Bravo's: **Jurnal Program Studi Pendidikan Jasmani dan Kesehatan**
Volume 12 Number 4, December 2024, pp: 326-336
E-ISSN: 2597-677X; P-ISSN: 2337-7674
DOI: http://dx.doi.org/10.32682/bravos.v12i4/67

Design of STEM-based teaching materials for basketball

Oktaria Novia Kurnia Sari[1], Wahyu Indra Bayu[1], Arizky Ramadhan[*2], Iyakrus[1], Meirizal Usra[1], Herri Yusfi[1]

[1]*Sport Education, Faculty of Teacher Training and Education, Sriwijaya University*
[2]*Physical Education and Health, Faculty of Teacher Training and Education, Sriwijaya University*
**Corresponding author: arizkyramadhan@fkip.unsri.ac.id*

Abstract

This study aims to apply STEM-based teaching materials in learning PJOK on basketball material in Junior High School. This study uses a development research approach, ADDIE model. The results showed that STEM-based teaching materials in basketball material in Junior High School have been assessed as very feasible to be applied to students based on expert assessment. In the first validity test, the score obtained was 90%, with a very feasible category with some improvements. In the second validity test, the product scored 93% with a very feasible category without improvement, and in the third validity test, the score obtained was 97% with a very feasible category. At the implementation stage, STEM-based teaching materials proved effective to be applied in basketball learning. This can be seen from the increase in the average value of student learning outcomes, with a pretest value of 72.52 which increased to 78.17 on the post-test, with a tcount of 8.982> ttable 1.675 at $\alpha = 0.05$. So, it can be concluded that STEM-based teaching materials on basketball material at the Junior High School level are valid, applicable, effective, and feasible to use.

Keywords: *Teching Material; Physical Education; STEM; Basketball*

Received: 5 December 2024 Revised: 18 December 2024 Accepted: 30 December 2024 Published: 31 December 2024

INTRODUCTION

In the era of 21st century education, an integrative and contextual learning approach is an urgent need to prepare students to face global challenges. One approach that is getting more attention is STEM (Science, Technology, Engineering, and Mathematics). The STEM approach emphasizes the integration of science and technology concepts with the development of critical thinking skills, problem solving, and creativity (English, 2017). The implementation of STEM in learning is not only relevant in the field of science, but also has great potential in sports learning, including basketball. Basketball is one of the sports that has complex characteristics, including physical aspects, techniques, tactics, and fast decision making (Wissel, 2012). Therefore, the development of STEM-based teaching materials on basketball material can provide a more holistic learning experience.

This approach allows learners to understand scientific concepts, such as biomechanics and physics of motion, as well as technology in game analysis and strategy design. In addition, this approach can improve learners' understanding of the relationship between sports theory and practice. The design of STEM-based teaching materials requires a systematic and innovative approach to integrate STEM elements (Kelley & Knowles, 2016) into the context of basketball learning. This involves collaboration between educators, STEM experts, and sports coaches to produce teaching materials that are not only academically relevant, but also

applicable in the development of basketball playing skills. Thus, this study aims to design and develop STEM-based teaching materials that can improve the quality of basketball learning at various levels of education.

STEM principles significantly enhance student engagement in basketball-related educational programs through various innovative approaches. For instance, integrating wearable technologies allows students to collect and analyze personal data during physical activities, linking their experiences to fundamental scientific concepts such as the laws of motion (James et al., 2020). Additionally, employing video-enabled, activity-based learning fosters motivation and academic performance, demonstrating that visual and interactive content can effectively engage students in STEM subjects (Zeidan et al., 2022). Programs like "Science in Sports" in Qatar exemplify how sports can serve as a practical context for STEM learning, where students engage in engineering challenges related to sports materials, thereby increasing their STEM literacy and interest (Ali et al., 2021). Furthermore, place-based educational models that connect students with experts in real-world settings have shown to deepen engagement and aspiration towards STEM disciplines (Cassady et al., 2020). Lastly, inquiry-based learning models that emphasize problem-solving and critical thinking have proven effective in bridging the gap between high school and post-secondary education, particularly for underperforming students (Huyer et al., 2020).

