Demographic Research and Social Development Reviews
"Volume 1, Issue 2, Year 2025"
website: https://www.c5k.com

Research Article

Student-Centered Learning in University Sports Education: A Comprehensive Review

Mita Khatun
[1]*Department of Building Engineering and Construction, Khulna University of Engineering and Technology, Khulna-9203, Bangladesh*
**Corresponding Author: Mitakhatun1923028@gmail.com*

ARTICLE INFO

Article history:
11 Sep 2025 (Received)
17 Oct 2025 (Accepted)
25 Oct 2025 (Published Online)

Keywords:
Student-Centered Learning, Sport Education Model (SEM), Tactical Games Approach (TGA), Flipped Classroom.

ABSTRACT

This review looks at how sport studies at universities can use student-centered learning (SCL) approaches and how they can help students improve and achieve change. To learn more, five main studies were examined using a structured literature review approach to study how methods such as the Sport Education Model, Tactical Games Approach, Cooperative Learning, Problem-Based Learning, and Flipped Classrooms work. It was found that SCL improves student participation in learning, mental growth, and physical skills, and helps them develop key transferable skills such as working on their own, with others, and analyzing problems. Additionally, video analysis, virtual reality, and live feedback tools help make learning more adaptable and welcoming to all students. Although SCL encourages students to learn for a long time, many barriers, such as organizational, systemic, and educational challenges, prevent its successful deployment. With this alignment, SCL becomes more important for education today. The review states that SCL isn't only a way of teaching but also a necessary strategy to link university sports programs with updated demands in professional jobs. Synthesis demonstrates that including SCL in education increases student achievements and develops graduates who are flexible and ready to keep learning after graduation.

DOI: https://doi.org/10.103/xxx @ 2025 Demographic Research and Social Development Reviews (DRSDR), C5K Research Publication

1. Introduction

University sports education has shifted away from classrooms with the teacher in charge to ones that involve students in more engaging activities (SCL). Back in the past, educators in sports at universities mostly directed students to learn, arranged their routines, and assessed abilities by strict models (Light & Fawns, 2003). Most of these teacher-led techniques required students to obey, repeat, and accept the coach's decisions without much say. Another type of learning called student-centered learning features the learner at its core and stresses their ability to decide, work together, and understand the important details. It follows the trend seen in higher education institutions and matters the most in sports, where using experience and reflection is very important. The idea behind the SCL approach is to guide students to decide, solve problems, and think critically in real-life situations of sports (Kirk, 2009). In SCL, students are encouraged to actively participate in building their educational experiences. Following constructivist beliefs, SCL values giving students freedom, involving them in group discussions, and individual learning plans. Among the main principles are (1) working together with students on course planning, (2) focusing on manipulating various elements to encourage solving problems through independent choices, and (3) having students review and evaluate one another's efforts (Chan et al., 2023; Klemenčič, 2017). With SCL, teachers switch from giving orders to students to acting as a guide and overseeing the learning process. Since this model is based on skills, everyone can go at their own pace, and differences are accepted by the system. There are many reasons for applying SCL in university sports education, mainly to help students improve skills beyond what they achieve in sports. First, it overcomes the difficulties caused by one way of teaching by meeting the needs of students with different skills and learning styles. For example, findings from studies comparing DI and SE illustrated that SE helped both lower-skilled students and female athletes develop their skills and understanding (Khelifi & Hamzaoui-elachachi, 2024; Layne & Yli-Piipari, 2015; Valério et al., 2021). Second, SCL helps children improve critical thinking and adapt to new situations by asking them to work on inquiry projects such as designing a course or studying recordings of football games (Singh, 2011). Moreover, it encourages people to grow and learn new skills as they prepare for what happens after their

*Corresponding author: Mitakhatun1923028@gmail.com (Mita Khatun)

Cite: Mita Khatun (2025). Student-Centered Learning in University Sports Education: A Comprehensive Review. *Demographic Research and Social Development Reviews,* 1(2), pp. 1-XY.

career in sports (Hardcastle et al., 2015). SCL also prepares learners by giving them opportunities to use knowledge from complementary subjects (Borhan et al., 2020).

A greater focus on SCL is a result of broader changes in society towards giving everyone the right to education. In many traditional systems, anyone outside of athletics was usually excluded, causing them to drop out (Furtschegger, 2024). For example, thanks to SCL's versatility (for example, through different teaching methods and technology for movement study), every student benefits from the training (Wasilko, 2020). (Wasilko, 2020). Cooperating with others, being a good leader, and expressing creativity are all skills valued by employers and shown in sports, especially when someone participates in SCL (Hou et al., 2024). Introducing SCL in university sports education answers the problems that have been discovered in traditional teaching methods (Bessa et al., 2021). The main principles of SCL are student agency, applying various disciplines, and ensuring everyone has the same access, allowing it to improve athletic training and offer useful education for anyone. SCL is studied through its theories (Lee & Hannafin, 2016), the way it is applied, and what it can achieve, with the argument that it should be integrated into university programs continually (Frasineanu & Ilie, 2017).

As a result, this paper aims to investigate the main ideas, applications, and importance of Student-Centered Learning (SCL) in university sports courses. The study uses a literature review to analyze the effects of the Sport Education Model, Tactical Games Approach, Cooperative Learning, Problem-Based Learning, and Flipped Classrooms on student involvement, skill acquisition, and continuous learning. Also, it aims to gather current knowledge and point out any defects in practice and policy to give a complete picture of how SCL can influence the structure of university sports courses. Again, it discusses important obstacles, such as resistance from the institution, faculty, and technology integration, while outlining solutions for including SCL in future curriculum planning and evaluation.

2. Methodology

2.1. Study Design

For this study, a well-structured literature review was used to review all available research on Student-Centered Learning (SCL) applied to university sports education. The purpose was to move past describing processes and instead to carefully study and organize both data and theories. Using this strategy, the complexity of SCL's impact, the most common issues it brings, and the essential research paths for this academic field were clearly explained. Ensuring the exceptional reliability and strength of the outcomes requires that every step in the review be organized and transparent.

2.2. Search Strategy

The design and execution of a wide-ranging multi-database search strategy allowed us to identify all significant academic findings. Included in this outcome were whole searches performed on Scopus and Web of Science. These websites were included because they cover educational research, sports science, and additional aspects of higher education in great detail. Each search was meticulously created so that it was both sensitive and specific, putting together words from student-focused teaching and sports in the university, linking them with the Boolean operators AND and OR. The search terms used in the study were "Student-Centered Learning," "Learner-Centered Education," "Active Learning in Sports Education," "SCL in Physical Education," "Problem-Based Learning," "Peer Coaching," and "Collaborative Learning Strategies," all to define teaching approaches. These were joined by "Sports Education," "Physical Education," "Sport Science," "Coaching Education," "University," and "Higher Education" to describe the educational setting. From 2010 through 2025, works were chosen so that the topic would be up-to-date, and several seminal books that created the field of structural complexity theory were also included if their relevance was thought to be especially high. We chose publications where all the text was in English.

