstract: Guiding and cultivating prosocial behavior in university students is a vital component of ideological and political education, as it is closely linked to the nation's future and the overall moral fabric of society. This issue should be given due attention by university administrators. This study primarily employs literature review, teaching experiments, and statistical analysis methods to explore the differences in the impact of basketball project-based teaching (experimental group) and table tennis project-based teaching (control group) on the prosocial behavior of university students. A 16-week teaching experiment was conducted with 60 second-year students from two classes at Jiangxi University of Finance and Economics. The findings reveal that both the basketball and table tennis programs positively influenced prosocial behavior, though the effects varied across different dimensions of prosocial behavior. Overall, basketball project-based teaching proved to be more effective than table tennis in fostering and guiding prosocial behavior among university students.

Keywords: Different types of projects, Basketball, Table tennis, Prosocial behavior.

1. INTRODUCTION

In the current economic climate, which has yet to fully recover, the increasing pressure on employment has brought an invisible strain on people's mental state. On university campuses, the psychological influence of online games has led some students to perceive indifferent and unfeeling behavior as "normal." When someone demonstrates simple acts of kindness, such as donations or helping others, they are often ridiculed or mocked. Some students, to avoid such mockery, choose to help others anonymously. This alienation of traditionally supported and valued prosocial behavior on campus should prompt reflection among educators.

Prosocial behavior is a crucial part of adolescent socialization and has become an important subject of research in psychology. People are increasingly recognizing the value of prosocial behavior, and its cultivation among university students is directly related to the quality of talent development in higher education. Prosocial behavior refers to actions that align with social expectations and benefit others, groups, or society. It encompasses behaviors such as helping, sharing, humility, cooperation, comforting, donating, and self-sacrifice—all of which are positive and socially responsible actions.

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In the context of a market economy, a stable social environment is a prerequisite for development, and the importance of prosocial behavior is increasingly recognized. Research has shown that prosocial behavior is highly malleable. As a key part of the educational system, physical education not only imparts sports skills but also fosters qualities such as prosocial behavior, collectivism, teamwork, and resilience—qualities that other disciplines may not effectively cultivate. Through specific interactive teaching and personal experiences, particularly via the socialization experiences of cooperative learning, physical education can promote the development of prosocial behavior.

To explore the differences in the effectiveness of basketball, a predominantly cooperative activity, and table tennis, a more independent one, on the cultivation of prosocial behavior in university students, this study examines four dimensions of prosocial behavior: altruism, public-mindedness (compliance and public interest), relationality, and trait characteristics. Through a 16-week teaching intervention, this study aims to understand how different types of project-based teaching affect these four dimensions of prosocial behavior in university students, providing valuable insights for future research.

2. RESEARCH METHODS

2.1. Literature Review

We accessed various electronic resource platforms such as the China National Knowledge Infrastructure

(CNKI) and Chaoxing eBooks. Using keywords such as "prosocial behavior," "basketball," and "table tennis," we searched for relevant research on sports model reform and prosocial behavior over the past decade, both domestically and internationally. In total, we reviewed six books and more than 20 master's and doctoral theses, as well as journal articles.

2.2. Experimental Method

A single-blind experimental design was adopted. A teacher from the research team, who is skilled in both basketball and table tennis instruction, conducted the teaching for two different groups. The experimental group was taught basketball skills and game strategies, while the control group focused on table tennis techniques and game tactics. The experiment lasted for one academic semester (16 weeks). A total of 120 questionnaires were distributed before and after the experiment, and 120 were collected, of which 118 were valid, yielding an effective response rate of 98.3%.

To meet the objectives of this study, the research team reviewed a large amount of literature on prosocial behavior and sports science. We consulted the *Handbook of Behavioral Medicine Scales* (2005) issued by the Chinese Journal of Behavioral Medicine and referenced the *College Students' Prosocial Behavior Evaluation Scale*. Following the basic requirements of sports science research methods for questionnaire design, we based our study on the "four-factor structure of prosocial behavior in adolescents" as established in *The Construction and Validation of the Prosocial Behavior Dimensions for Adolescents* [8]. The four dimensions of prosocial behavior—altruism, public-mindedness (compliance and public interest), relationality, and trait characteristics—were prioritized. In the process of refining the evaluation scale, we sought input from experts multiple times. We consulted three experts in education and two in sports psychology, making necessary revisions and additions based on their feedback. The final *College Students' Prosocial Behavior Questionnaire* was developed, and the revised scale was tested twice for reliability and validity. The results, certified by experts, indicated a high level of structural validity, with a test-retest reliability coefficient of 0.89, proving that the scale was scientifically sound and met the requirements of this study.