The integration of engineering concepts into sports materials significantly enhances students' understanding of STEM subjects by providing practical, relatable applications of theoretical knowledge. Programs like "Science in Sports" in Qatar demonstrate that engaging students in workshops focused on sports materials fosters their engineering skills and STEM literacy, as evidenced by improved attitudes and productivity in STEM fields (Ali et al., 2021). Additionally, incorporating engineering principles into physical education curricula promotes creativity, problem-solving, and injury prevention through biomechanics, thereby enriching the educational experience (L et al., 2024). Hands-on experiments related to sports, such as those exploring aerodynamics and mechanics, further stimulate interest in engineering disciplines among students, allowing them to apply concepts in a familiar context (Kadlowec & Navvab, 2010).

Recent research highlights the potential of integrating STEM education into physical education (PE) to enhance student engagement and learning outcomes. Sports analytics can provide a tangible application of math and statistics, increasing students' interest in STEM careers (Drazan et al., 2017). Incorporating STEM in PE can nurture curiosity, develop critical thinking skills, and prepare students for the 21st-century workforce (Gondo & Mudekunye,

2020). However, a study of PE teachers found that only 19.4% regularly integrated STEM into their teaching, suggesting a need for increased support and training (Li et al., 2019). To promote STEM integration, educators can develop STEM in Sports Days and incorporate STEM concepts into PE teacher education programs (Wajciechowski & Hemphill, 2019). These approaches can help students see the relevance of STEM in their lives, potentially improving their engagement with both PE and STEM subjects.

METHOD

Design Research

This research uses the research and development (R&D) method with the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). The steps of this research method are as follows: (1) Analysis which consists of identifying the needs of STEM-based teaching materials in basketball learning; conducting literature reviews and curriculum analysis to determine the relationship between STEM concepts and basketball materials; and conducting interviews with teachers and students to understand learning needs. (2) Design which consists of designing prototypes of STEM-based teaching materials which include learning modules, practicum activities, and evaluation tools and compiling learning content that integrates STEM concepts with basic basketball techniques, such as physics concepts in ball shots, the use of technology, and math applications in calculating game statistics. (3) Development which includes developing teaching materials according to the design that has been made; conducting expert validation of teaching materials, involving sports education experts, STEM experts, and learning practitioners; and revising teaching materials based on input from experts. (4) Implementation which includes testing teaching materials on small groups of students to determine the effectiveness and suitability of learning and observing student and teacher responses to the teaching materials developed. (5) Evaluation which includes conducting a formative evaluation of the trial results, including analysing student learning outcomes, responses, and feedback and revising teaching materials to produce a better final product.

Research Subjects

At the implementation stage of the validated product, the next step is to test it to students in learning. The trial was conducted twice, namely small-scale trials and large-scale trials, small-scale trials were conducted in two classes with a total of 52 students. Large-scale trials were conducted in three classes with a total of 78 students. This trial will observe the level of

activeness of students during the teaching and learning process using the basketball game teaching material design.

Data Analysis

Data collection will be carried out through validation sheets by experts and analysis of the assessment of the affective, cognitive and psychomotor aspects of the student worksheet given to VII grade students. From the results of the validation of experts on all aspects assessed, the results are presented in tabular form. to be able to find the average score developed. After the STEM-based student worksheet is validated, the validator then provides comments or suggestions regarding the that the researcher has made. Test the effectiveness of teaching material design using a paired sample t-test on small- and large-scale trial sample groups. The test was carried out using the help of the SPSS program. The data from the SPSS application is described in the form of qualitative data that shows the feasibility of the product. The prerequisites that must be met before the t test include a normality test with the criteria Ha is accepted if $t_{count} > t_{table}$ at $\alpha=0,05$.

RESULTS

Design

The Design stage begins with designing the product concept as needed, namely STEM-based student worksheet products by preparing all learning resources, determining the content of student worksheet which includes the title, content, potential to be achieved. Furthermore, the preparation of tests based on the learning objectives that have been determined, then collecting other supporting sources that are relevant to the learning environment according to the needs of the characteristics of the research subjects.

Development

At this stage, the student worksheet process designed at the previous stage is made. At this stage of development began to develop STEM-based student worksheet on basketball material. The results obtained from the student worksheet product will then be validated by a team of material experts and is a process to assess the design or product rationally, logically, and analytically. In this study, validation was carried out by material experts. The initial product is rated and given input by experts if the student worksheet product has deficiencies, then the student worksheet will be revised or corrected. The results of the study consist of mean expert validation and data on the results of the effectiveness test of the design of STEM-based teaching materials on basketball material in junior high school, namely pre-test and

post-test data of large-scale tests and small-scale tests. following are the results of material expert validation:

Table 3. *Mean Expert* Validation

Validator	Percentage	Description
First	90%	Highly Feasible
Second	93%	Highly Feasible
Third	97%	Highly Feasible
Mean	**93%**	**Highly Feasible**