2.3. Inclusion and Exclusion criteria

Items were brought into the review if they were international peer-reviewed journal articles about SCL or similar methods (e.g., problem-based learning, peer coaching) used in college or university sports education (e.g., studies in sports science, physical education, coaching, and athletic training). Results on the rollout, success, and difficulties of SCL were expected in all studied cases. We did not include research from secondary schools, non-English language sources, editorials, and papers that had nothing to do with SCL.

2.4. Ways to Choose Which Studies to Use

Two phases were used for choosing the articles. The study began by importing the results and abstracts into a reference manager, which were then looked at by the main investigator. Any work that was not relevant was not included in the study. After that, we carefully examined the full texts of articles that were selected by the inclusion and exclusion rules. Reasonable explanations for any uncertain cases were reached by looking at the data again.

2.5. PRISMA Flow diagram

The study was conducted by using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to make sure that there is transparency and reproducibility. Figure 1 shows the procedure of selection. As illustrated in the flow diagram, a total of 226 records were initially identified through database searches (Scopus and Web of Science) and additional sources. After removing duplicates, 205 records remained for screening, of which 170 were excluded based on title and abstract relevance. Thirty-five full-text articles were

assessed for eligibility, and 30 were excluded due to reasons such as lack of focus on higher education (n = 12), absence of SCL methodologies (n = 9), insufficient data (n = 5), and non-English language (n = 4). Ultimately, 5 studies met the inclusion criteria and were incorporated into the final synthesis. This rigorous selection process ensured that only high-quality and contextually relevant studies contributed to the review's findings.

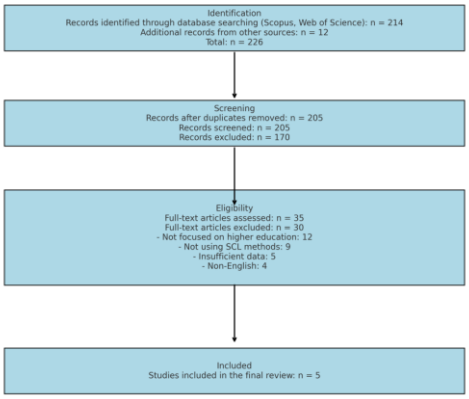

Fig. 1. PRISMA flow diagram

2.6. Traits of the Studies Reviewed

Five studies qualified for inclusion in this research. Table 1 outlines the main features of each study, such as its design, kinds of participants, methods for self-assessment, and the main points about university-level sports education.

Table 1. included in this work has the following characteristics related to student-centered learning in university sports education.

Study Design	Participants	Key Findings
Cross-sectional survey using a structured questionnaire (Google Forms)(Bucea-Manea-Țoniș et al., 2022)	100 physical education and sports science teachers from two Romanian HEIs	Teaching through online platforms had a strong negative influence on teachers' psychological status, influenced outcomes only moderately, and even caused moderate difficulties for their teaching performance, despite over two-thirds being satisfied and able to keep a good lifestyle.
Mixed Methodology(Giménez-Meseguer et al., 2022)	50 students	SEM was effective in increasing student motivation, letting them work by themselves and improving how they interacted with fellow students; the qualitative feedback showed that it had practical applications, too.
Systematic review according to the guidelines described in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines(Zhang et al., 2024)		SEM had a better effect on both learning attitudes and satisfaction with learning materials than traditional teaching (TT).
Quasi-experimental, cross-sectional, and mechanistic studies(Trudeau & Shephard, 2008)	Undergraduate students	Spending more school time on physical activities does not reduce learning and may slightly improve GPA, increase your ability to catch on quickly at school, recall more, focus better, and act in a disciplined way, all while supporting fitness and intellectual performance.
comparative analysis(Pereira et al., 2016)	47 students (25 boys and 22 girls)	SEM contributed more to learning results for students with lower skills than Direct Instruction (DI).

2.7. Extraction and Combination of Data

A prepared framework was used to gather data on author names, dates of publication, style of the study, details of SCL methods applied, and main research outcomes. The main topics looked at were student involvement, academic achievements, the way students learned, and how well the ideas were implemented. The Braun and Clarke (2006) method was used: data was studied, then coded, and themes were identified, reviewed, and given names. Themes addressed frequently used SCL techniques, the good results for learning and performance they can have, and the issues involved in their use. More care was taken to introduce newer ways like problem-based learning and peer coaching, which had been explained by theories such as self-determination theory and constructivism. It summarized everything we know about university sports education and the good and bad points of using SCL.

3. Models in spot education

Currently, universities are advancing sports education by using unique teaching approaches that center on students being involved, critical, and team players. Unlike standard instruction, the Sport Education Model has students acting as coaches, referees, and managers for an entire sport season. Studies indicate that students participating in this system understand the tactics of sports, gain leadership, and remain interested in sports

activities for a longer period (Dyson & Casey, 2016). This approach was invented by Daryl Siedentop in 1984. Sport Education is a method of curriculum and teaching created for physical education courses in upper elementary, middle, and high schools. The purpose is to offer children and youth better and more engaging sports activities than they usually have in physical education. During seasons, students collaborate as team members for a period that is longer than a regular physical education class. They take part in their sport by acting in different roles found in real sports, such as captains, coaches, sports trainers, statisticians, officials, publicists, and people in sports councils. Through their team uniforms, names, and the cheers they share, members of the team unite and focus on becoming better players (Bennett & Hastie, 1997). The main objectives in developing an SEM program are for students to be able, well-read, and have fun while playing. As a result, teachers are required to plan lessons that resemble real-life experiences for students. Siedentop mentions that objectives are shown in Figure 2 (Hastie & Wallhead, 2016).