2.3. Statistical Analysis Method

All data collected from the teaching experiment were analyzed using the SPSS 19.0 software package for conventional statistical analysis. This study employed independent paired t-tests to compare the pre- and post-experiment results between the basketball experimental group and the table tennis control group, followed by further statistical analysis.

3. EXPERIMENTAL CONTROLS

3.1. Ensuring the Authenticity of Pre- and Post-Test Questionnaire Data

Fifteen minutes before the first class and fifteen minutes after the final class, questionnaires were distributed to the basketball experimental group and the table tennis control group by the class sports representatives, with each student receiving one questionnaire. The questionnaires were filled out anonymously, and to enhance the authenticity of the responses and avoid discussions between students, participants were asked to provide answers based on their true feelings. The completed questionnaires were collected immediately.

3.2. Ensuring Consistency Across Groups

Since students select courses online and are mostly unfamiliar with one another, two class rosters were printed from the campus network to better understand the students. After one session of basketball and table tennis instruction and practice, the students with outstanding skills were identified. The grouping principle for both the basketball experimental group and the table tennis control group was to ensure that each group consisted of students from different administrative classes and that every group had at least one highly skilled student. The group composition remained fixed throughout the teaching experiment, and the group rosters were finalized and announced after the first class.

3.3. Fostering Altruism through Reflective Exercises

Throughout the teaching process, both the basketball experimental group and the table tennis control group were regularly educated on the importance of team cooperation. Each unit's teaching tasks were assigned to specific groups, with students who were more skilled being encouraged to help others, facilitating mutual learning within the group. The instructor emphasized team cooperation and collective progress during regular teaching and, at appropriate times, organized group competitions. Reflective

summaries during class breaks were used to further cultivate students' altruism.

4. RESULTS AND ANALYSIS

4.1. Comparison and Changes in Prosocial Behavior Factors Between the Control and Experimental Groups Before and After the Experiment

Prosocial behavior is a type of social behavior influenced by various factors, including cultural environment. Specific age characteristics undoubtedly affect an individual's recognition of prosocial behavior, and cultural context inevitably shapes both individual and collective attitudes towards prosocial behavior. Therefore, further research must adopt more ecologically valid and localized methods. American psychologist Gustavo Carlo proposed a multidimensional measurement approach for prosocial behavior. He pointed out that traditional research methods have, to some extent, led to inconsistencies in prosocial behavior research findings. As a result, he rejected the holistic measurement method in favor of multidimensional measurement, providing a more rigorous framework for subsequent studies [9].

Thus, this study used valid sample data from both the experimental and control groups (see Table **2.1**) and found no significant differences in prosocial behavior factors between the two groups before the experiment. This confirms that the random selection of the two classes met the requirements of the study.

4.2. Comparison and Changes in Prosocial Behavior Factors Between the Control and Experimental Groups After the Experiment

Post-experiment analysis of the prosocial behavior factors within the experimental and control groups reveals that both the basketball project (experimental group) and the table tennis project (control group) had positive effects on students' prosocial behavior. However, when comparing the two groups, significant differences were found in two factors: altruism and relationality ($p < 0.01$), while public-mindedness showed a significant difference ($p < 0.05$). There was no significant difference in the trait characteristics factor. This indicates that after one semester of the teaching experiment, the basketball project had a marked effect on enhancing students' prosocial behavior, but the influence on each factor varied. As trait characteristics tend to be more stable, the effect on this factor was not significant.