Implementation

At the product implementation stage that has been by a team of experts and has been revised, then student worksheet trials are carried out to students in the classroom. The trial was conducted 2 times, namely small-scale trials and large-scale trials, small-scale trials were conducted in 2 classes with a total of 52 students. Large-scale trials were conducted in 3 classes with a total of 78 students. The process carried out by this large-scale trial is the same as that carried out on a small trial scale presented in table 1, explaining the results of product validation by the three material experts, which are declared very feasible, then tables 2 and 3 below will reveal the effectiveness test in the small-scale test and large-scale test on the design of STEM-based teaching materials for basketball material in junior high school. The effectiveness test in this study aims to determine whether STEM-based teaching materials are effective in learning basketball material through a different test before and after the teaching material design is used during learning. The difference test was carried out with the help of the SPSS program through the paired sample t test. Ha testing criteria are accepted if the $t_{count} > t_{table}$ value at alpha 0.05.

Table 4. Small Scale Effectiveness Test Results

N	***Mean***	***St. Dev***	t_{count}	t_{table}	**Description**
52	72.67 78.33	7.337 6.498	16.651	1.675	Effective

In table 2, it is explained that the average learning outcomes before being given the teaching materials of the development design are with a value of 72.67 experiencing changes after being given STEM-based teaching materials development products to 78.33. The difference test results show that the t_{count} value of 16.651 is greater than the t_{table} 1.675 at alpha 0.05.

Table 5. Large Scale Effectiveness Test Results

N	***Mean***	***St. Dev***	t_{count}	t_{table}	**Description**
78	72.52 78.17	7.443 6.122	8.982	1.675	Effective

In table 2, the average result is explained with a value of 72.67, which has changed after being given STEM-based teaching materials from the development product to 78.33. The difference test results show that the value of t_{count} 16,651 > t_{table} *1,675* α*=0,05*. Table 3 explains

that the average learning outcomes before being given teaching materials from the development design is 72.52, which changes after being given STEM-based teaching materials from the development product to 78.17. The difference test results show that the value of t_{count} 8,982 > t_{table} 1,675 α=*0,05*. Thus, based on tables 2 and 3, it means that the design of STEM-based teaching materials for basketball learning for students in junior high school is effective to be used as teaching materials.

Evaluating

Based on the evaluation results of the design test, the records of the effectiveness test results explained that learning after using the STEM-based teaching material design experienced significant changes, this can be seen from the statistical analysis which shows statistical information in the ha region is accepted, but the notes that must still be considered are good class mastery. No matter how good the quality of teaching materials, if class mastery has not supported learning, it will certainly make it difficult for teachers to implement the STEM-based teaching material design.

DISCUSSION

Students participating in basketball education through a STEM approach have demonstrated significant improvements in various learning outcomes. Research indicates that integrating sports science and technology into basketball instruction enhances understanding of basketball theory and tactics, as well as skill development, although areas like physical conditioning require further attention (Yang, 2024). Additionally, the STEM learning model has been shown to positively influence self-efficacy and overall learning outcomes, suggesting that students feel more empowered and capable in their learning environments (Awaludin et al., 2024). Furthermore, a meta-analysis highlights that STEM education fosters critical thinking, creativity, and higher-order thinking skills, benefiting students across genders (Fadillah et al., 2024). Lastly, the use of personalized instructional models, particularly those utilizing digital materials, has been found to significantly improve basketball skill acquisition compared to traditional methods (Juditya et al., 2021). Collectively, these findings underscore the effectiveness of a STEM approach in enhancing basketball education outcomes.

The integration of STEM principles in basketball-related educational programs significantly enhances student engagement and learning outcomes. Research indicates that such programs, like the "Science in Sports" initiative, effectively engage students by challenging them to apply engineering concepts to sports materials, thereby fostering a deeper understanding of STEM subjects and improving attitudes towards these fields (Ali et al., 2021).

Additionally, integrated STEM curricula have been shown to positively influence students' motivation and self-efficacy in science and mathematics, although careful implementation is necessary to maintain these benefits (De Loof et al., 2022). Furthermore, the combination of project-based learning (PjBL) with STEM principles has been linked to increased motivation and scientific literacy, leading to improved academic performance (Nurhayati B et al., 2023). Meta-analyses confirm that STEM integration, particularly through PjBL, yields high effect sizes on learning outcomes, emphasizing the importance of critical thinking and problem-solving skills essential for future career readiness (Khoiri, 2019). Overall, these findings underscore the potential of STEM integration to create engaging and effective educational experiences in sports contexts.