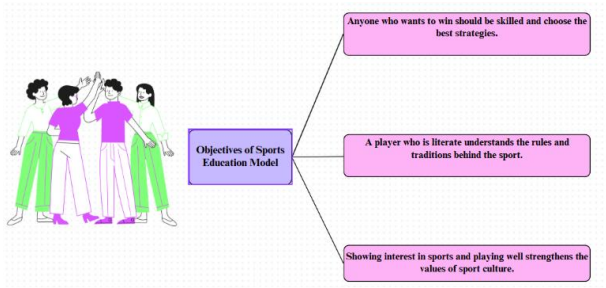

Fig. 2. Objectives of the Spots Education Model

Writing on SEM, the Tactical Games Approach (TGA) encourages players to practice their skills in games that call for instant decision-making. Studies have found that this approach strengthens a student's capacity to deal with the events in a game, make solid decisions, and use their skills in competitive sports and other areas (Griffin & Butler, 2005). Take, for instance, if games are adapted with limited rules (small-sided games), this supports students in assessing rivals, getting ahead of them on the field, and working with teammates, leading to mental benefit as well as physical development. It has many benefits shown in Figure 3. The Tactical Games Approach makes physical education more effective. It helps students learn how to play the game, allowing them to perform better by applying both tactics and their skills. This strategy also benefits brain development by improving a child's way of thinking and solving issues. Besides, it makes students more active by improving their engagement with physical activity throughout lessons. Students become more interested in school when the program is fun. In the end, by linking tactics, skills, and game action, the Tactical Games Approach develops a player's confidence and expertise better compared to solely practicing individual skills (Gouveia et al., 2019; Hodges et al., 2018).

Cooperative Learning (CL) focuses on tasks that require students to communicate, be responsible together, and help their teammates. In higher education sports, CL activities allow students to exercise their teamwork and own responsibility for their actions. A meta-analysis indicates that CL promotes gaining skills and helps to break down social barriers by making sure every participant is engaged in the conversation (Hastie & Wallhead, 2016). As a result, students work together and learn how to achieve goals with the help of their classmates, reflecting the same approach expected of them in work and society. The advantages of CL make it a valued strategy for teaching in colleges and universities. According to Figure 4, CL supports growth in academic skills and how well students think and solve problems by encouraging self-regulated learning. Through language arts, students get better at working with others and can express their opinions easily. CL increases both students' motivation and their participation in learning by making it both meaningful and pleasurable. Students in a positive environment feel safe and motivated, which helps them make good friends. Besides, it helps to promote honesty by requiring everyone to take part the right way and share responsibility. Having a wide range of members in CL groups encourages fresh thinking, more work, and mutual respect (Keramati & Gillies, 2022).

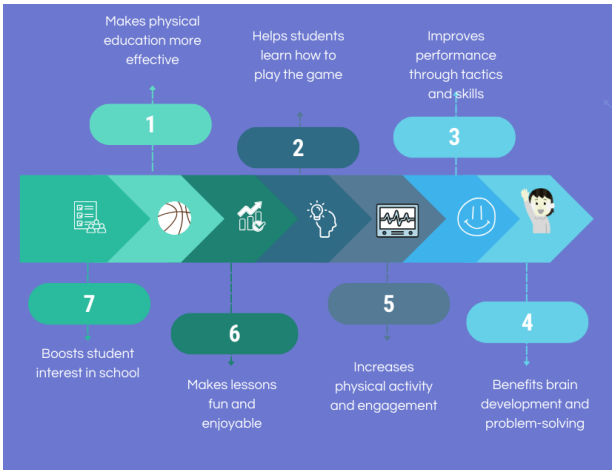

Fig. 3. Benefits of the Tactical Games Approach

All of these models explain how focusing on students can help in sports by supporting advanced skills as well as improving their thinking, social life, and feelings. More studies could consider combining TGA with SEM during the same sessions to achieve even better learning outcomes.

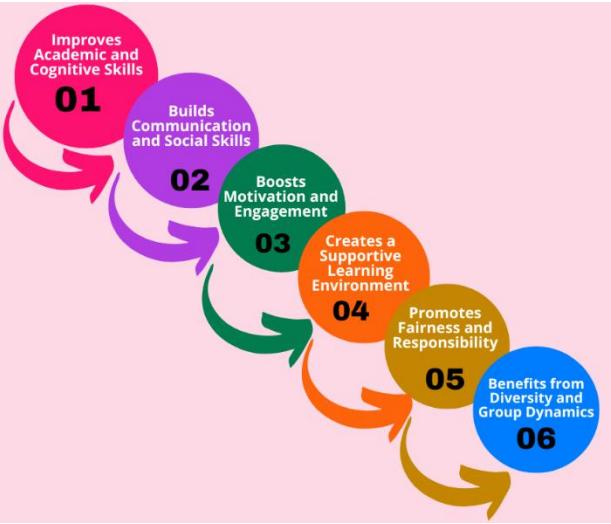

Fig. 4. Main Benefits of Cooperative Learning (CL)

4. Applications in university spots in education

Since university physical education is changing to keep up with modern student needs, there is now a bigger demand for teaching methods that are flexible, inclusive, and work in various sporting environments. So, the curriculum should offer models that teach skills as well as raise students' awareness, ability to work as a group, and their reflective ability. With Cooperative Learning (CL) and the Tactical Games Approach (TGA), educators have many ways to teach. Introducing them in sports curricula is a positive shift toward better and more useful teaching methods.

4.1. Curriculum Design and Pedagogical Innovations

Cooperative Learning (CL) should be included in university sports curricula by arranging activities in which people must rely on one another, take responsibility for themselves, and encourage teammates. By using Jigsaw, students split off to practice separate parts of the game, share their knowledge with others, and help everyone improve. They improve students' knowledge of games while helping them communicate and develop leadership skills (Legrain et al., 2019). To include the Tactical Games Approach (TGA) in university classes, teachers organize lessons based on game modes that test tactics and then discuss the thinking behind students' choices. Using this approach motivates students to think more, and it also reflects what they'll face in real-life sports. TGA is connected to higher levels of student interest and satisfaction since it creates a more important and related learning situation (Harvey & Jarrett, 2014). When CL and TGA are used in curriculum design, students learn by working on their mental abilities and social skills at the same time. By working together in teams to solve problems in adapted games, students will develop both their team skills and their approach to strategy. When integration takes place, students become more active in their learning, thoughtful, and responsible for the results.

To benefit from these innovations, planners need to plan carefully and train all instructors before using them. Instructors should be able to lead groups, set up important scenarios for games, and encourage useful discussions. These programs prepare teachers to successfully teach with cognitive learning and learning through games (Casey & Kirk, 2020). In short, university sports education is moving closer to student-friendly learning by adopting cooperative learning and the tactical games approach. The new teaching methods help students become physically active and also strengthen essential skills such as working together, communicating well, and thinking strategically, which are important outside of sports (Johnson & Johnson, 2009).