The data analysis in Table **2.2** also shows that second-year university students' prosocial behavior

Table 2.1: Comparison and Changes in Prosocial Behavior Factors Between the Control and Experimental Groups Before and After the Experiment

Timeliness	Altruism	Public-Mindedness	Relationality	Trait Characteristics
Control Group	1.11 ± 0.09	1.10 ± 0.06	1.10 ± 0.08	1.13 ± 0.09
Before Experi Ment Experimental Group	1.13 ± 0.06	1.10 ± 0.06	1.12 ± 0.07	1.12 ± 0.07
t-value	-0.394	-0.195	-0.529	0.063
p-value	.696	.846	.603	.950

Note: ** indicates $p \leq 0.01$; * indicates $p \leq 0.05$.

Table 2.2: Comparison and Changes in Prosocial Behavior Factors Between the Control and Experimental Groups After the Experiment

Timeliness	Altruism	Public-Mindedness	Relationality	Trait Characteristics
Control Group	1.11 ± 0.10	1.08 ± 0.08	1.10 ± 0.08	1.08 ± 0.16
Before Experi Ment Experimental Group	1.33 ± 0.06	1.13 ± 0.08	1.23 ± 0.06	1.12 ± 0.08
t-value	-3.720	-2.578	-4.019	-0.456
p-value	.010**	.014*	.000**	.654

Note: ** indicates $p \leq 0.01$; * indicates $p \leq 0.05$.

demonstrates a certain level of stability. The traditional table tennis teaching method—explanation of key points, action demonstration, step-by-step practice, and correction of actions—also has a positive impact on students' prosocial behavior, though it is not as effective as the basketball teaching method. This suggests that basketball teaching has a significantly greater effect on improving prosocial behavior compared to table tennis instruction.

4.3. Comparison of Differences in Prosocial Behavior Factors in the Control Group Before and After the Experiment

The table tennis control group showed no significant differences in three factors of prosocial behavior—altruism, trait characteristics, and public-mindedness—before and after the teaching intervention ($p > 0.05$). This indicates that one semester of table tennis instruction had no significant effect on fostering prosocial behavior in the control group, with no notable changes in student behavior. However, there was a significant improvement in the relationality factor of prosocial behavior. This suggests that after 16 weeks of shared learning and technical exchange, students' social adaptability improved, and the bonds between classmates deepened, resulting in a significant change in relationality. Nevertheless, the overall level of prosocial behavior did not show significant improvement.

An analysis of the valid sample data from the table tennis control group (see Table **2.3**) reveals that table tennis teaching had a certain correlation with prosocial behavior. However, this correlation was not strong enough to lead to significant differences in prosocial behavior. Since the table tennis project focuses more on individual skills and independence, it lacks the elements needed to fully stimulate cooperation and social-emotional engagement, thus limiting its ability to improve students' overall prosocial behavior.

4.4. Comparison of Differences in Prosocial Behavior Factors in the Experimental Group Before and After the Experiment

An analysis of the valid sample data from the basketball experimental group (see Table **2.4**) reveals that the altruism, relationality, and public-mindedness factors of prosocial behavior reached a highly significant level ($p < 0.01$) after the basketball teaching intervention. This indicates that one semester of basketball teaching had a clear and significant effect on fostering prosocial behavior in the experimental group, with notable changes in the students' behavior. Although the trait characteristics factor of prosocial behavior showed some improvement, the difference was not statistically significant. This suggests that trait characteristics in second-year students tend to be relatively stable, and a 16-week period may not be sufficient to bring about significant changes in this factor. However, the overall level of prosocial behavior did show significant improvement. This finding is consistent with previous research on prosocial behavior by other scholars.

The analysis further suggests that basketball teaching enhances the social cooperation aspects of physical education, which are positively correlated with students' prosocial behavior. This result indicates that basketball teachers should adopt cooperative learning models that incorporate the joy of physical activity, rational groupings, appropriate praise, and engaging explanations, along with expressive facial gestures and body language, to increase the emotional impact of physical education. By doing so, they can stimulate students' collectivist spirit and social-emotional engagement, ultimately improving students' prosocial behavior.

Table 2.3: Comparison of Differences in Four Prosocial Behavior Factors in the Control Group Before and After the Experiment

Indicator	Altruism	Public-Mindedness	Relationality	Trait Characteristics
Before Experiment	1.08 ± 0.12	1.15 ± 0.17	1.17 ± 0.14	1.23 ± 0.11
After Experiment	1.17 ± 0.09	1.21 ± 0.19	1.28 ± 0.09	1.20 ± 0.09
t-value	-3.445	-3.228	-2.732	-0.298
p-value	.06	.08	.01	.13

Note: ** indicates $p \leq 0.01$; * indicates $p \leq 0.05$.