Recent research explores the integration of STEM concepts into basketball learning, offering innovative approaches to engage students in science and mathematics. Sports analytics can provide a tangible application of STEM concepts, potentially increasing students' interest in STEM careers (Drazan et al., 2017). The "STEM Circle" approach uses basketball-related problems to teach content, develop language skills, and promote problem-solving abilities among emergent multilingual students (Suh et al., 2020). Physics education can be enhanced by incorporating basketball, using video analysis tools to study projectile motion and improve students' understanding of kinematics graphs (Chanpichai et al., 2010). Physics concepts applied to basketball, such as spin and trajectory, can improve players' performance and deepen understanding of scientific principles (Watkins, 2007). These studies collectively highlight the potential of sports-integrated STEM education to make science and mathematics more accessible and appealing to diverse student populations, fostering both academic and athletic development. In the realm of computer animation, trajectory optimization and deep reinforcement learning techniques have been employed to create realistic basketball dribbling controllers for simulated players, demonstrating the application of advanced computational methods in sports simulation (Liu & Hodgins, 2018). These studies highlight the potential of basketball as a versatile tool for STEM education and research.

The integration of a STEM approach in physical education, particularly in basketball, has shown significant positive impacts on student learning outcomes and engagement. Research indicates that project-based learning models enhance students' understanding and skills in basketball, leading to improved psychomotor, cognitive, and affective outcomes, as evidenced by increased student performance metrics over multiple cycles (Raibowo et al., 2024). Additionally, the application of STEAM principles in physical education has been linked to enhanced self-directed learning abilities and more favorable attitudes towards PE classes,

addressing issues of student alienation (Lee, 2021). Furthermore, the Sport Education model has been shown to significantly boost both common and specialized content knowledge among preservice teachers, indicating that structured, accountable learning environments can effectively enhance basketball performance and understanding (Liu et al., 2023). Overall, these findings suggest that incorporating STEM methodologies into basketball education not only enriches the learning experience but also fosters essential skills for students' physical and cognitive development (Wang, 2024).

The integration of STEM principles in physical education (PE) classes, particularly those focused on basketball, effectively addresses student alienation by fostering engagement, creativity, and self-directed learning. Research indicates that STEM-based PE classes significantly improve students' attitudes towards physical education and enhance their self-directed learning abilities, which are crucial for reducing feelings of alienation and avoidance behaviours (Lee, 2021). Additionally, incorporating STEM activities promotes health, creativity, and social skills, thereby creating a more inclusive and engaging environment for students (Glišović & Jovanović, 2024). The development of interdisciplinary programs that link physical education with subjects like life sciences and arts has shown to increase student satisfaction and participation, further mitigating alienation (Hyuk-Gyu, 2024). Moreover, integrating concepts from physics into PE has been linked to heightened motivation and satisfaction, which are essential for fostering a positive learning atmosphere (Papaioannou et al., 2020). Overall, STEM integration provides a multifaceted approach to combatting alienation in PE settings (Kim, 2022).

CONCLUSION

This research successfully developed STEM-based teaching materials (Science, Technology, Engineering, and Mathematics) for basketball material. The results showed that the designed teaching materials were able to improve students' understanding of STEM concepts integrated with sports, especially basketball. Through this approach, students not only understand the basic techniques and rules of basketball, but also relate concepts such as physics (force, gravity, and shot angle), technology (video analysis of the game), and mathematics (calculation of distance, speed, and shot angle). In addition, the integration of STEM approach in sports learning is proven to increase students' learning motivation, critical thinking skills, and collaboration ability. Thus, STEM-based teaching materials in basketball materials can be an innovative alternative to teach STEM concepts in a contextual, relevant, and applicable manner, and support the development of 21st century competencies. This study recommends

wider implementation and further evaluation to maximize its effectiveness at various levels of education.