4.2. Using Problem-Based Learning and Flipped Classrooms in University Sports Education

Problem-based learning involves having students learn by confronting numerous challenges encountered in the world, using self-study, reflection, and working with others (Goodnough, 2006). This method uses constructivist ideas about education, which say that students build their understanding by participating and reflecting (Baviskar 1 et al., 2009). With project-based learning in sports education, learners develop important abilities such as planning, making decisions on the spot, and effective communication. When students complete such tasks, they need to combine information on physiology, psychology, and how to coach an athletic population. They both help with understanding content and reflect the different problems athletes face in their sport settings. Studies focused on practice have confirmed that PBL works well in higher education. Reviews of PBL suggest it improves students' learning of concepts, encourages better problem-solving abilities, and motivates them. In addition, students develop a feeling that learning is their responsibility since they help set what needs to be learned and find useful information (Prince, 2004).

With a flipped classroom, the focus on explaining things happens away from the classroom, through prerecorded videos or readings, and class time is used for hands-on activities and practice. With this method, students can receive support that fits their needs and take part more in what's happening through active participation in lessons. Students in sports education can learn new concepts on their own time with the flipped classroom, so that group time can focus on practice drills, simulation games, and teamwork (Abeysekera & Dawson, 2015). First, students can watch a lecture on biomechanics at home, and later they can practice interpreting movement patterns during the in-person session (Albert & Beatty, 2014). The research evidence suggests that using the flipped classroom model benefits student learning and keeps them involved. Researchers showed that students in a flipped classroom learned and remembered better than students in regular lecture courses. In addition, this model helps students develop the ability to control their learning

because they need to keep track of how they use their time (Thai et al., 2017).

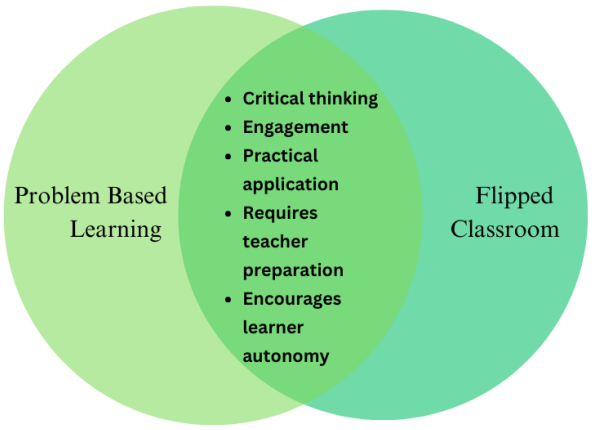

Fig. 5. A Venn Diagram presents both the common features of PBL and the Flipped Classroom.

Even though PBL and the flipped classroom approach things differently, they both aim to make learning more engaging, develop critical thinking, and help students use what they learn in practical situations (Mariani & Dewi, 2025). Bringing together these approaches can make learning in sports education better. As an example, students may first learn key ideas in a flipped classroom (Kiat & Kwong, 2014), then use them in PBL activities during class. Because of this, learners can consume the information rapidly and practice it in the right context, which matches sports education's hands-on method. On the other hand, the right application of these methods depends on ahead-of-time planning and thinking about the possible problems that might arise. Teachers ought to guarantee that the materials made available before class are easy to use and engaging and that what happens during class is well set up to promote good learning. Students may also need help in learning how to direct their learning for these types of classes.

Bringing in PBL and the flipped classroom calls for university sports educators to reconsider their approach to curriculum design. The organization of the courses should help people act and work actively, aiming for learning solutions that support real life. Along with these new curriculum goals, methods for measuring progress ought to support formative assessments, reflective habits, and competency-based assessments. In addition, it is necessary to train faculty so they can use these teaching methods properly. Educational institutions must train teachers and supply resources to support active learning, so the culture of teaching is always improving. Bringing together problem-based learning and the flipped classroom makes for an advanced step in how university sports education is delivered. When these techniques are used, students build the skills to succeed in the tough world of sports. As learning approaches change, it will be important to include these methods to create capable, flexible, and thoughtful teachers. Figure 5 highlights both the shared elements of Problem-Based Learning (PBL) and the Flipped Classroom, suggesting they can blend closely in sports education. In the shared area, the program highlights critical thinking, engaging activities, and how prepared teachers can help in student-centered sports education.

4.3. Role of Technology in Student-Centered Sports Education

A growing number of educators believe student-centered learning is needed because of shifts in education, the need to teach diverse learners, and the importance of strong lifelong learning skills. Sports education based on students' needs stresses their ability to act on their own, be actively involved, regulate themselves, and apply what they learn in the environment. The change in teaching methods is strongly supported by the use of technology. Emerging digital resources support personalized learning and help students more, promote engagement, support intentional practice, and promote inclusivity—all in support of the basic values of student-centered learning in physical education and sport pedagogy.

1. Use of Technology to Make Learning Unique

A student-centered approach depends on the use of personalized learning pathways. Because technology monitors behavior and cognition, it informs educational strategies that are designed for each learner. In sports education, heart rate monitors, accelerometers, and GPS trackers are regularly used to monitor students' fitness and progress in real time. That information allows educators to plan training and lessons that match each student accordingly (Liang et al., 2019). In addition, such products as Dartfish and Hudl support giving micro feedback, so learners can spot their areas to work on. Looking at one's emotions online makes learners aware of how they feel and improves their thinking skills. By using such technology, students take responsibility for their learning (Palao et al., 2015).

2. Using digital tools to bring more motivation and engagement into roles.

Motivation in the learning process is greatly affected by interactive and gamified technology. Various apps and games make physical activities enjoyable by including achievements, badges, and simple tools to share one's progress (Van der Poll et al., 2019). Virtual Reality (VR) and Augmented Reality (AR) allow students to train in real situations, as though in practice environments, without putting themselves in danger. Because of VR, students have the opportunity to study tactics and movements at their own pace, without facing the same challenges found in usual practice (Anwar et al., 2023).

3. Learning Together with Digital Help

They encourage teachers to promote learning through groups and inquiry activities. Cloud platforms such as Google Workspace and Microsoft Teams, along with learning management systems (Rusli et al., 2023), help support communication, allow students to review others' work, and help students build their understanding together.

These platforms in sports education allow students to assess their performance recordings as a group (Palao et al., 2015), design workouts together, and review their tactics. In addition, mobile apps for social learning help students cooperate beyond class sessions, which fits with the way Vygotsky believed new ideas and learning develop.

4. Feedback is given immediately in learning situations.

Being student-centered means that formative assessment is a main feature of teaching. Thanks to modern tools and computer reviews, you can receive your feedback right away. By using motion capture and inertial sensors, the system can immediately watch a person's actions and help them correct any improper movements. These technologies allow students and teachers to watch students' learning progress thanks to the reports and dashboards, which help guide the next teaching steps (Ifenthaler & Yau, 2020).