Table 2.4: Comparison of Differences in Four Prosocial Behavior Factors in the Experimental Group Before and After the Experiment

Indicator	Altruism	Public-Mindedness	Relationality	Trait Characteristics
Before Experiment	1.07 ± 0.11	1.13 ± 0.18	1.10 ± 0.13	1.20 ± 0.10
After Experiment	1.21 ± 0.08	1.23 ± 0.15	1.35 ± 0.07	1.21 ± 0.08
t-value	-3.041	-3.029	-2.980	-0.176
p-value	.007**	.009**	.008**	.088

Note: ** indicates $p \leq 0.01$; * indicates $p \leq 0.05$.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

5.1.1. Both basketball and table tennis teaching have significant effects on fostering prosocial behavior in university students, though the differences across specific factors vary

The results of this study demonstrate that both basketball and table tennis teaching positively influence the development of prosocial behavior among university students. However, the effects on different dimensions of prosocial behavior are not uniform. The relational, altruistic, and public-mindedness factors respond differently depending on the type of teaching, suggesting that while both sports contribute to prosocial development, the specific social dynamics and interactions associated with each sport may shape different aspects of behavior.

5.1.2. Basketball teaching is more conducive to the development of prosocial behavior compared to table tennis teaching, with significant differences observed

Basketball, as a team-oriented and highly interactive sport, emphasizes cooperation, communication, and collective achievement. The findings indicate that basketball teaching has a more pronounced impact on enhancing prosocial behavior than table tennis, which tends to focus more on individual skill and independence. The cooperative learning opportunities inherent in basketball foster greater teamwork and social engagement, which in turn enhance students' prosocial behavior.

5.1.3. Basketball teaching shows a significant difference in the overall level of prosocial behavior compared to table tennis teaching

In terms of the overall development of prosocial behavior, basketball teaching proves to be significantly more effective than table tennis. The results suggest that the interactive and cooperative nature of basketball promotes a higher level of social responsibility, relational bonding, and altruism among students. This reinforces the idea that sports involving greater collaboration and group dynamics are better suited to fostering broad-based prosocial behaviors in educational settings.

5.2. Recommendations

5.2.1. Basketball teaching, which emphasizes cooperation, should be used to better promote social interaction among university students, enhance their understanding and respect for human nature, and foster a stronger sense of national identity

Basketball, with its inherent focus on team play and collaboration, offers an ideal platform for promoting social interaction among students. The cooperative elements of the sport help students develop a deeper understanding and respect for others, fostering empathy and social responsibility. Furthermore, basketball teaching can be instrumental in strengthening students' identification with the cultural values of the Chinese nation, making it an effective tool for nurturing prosocial behavior in university settings.

5.2.2. Table tennis teaching, which emphasizes independence, should incorporate more diverse activities such as sports games and expanded training to enhance students' interest in physical activity and foster their social-emotional development and cooperation skills

While table tennis primarily focuses on individual skill development, it is essential for educators to enrich the curriculum by incorporating elements that promote social engagement and cooperative learning. By integrating sports games and team-building exercises, table tennis can evolve into a more comprehensive learning experience that not only hones students' technical abilities but also enhances their emotional

intelligence and collaborative skills. This approach can stimulate students' interest in sports while fostering a sense of social connection and teamwork.

5.2.3. Basketball teaching can enhance students' experience of mutual support, sharing, and cooperation within their class groups, fostering enjoyment and enthusiasm for teamwork, while improving both prosocial behavior and satisfaction with physical education

The collaborative nature of basketball allows students to experience the joy of helping, sharing, and cooperating with their peers, which contributes to a positive learning environment. This sense of collective achievement and enjoyment strengthens students' enthusiasm for teamwork and social interaction. By enhancing these aspects of physical education, basketball teaching not only improves prosocial behavior but also raises students' overall satisfaction with the course. The enjoyment derived from playing basketball and the sense of camaraderie it fosters can be key motivators for developing lifelong social and cooperative skills.

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CONFLICTS OF INTEREST

The author declared no conflicts of interest.

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