REFERENCES

Ali, R., Bhadra, J., Siby, N., Ahmad, Z., & Al-Thani, N. (2021). A STEM Model to engage Students in Sustainable Science Education through Sports: A Case Study in Qatar. *Building Resilience at Universities: Role of Innovation and Entrepreneurship*, 176–176. https://doi.org/10.29117/quarfe.2021.0176

Awaludin, A., Ruhiat, Y., & Anriani, N. (2024). Improving Learning Outcomes through STEM Learning Model and Self-Efficacy. *Ideguru: Jurnal Karya Ilmiah Guru*, *9*(3), 1175–1180. https://doi.org/10.51169/ideguru.v9i3.1012

Cassady, J. C., Heath, J. A., Thomas, C. L., Mangino, A. A., & Kornmann, M. A. (2020). Engaging students in STEM with non-traditional educational programmes: Bridging the gaps between experts and learners. *STEM Education Across the Learning Continuum: Early Childhood to Senior Secondary*, 213–232. https://doi.org/10.1007/978-981-15-2821-7_12

Chanpichai, N., Wattanakasiwich, P., Paosawatyanyong, B., & Wattanakasiwich, P. (2010). Teaching physics with basketball. *AIP Conference Proceedings*, *1263*, 212–215. https://doi.org/10.1063/1.3479872

De Loof, H., Boeve-de Pauw, J., & Van Petegem, P. (2022). Engaging Students with Integrated STEM Education: a Happy Marriage or a Failed Engagement? *International Journal of Science and Mathematics Education*, *20*(7), 1291–1313. https://doi.org/10.1007/s10763-021-10159-0

Drazan, J. F., Loya, A. K., Horne, B. D., & Eglash, R. (2017). From Sports to Science : Using Basketball Analytics to Broaden the Appeal of Math and Science Among Youth. *2017 MIT-Sloan Sports Analytics Conference*, *March*, 1–16. https://homepages.rpi.edu/~horneb/Drazan_Loya_Horne2017.pdf

English, L. D. (2017). Advancing Elementary and Middle School STEM Education. *International Journal of Science and Mathematics Education*, *15*(S1), 5–24. https://doi.org/10.1007/s10763-017-9802-x

Fadillah, M. A., Hirahmah, A., Puspita, S., Jannati, R. P., & Usmeldi. (2024, October 3). *Effect of STEM on Student Learning Outcomes and Gender Differences in Senior High School: A Meta-analysis*. https://doi.org/10.31219/osf.io/jk3v4

Glišović, G., & Jovanović, E. (2024). Innovations in teaching: Integration of STEAM and physical education for primary school students. *Metodicka Praksa*, *27*(1), 66–78. https://doi.org/10.5937/metpra27-51490

Gondo, T., & Mudekunye, J. J. (2020). Nurturing Curiosity Learning Through STEM in Physical Education in Zimbabwe. *International Journal of Technology-Enabled Student Support Services*, *10*(2), 20–30. https://doi.org/10.4018/ijtesss.2020070102

Huyer, L. D., Callaghan, N. I., Dicks, S., Scherer, E., Shukalyuk, A. I., Jou, M., & Kilkenny, D. M. (2020). Enhancing senior high school student engagement and academic performance using an inclusive and scalable inquiry-based program. *Npj Science of Learning*, *5*(1), 17. https://doi.org/10.1038/s41539-020-00076-2

Hyuk-Gyu, S. (2024). A Study on the Development and Application of STEAM Convergence Program in Physical Education Subjects: Development and Application of Classes Using

CPR. *Korean Association For Learner-Centered Curriculum And Instruction*, *24*(17), 505–517. https://doi.org/10.22251/jlcci.2024.24.17.505

James, D. A., Parker, J., Willis, C., & Lee, J. (2020). STEMfit: Student Centric Innovation to Improve STEM Educational Engagement Using Physical Activity, Wearable Technologies and Lean Methodologies. *The 13th Conference of the International Sports Engineering Association*, 33. https://doi.org/10.3390/proceedings2020049033

Juditya, S., Zakaria, D. A., Hardi, V. J., Sutiswo, S., & Sunarsi, D. (2021). Digital Material Teaching: Learning Model and Learning Outcomes of Basketball. *Journal of Educational Science and Technology (EST)*. https://doi.org/10.26858/est.v0i0.18375

Kadlowec, J., & Navvab, A. (2010). Attitudes And Interests Of Students In Introductory Engineering Courses With Experiments Related To Sports. *2010 Annual Conference & Exposition Proceedings*, 15.220.1-15.220.7. https://doi.org/10.18260/1-2--16595

Kelley, T. R., & Knowles, J. G. (2016). A conceptual framework for integrated STEM education. *International Journal of STEM Education*, *3*(1), 11. https://doi.org/10.1186/s40594-016-0046-z

Khoiri, A. (2019). Meta Analysis Study: Effect of STEM (Science Technology Engineering and Mathematic) towards Achievement. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *9*(1). https://doi.org/10.30998/formatif.v9i1.2937