5. All athletes should be able to participate equally in sports education.

Technology greatly helps to include all students in physical education activities. With the use of voice commands, screen readers, and haptic devices, students who are physically or mentally challenged can participate in sports activities (UNICEF, 2022). All students can be useful in their learning because adaptive games and AI allow for games matched to their abilities (Pérez-Muñoz et al., 2024). In addition, the COVID-19 pandemic made remote learning tools important because students could still take part in sports education, and this increased access and reduced obstacles for those with limited mobility or who lived far from classes (Varea et al., 2024).

6. Careful thought is needed about ethical and teaching principles.

Even though digital tools can help a lot, there are some risks to using them. Matters such as data privacy, becoming tired of too many screens, and disadvantages in internet and device access are among the challenges people face. At the same time, not every educator has the ability to teach using technology that benefits students. If student-centered results matter, schools must offer professional training, ensure all students can use the technology, and always see technology as a support to learning rather than an aim to achieve itself (Selwyn, 2021).

4.4. Assessment Practices Aligned with Student-Centered Learning

Traditional ways of assessing, which only emphasized the results after learning was complete, are being replaced with modern approaches that support and guide students in their studies. Such a shift is necessary for assessing in line with student-centered learning, which supports learner autonomy, actively involves them, and leads to both deep learning and skills that last a lifetime. Here, players participate in assessment as part of learning, allowing them to improve and support their progress as independent learners (Boud, 2013). Formative assessment is used throughout student-centered assessment. Although summative evaluations come at the end of a period of study, formative assessments help check student progress as they learn and provide helpful advice for both the student and the teacher (Black & Wiliam, 2010). Because of this feedback cycle, teachers can notice what students do not know, make changes in their lessons, and help students understand both what they are good at and what they can improve on. Many studies show that when feedback guides students on what to do next and how to learn, student achievement and motivation increase (Falchikov, 2007). It changes assessment from only evaluating what students have done before into a useful tool for their future success. In addition, student-centered assessment promotes student involvement by enabling students to assess their work and that of their classmates. When learners participate in self-assessment, they practice careful thinking about how well they have grasped their lessons, which aspects they need to study further, and their improvement toward meeting learning goals (Guengerich, 2013). By following this process, students learn to understand themselves and value what they do in class. By allowing students to assess the work of others, peer evaluation creates useful feedback for both the assessor and the assessed. Collaborating in groups on marking assignments gains students' knowledge of the criteria and develops the important skills needed for effective teamwork in future jobs (Boud et al., 1999).

An important aspect of student-centered assessment is the importance of authentic assessment. This covers work reproducing issues from the real world, expecting students to use their learning rather than just memorize facts. Through using project-based learning, portfolios, case studies, and simulations, educators can see the complete abilities of students to put information together, solve challenging problems, and make real-world products. Doing these assessments often makes learning more interesting and useful for students, helping them learn skills they can use in many situations (Sutadji et al., 2021; Ukashatu, 2021). Furthermore, an assessment that puts students first is built around their personal needs and a focus on improvement. Assessment needs to consider that people must learn at different times, learn things differently, and have different skills, so the methods must be able to reflect that. Doing so requires dividing assessment types, allowing for various approaches to minimizing differences and reviewing each person's progress individually. Thinking about progress and earning efforts, instead of natural skill, promotes sticking with challenges, perseverance, and a good approach to problems (Dweck, 2006). All things considered, assessment approaches that support student-centered learning become important features of the educational process. When teachers give formative feedback, help students practice assessment skills within groups, use meaningful tasks, and keep personalization and a positive mindset in mind, the learning experience becomes fair and

helps students become lifelong learners. This approach to evaluating students is key to producing people ready for the complicated challenges of the future.

As the approach to education moves toward letting students control their learning, keeping track of assessment developments is necessary. Table 2 lists the major contrasts between traditional assessment and student-centered assessment.

Table 2. outlines the major contrasts between traditional assessment and student-centered assessment.

Traditional assessment	**student-centered assessment**
Traditional assessment measures what students accomplish in the end.	Student-centered assessment pays attention to how students learn along the way.
Students playa passive role.	Motives to join in and participate
Use quizzes and exams.	Use formative help and projects that link to real-world situations.
Feedback comes after the learning has finished.	Alternatively, assessing students for how they learn offers help that leads to their progress.
Designed to work for everyone in the same way.	Students design to match their unique ways of learning.
Do not allow much collaboration.	Learn to evaluate themselves and help each other understand the material.
Focus on academic knowledge.	Developsabilities needed in life, such as cooperating in teams, pausing to think, and solving issues.
Designed to check what students have learned.	Intended to lead students toward learning throughout their lives.

5. Outcomes and impacts

The most important effect is an increase in student participation and willpower. If learners pick their sports or select coaching, physiotherapy, or athletic training, they are more engaged with what they are studying. Because they can make their own choices, students feel more connected and therefore work harder [59].Furthermore, the course is designed to support learning both hard and soft skills. Learning by teaching each other, conducting simulations, and taking part in practical tasks develops both their physical talents and their leadership, communication, and team skills [60].SCL also makes a difference by highlighting inclusivity and adapting instruction to each individual. It serves a range of students by offering different ways for students to learn and demonstrate their skills. As a result, every student is given the same chance to excel at learning [61]. Also, moving from a teacher-directed to a facilitator-focused approach encourages better teacher-student relationships. Instructors mentor their students and give them plenty of chances to collaborate and get feedback in the classroom [62]. With more technology, people can learn and train based on their data, with the use of helpful videos, performance trackers, and virtual coaching platforms [63].

University sports education sees just as impressive results from SCL. As they are actively involved in the curriculum, students usually gain and retain more knowledge. This kind of learning encourages students to think critically and find answers to problems by studying their results, building strategies, and considering what they learned [64]. Thanks to their rigorous curriculum, students from SCL become more flexible, confident, and ready to start professional lives in sports, coaching, therapy, or training [65]. Most of these students are pleased with their studies and continue through their programs for longer [66]. Furthermore, developing habits of watching your progress, determining your goals, and seeking improvement is supported by SCL, helping people in sports learn new things over their lives.

The results of using SCL in university sports education are just as impressive. Students often do well academically and remember things for longer, thanks to the meaningful way they experience the subject. The approach encourages critical thinking and problem-solving, as students regularly review their results, decide on actions, and review their learning journey. From an employment standpoint, SCL's programs train graduates who are flexible, confident, and prepared to handle jobs in coaching, managing sports, therapies, or training. Students in these courses are, on average, happier with their coursework and usually stick with their program. Because SCL encourages people to examine themselves, set goals, and improve their skills, it ensures people can learn and improve throughout their careers in sports [67].SCL has a significant impact on future behavior and later career results. Students trained in student-centered ways are likely to form habits like planning their learning, practicing reflection, and handling time wisely even after they graduate. Doing these things is valuable both for yourself and for your career over the long run [68]. After graduating, sports management graduates tend to have stronger initiative, adaptability, and resiliency, all greatly appreciated in the sports field [53]. Additionally, they tend to work towards additional degrees or certifications, look for creative careers, or become leaders in different companies. That's why student-centered learning prepares students to be not only qualified but also able to lead development and growth in their careers [69].The main points regarding the impacts explored in this section are shown in **Figure 6**.

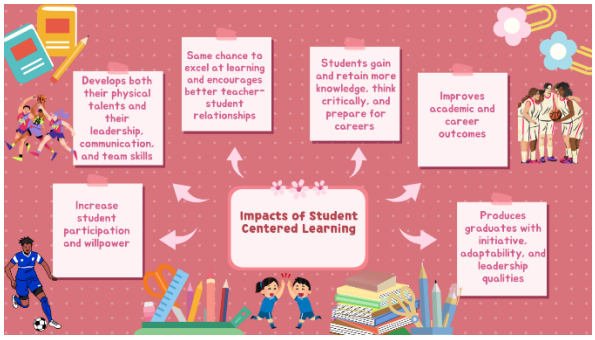

Fig. 5. Impacts of Student-Centered Learning

Yet, there are some difficulties related to SCL. For a successful implementation, instructors must use new teaching methods that can represent a big departure (Huba & Freed, 2000). SCL tends to influence a person's behavior and work lifelong into the future. People who study using student-centered approaches are expected to keep habits like learning by themselves, practicing mindfully, and managing their schedules effectively even after leaving university. These actions help both with our personal goals and with advancing our careers (Blumberg, 2008). Often, young people who receive a sports education develop extra energy, adaptability, and persistence, which are needed in a fast-paced and competitive sports industry (Falchikov, 2007). They are inclined to obtain more formal education, get special certifications, try unusual jobs, or accept leadership jobs in companies. For this reason, using student-centered approaches helps develop graduates who can both do their jobs well and encourage advancements and change in their fields.

There are also some problems associated with SCL. Applying new instructional strategies takes instructors beyond the familiar approaches from traditional learning. Individual curricula and test materials take a lot of effort to build, and many schools still lack access to new educational technology because of budget issues (Huba & Freed, 2000; Means et al., 2009; O'Neill & McMahon, 2005). In short, while it takes careful organizing and support from the institution, student-centered learning in university sports education greatly enhances engagement, skill improvement, academic results, behavior in the future, and career readiness for students. Effective SCL transforms schooling into an environment that promotes teamwork, involves many, and plans for the future. It helps students build a strong career in sports.

5.1. Institutional and Structural Constraints

The shift to student-centered assessment frequently runs up against well-established challenges within colleges and universities. Because traditional education programs are large and standardized, they are usually resistant to new forms of assessment. The big challenge of working with many students in foundational classes makes it hard for instructors to provide specific feedback and reliable assessments (Ukashatu et al., 2021). With so many students, offering useful feedback about their progress all the time is very hard, which often pushes teachers to use standard methods that can be counted.

In addition, sticky academic policies and set curricula make it hard for schools to be flexible for SCA. Most assessment systems place importance on easy-to-handle tests with clear results, rather than considering the educational value of those tests (Kushwaha & Maurya, 2024). A single approach to assessment does not fit the needs of all learners and the different types of assignments used in meaningful assessment (Singh, 2016). Since most curricula are sectioned into various disciplines, with specific learning outcomes, interference between subjects can become challenging and slow efforts to work on real-life problems or do interdisciplinary projects. Since students mainly focus on learning facts and details in these structures, they might end up rote memorizing, which goes against the SCA's goals. Things become even more difficult when discussing resource allocation. Additional resources like having fewer students in a class, unique technology, and flexible learning environments are commonly needed when using SCA and especially authentic assessment (Moriña, 2019). Because of insufficient funding or planning, universities sometimes cannot create the necessary infrastructure. Furnishings and materials within classrooms are still difficult for many special needs students to use, and content usually isn't available in formats that help them, reflecting the wider difficulty in sharing resources for fair evaluation. A lack of adequate support for these resources makes it less likely that faculty will try new approaches, even if they understand why the old methods are not working.

Lastly, the common ways things are done and the frameworks for holding people accountable can stop people from acting. The way higher education systems are usually evaluated, using rates of graduation, test results, or published papers, doesn't always reveal everything about learning at SCA. A strong focus on showing results can stop educational institutions from following assessment reforms that are less straightforward to analyze. Because there are few ways to oversee these progressive policies, they have little real impact in most institutions (Chaudhary, 2017). For these barriers to be overcome, there needs to be true commitment from the top to shift the culture, rework policies, and move resources to make higher education more student-focused (Kushwaha & Maurya, 2024).

5.2. Faculty Readiness and Training Needs

Successful use of student-centered assessment still depends on how well and how much faculty members are able and willing to participate (Webber, 2012). There is a big issue caused by the traditional learning ideas that many faculty have come to believe during their careers. Moving from being the main instructor and testing student abilities to encouraging student involvement and using different kinds of assignments requires a major change in teaching strategy (Pitcher, 2024). What matters the most

are shifts in basic views regarding teaching, learning, and assessment, more than simply using new practices.

There is a major challenge because there are few professional development and training events focused on SCA. A lot of faculty development programs explain basic teaching tactics, but they rarely provide the detailed, practical help needed for creating, carrying out, and reviewing different kinds of student-centered assessments (Villar & Alegre, 2006).

Faculty requires assistance in:

- Creating projects and tasks that are real-world, using things like portfolios, simulations, and paper and pencil case studies to replace traditional exams (Steiner & Posch, 2006).
- Building detailed and easy-to-follow rubrics that spell out how work should look and help teachers and students evaluate similar things (Allen & Tanner, 2006).
- Supporting students in reflection on their learning and getting constructive comments from others (Ferreira et al., 2023).
- Instead of assessing work by grade, provide immediate, particular, and helpful feedback to enrich learning (Kulasegaram & Rangachari, 2018).
- Guiding increased assignments: Identifying tactics to handle the longer period needed to review student work and correct formal, authentic tests.