Kim, M. (2022). "Not Fair, Not Fun, Not Safe": Confronting Alienation in Physical Education Class. *Strategies*, *35*(2), 46–48. https://doi.org/10.1080/08924562.2022.2031421

L, A., P, K. T. K., Kumar, P., & P, K. T. K. (2024). Thematic Analysis on the Integration of Engineering Concepts in Physical Education: A Collective Approach for Innovative Transformation. *Indonesian Journal of Sport, Health and Physical Education Science*, *2*(2), 77–83. https://doi.org/10.58723/inasport.v2i2.225

Lee, D.-J. (2021). The Effect of STEAM-Based Physical Education Classes on Middle School Students' Attitudes toward Physical Education Classes and Self-Directed Learning Abilities. *Iranian Journal of Public Health*, *50*(5), 938–948. https://doi.org/10.18502/ijph.v50i5.6111

Li, C., Kevin Kam, W. K., & Zhang, M. (2019). Physical Education Teachers' Behaviors and Intentions of Integrating STEM Education in Teaching. *The Physical Educator*, *76*(4), 1086–1101. https://doi.org/10.18666/tpe-2019-v76-i4-9104

Liu, H., Shen, W., Hu, A., Wang, W., Li, W., & Hastie, P. A. (2023). The Impact of Sport Education on Physical Education Majors' Basketball Content Knowledge and Performance. *Journal of Teaching in Physical Education*, *42*(3), 480–489. https://doi.org/10.1123/jtpe.2022-0058

Liu, L., & Hodgins, J. (2018). Learning basketball dribbling skills using trajectory optimization and deep reinforcement learning. *ACM Transactions on Graphics*, *37*(4), 1–14. https://doi.org/10.1145/3197517.3201315

Nurhayati B, Jamaluddin, F. J., Daud, F., Saenab, S., Hadis, A., Hadis, N. I. R., & Remiza. (2023). An Extraordinary Duet: Integration of PjBL and STEM to Promote Student's Motivation, Scientific Literacy Skills, and Students Learning Outcomes. *European Journal of Education and Pedagogy*, *4*(3), 42–47. https://doi.org/10.24018/ejedu.2023.4.3.639

Papaioannou, A., Milosis, D., & Gotzaridis, C. (2020). Interdisciplinary Teaching of Physics

in Physical Education: Effects on Students' Autonomous Motivation and Satisfaction. *Journal of Teaching in Physical Education*, *39*(2), 156–164. https://doi.org/10.1123/jtpe.2018-0315

Raibowo, S., Rahmi, M. F., Aldino, A., & Permadi, A. (2024). Implementation of Project Based Learning model to improve learning outcomes of basketball material. *Jendela Olahraga*, *9*(2), 90–99. https://doi.org/10.26877/jo.v9i2.17946

Suh, E., Hoffman, L., Hughes, M., & Zollman, A. (2020). The twelve-foot basketball player task: STEM circles score points and win academic goals with emergent multilingual students. *Middle School Journal*, *51*(3), 11–18. https://doi.org/10.1080/00940771.2020.1735872

Wajciechowski, M., & Hemphill, M. (2019). STEM and Physical Education: Making Connections for Our Students, Building Strength for Our Profession: Column Editor: K. Andrew R. Richards. *Strategies*, *32*(6), 43–45. https://doi.org/10.1080/08924562.2019.1658435

Wang, T. (2024). Practical Application and Effectiveness Evaluation of Basketball in Physical Education. *Lecture Notes in Education Psychology and Public Media*, *56*(1), 195–200. https://doi.org/10.54254/2753-7048/56/20241655

Watkins, S. (2007). Extended Book Review: The Physics of Basketball. *International Journal of Sports Science & Coaching*, *2*(2), 197–209. https://doi.org/10.1260/174795407781394239

Wissel, H. (2012). *Steps to success Basketball*. Human Kinetics.

Yang, G. (2024). Assessment on the Basketball Teaching Approach: Basis for the Development of Basketball Curriculum in College Department. *International Journal of Social Science and Human Research*, *07*(10). https://doi.org/10.47191/ijsshr/v7-i10-50

Zeidan, M., Huang, X., Xiao, L., & Zhao, R. (2022). Improving student engagement using a video-enabled activity-based learning: an exploratory study to STEM preparatory education in UAE. *Journal of Learning Development in Higher Education*, *24*. https://doi.org/10.47408/jldhe.vi24.888