Failing to encourage professional growth in instruction and assessment may leave faculty diffident, swamped, or hesitant to use new forms of assessment. It appears that although teachers have some knowledge of authentic assessment, using it in the classroom is inconsistent due to obstacles and a shortage of knowledge (Gautam et al., 2025). Well-designed training, such as that based on "learner-centered professional development," teaches faculty to acknowledge student diversity and use methods that meet students' needs. For this reason, colleges and universities must focus on improving their instructors' teaching skills and view it as crucial for reforming assessment (Timm, 2008).

5.3. Student Resistance or Adaptation Issues

While student-centered assessment serves students best, sometimes students or even teachers feel resistant or unsure about implementing it (Pedersen & Liu, 2003). What often happens is that students, having experienced traditional assessment before, think success comes from simply remembering and repeating details. Because they often get clear answers from teachers, students who work well with uncertainty may not feel challenged or confused by challenges with no one answer. Students can struggle with student-centered assessment approaches. A frequent problem arises from a lack of experience with self- and peer assessment. Students often have trouble with metacognition, which is important for reflecting, and with critical thinking and communication, which are needed for offering useful feedback to peers (Boud, 2013).

For many reasons, including lack of anonymity or low trust among peers, this approach might make students believe that peer feedback is unreliable or unfair (Gudiño et al., 2024). People also feel that task genuineness leads to added stress and unclear expectations. While busy projects can catch students' attention better, they might also be harder and take more time than standard tests. Because these tasks are not always clear-cut, many students often feel stressed if they are used to assignments that have only one correct way to solve them. On top of that, some people may seek out things that reward them externally. Previously, many students relied only on their grades and wanted others' praise; this may make them resist efforts to motivate them by focusing on learning itself (Dweck, 2006). Many times, these students find it difficult to sense the benefit of assignments not added to a numerical score. Eventually, worrying about not doing well can become stronger as you meet assessments that need you to use your skills and solve different problems. Such a change can make people more aware of where they lack understanding, which can cause those relying on basic tactics to avoid being exposed to feel more anxious.

Instructors need to deal promptly with the difficulties students face while adjusting to student-centered assessment. Explaining to students both the reasoning behind SCA and the advantages it offers prepares them to use these methods for future learning and career success (Gumeta, 2025). Teachers can build students' understanding and comfort level by explaining tasks, offering clear guidelines, and letting students work on self- and peer assessments (Bacchus & Wallace, 2024). The learning environment should be one where instructors motivate students to trust each other, encourage free exchanges of ideas, and see their mistakes as chances for improvement. Being available and friendly to students greatly lowers resistance (Seidel & Tanner, 2013). At the same time, well-planned use of technology can improve SCA, making giving and receiving feedback, reviewing other students' work, and preparing a portfolio all much simpler. The real goal is to help students make a meaningful change by motivating them to learn more independently and flourish.

6. Discussion

This review confirms that Student-Centered Learning (SCL) offers a transformative shift in university sports education by promoting autonomy, collaboration, and critical engagement. Models such as the Sport Education Model, Tactical Games Approach, Cooperative Learning, Problem-Based Learning, and Flipped Classrooms consistently enhance student participation, skill development, and motivation while also fostering transferable competencies valued in professional practice.

Technology further strengthens SCL by enabling personalized learning, immediate feedback, and inclusive participation. However, its effectiveness depends on institutional investment in infrastructure, equitable access, and faculty training. Resistance from both educators and students, alongside rigid curricula and resource constraints, remains a significant barrier to large-scale adoption. Despite these challenges, evidence suggests that SCL cultivates adaptability, metacognition, and resilience, equipping graduates for lifelong learning and dynamic career environments. Future research should examine long-term outcomes of SCL-trained graduates and explore the scalability of emerging technologies, including AI-driven feedback. Overall, the findings position SCL not merely as an instructional choice but as an essential educational paradigm that aligns with the evolving demands of higher education and the sports profession. For its potential to be fully realized, institutions must overcome entrenched barriers and commit to strategic investments in infrastructure, faculty capacity-building, and curriculum innovation. By doing so, universities can ensure that SCL fulfills its promise of producing graduates who are not only technically skilled but also capable of leadership, creativity, and continuous learning in dynamic professional landscapes.

7. Conclusion

The findings of this review affirm that Student-Centered Learning (SCL) constitutes a fundamental advancement in university sports education, redefining traditional pedagogical frameworks by placing learners at the core of the teaching and learning process. Approaches such as the Sport Education Model, Tactical Games Approach, Cooperative Learning, Problem-Based Learning, and Flipped Classrooms collectively demonstrate significant benefits in fostering student engagement, enhancing skill development, and cultivating critical and transferable competencies essential for both academic success and professional practice. The incorporation of technological innovations further enriches these models by enabling personalized learning, immediate feedback, and inclusive participation.

However, successful implementation of SCL remains challenged by institutional inertia, faculty readiness, and resource limitations. Targeted investments in faculty training, curriculum redesign, and infrastructural support are necessary to address these barriers and ensure equitable and sustainable application. Importantly, SCL should be viewed not as a temporary pedagogical trend but as a strategic necessity for aligning sports education with the demands of a rapidly changing professional landscape. By embedding learner-centered approaches into university programs, institutions can prepare graduates who are not only competent in their fields but also innovative, resilient, and capable of continuous growth throughout their careers.

References.

Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *Higher education research & development*, *34*(1), 1-14.

Albert, M., & Beatty, B. J. (2014). Flipping the classroom applications to curriculum redesign for an introduction to management course: Impact on grades. *Journal of Education for Business*, *89*(8), 419-424.

Allen, D., & Tanner, K. (2006). Rubrics: Tools for making learning goals and evaluation criteria explicit for both teachers and learners. *CBE—Life Sciences Education*, *5*(3), 197-203.

Anwar, M. S., Ullah, I., Ahmad, S., Choi, A., Ahmad, S., Wang, J., & Aurangzeb, K. (2023). Immersive learning and AR/VR-based education: cybersecurity measures and risk management. In *Cybersecurity management in education technologies* (pp. 1-22). CRC Press.

Bacchus, R., & Wallace, J. (2024). Peer Assessment Using Student Co-Designed Rubrics. *Creative Education*, *15*(02), 164-177.

Baviskar 1, S. N., Hartle, R. T., & Whitney, T. (2009). Essential criteria to characterize constructivist teaching: Derived from a review of the literature and applied to five constructivist-teaching method articles. *International Journal of Science Education*, *31*(4), 541-550.

Bennett, G., & Hastie, P. (1997). A sport education curriculum model for a collegiate physical activity course. *Journal of Physical Education, Recreation & Dance*, *68*(1), 39-44.

Bessa, C., Hastie, P., Ramos, A., & Mesquita, I. (2021). What actually differs between traditional teaching and sport education in students' learning outcomes? A critical systematic review. *Journal of sports science & medicine*, *20*(1), 110.

Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi delta kappan*, *92*(1), 81-90.

Blumberg, P. (2008). *Developing learner-centered teaching: A practical guide for faculty*. John Wiley & Sons.

Borhan, M. T., Saleh, S., Li, A., & Ong, E. (2020). Readiness in implementing student-centred learning (SCL): An Insight to developing a problem-based learning (PBL) module. *Universal Journal of Educational Research*, *8*(1), 119-126.

Boud, D. (2013). *Enhancing learning through self-assessment*. Routledge.

Boud, D., Cohen, R., & Sampson, J. (1999). Peer learning and assessment. *Assessment & evaluation in higher education*, *24*(4), 413-426.

Bucea-Manea-Țoniș, R., Vasile, L., Stănescu, R., & Moanță, A. (2022). Creating IoT-Enriched Learner-Centered Environments in Sports Science Higher Education during the Pandemic. *Sustainability*, *14*(7), 4339. https://www.mdpi.com/2071-1050/14/7/4339

Casey, A., & Kirk, D. (2020). *Models-based practice in physical education*. Routledge.

Chan, E. H. Y., Chan, V. H. Y., Roed, J., & Chen, J. Y. (2023). Observed interactions, challenges, and opportunities in student-led, web-based near-peer teaching for medical students: interview study among peer learners and peer teachers. *JMIR Medical Education*, *9*(1), e40716.

Chaudhary, B. (2017). Challenges And Opportunities For Inclusive Education in India. *Research Journal of Philosophy & Social Sciences*, *43*(2), 23-30.

Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random house.

Dyson, B., & Casey, A. (2016). *Cooperative learning in physical education and physical activity: A practical introduction*. Routledge.

Falchikov, N. (2007). The place of peers in learning and assessment. In *Rethinking assessment in higher education* (pp. 138-153). Routledge.

Ferreira, A., Araújo, B., Alves, J., Principe, F., Mota, L., & Novais, S. (2023). Peer feedback: model for the assessment and development of metacognitive competences in nursing students in clinical training. *Education Sciences*, *13*(12), 1219.

Frasineanu, E. S., & Ilie, V. (2017). Student-centered education and paradigmatic changes. *Revista de Stiinte Politice*(54), 104.

Furtschegger, D. (2024). The rise of the individual learner: Sociological insights on the history of student-centred learning. *History of Education*, *53*(1), 106-125.

Gautam, A., Dahal, N., & Hasan, M. K. (2025). University faculty perceptions of training transfer and professional growth: a qualitative study. Frontiers in Education,

Giménez-Meseguer, J., Ferriz-Valero, A., & Baena-Morales, S. (2022). Impact of Sport Education Model on Sports Lifestyle and Attitudes of Vocational Education Training Students. *Education Sciences*, *12*(12), 896. https://www.mdpi.com/2227-7102/12/12/896

Goodnough, K. (2006). Enhancing pedagogical content knowledge through self-study: An exploration of problem-based learning. *Teaching in higher education*, *11*(3), 301-318.

Gouveia, É. R., Gouveia, B. R., Marques, A., Kliegel, M., Rodrigues, A. J., Prudente, J., Lopes, H., & Ihle, A. (2019). The effectiveness of a tactical games approach in the teaching of invasion games. *Journal of Physical Education and Sport*, *19*, 962-970.

Griffin, L., & Butler, J. (2005). Teaching Games for Understanding: Theory. *Research, and Practice*, 1-238.

Gudiño, D., Fernández-Sánchez, M.-J., Becerra-Traver, M.-T., & Sánchez-Herrera, S. (2024). University students' perceptions of peer assessment in oral presentations. *Education Sciences*, *14*(3), 221.

Guengerich, A. M. (2013). Assessment as Learning: Using classroom assessment to maximize student learning. *Education Libraries (Online)*, *36*(1), 37.

Gumeta, H. (2025). Online Teaching in China: Active Learning and Authentic Assessment Challenges. In *The Emerald Handbook of Active Learning For Authentic Assessment* (pp. 271-291). Emerald Publishing Limited.

Hardcastle, S. J., Tye, M., Glassey, R., & Hagger, M. S. (2015). Exploring the perceived effectiveness of a life skills development program for high-performance athletes. *Psychology of Sport and Exercise*, *16*, 139-149.

Harvey, S., & Jarrett, K. (2014). A review of the game-centred approaches to teaching and coaching literature since 2006. *Physical Education and Sport Pedagogy*, *19*(3), 278-300.

Hastie, P. A., & Wallhead, T. (2016). Models-based practice in physical education: The case for sport education. *Journal of Teaching in Physical Education*, *35*(4), 390-399.

Hodges, M., Wicke, J., & Flores-Marti, I. (2018). Tactical Games Model and Its Effects on Student Physical Activity and Gameplay Performance in Secondary Physical Education. *The Physical Educator*, *75*, 99-115. https://doi.org/10.18666/TPE-2018-V75-I1-7551

Hou, B., Lu, J., & Liu, Y. (2024). The Role of Sports Games Combined with English Education in Guiding Students' Psychological Transition. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, *33*(4), 40-46.

Huba, M. E., & Freed, J. E. (2000). *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*. ERIC.

Ifenthaler, D., & Yau, J. Y.-K. (2020). Utilising learning analytics to support study success in higher education: a systematic review. *Educational technology research and development*, *68*(4), 1961-1990.

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational researcher*, *38*(5), 365-379.

Keramati, M. R., & Gillies, R. M. (2022). Advantages and Challenges of Cooperative Learning in Two Different Cultures. *Education Sciences*, *12*(1), 3. https://www.mdpi.com/2227-7102/12/1/3

Khelifi, K., & Hamzaoui-elachachi, H. (2024). Beyond'One-Size-Fits-All'Teaching: Embracing the Learner-Centered Paradigm Through Differentiated Instruction. 726-708 ,(2)14 ,التعليمية.

Kiat, P. N., & Kwong, Y. T. (2014). The flipped classroom experience. 2014 IEEE 27th Conference on Software Engineering Education and Training (CSEE&T),

Kirk, D. (2009). *Physical education futures*. Routledge.

Klemenčič, M. (2017). From student engagement to student agency: Conceptual considerations of European policies on student-centered learning in higher education. *Higher education policy*, *30*, 69-85.

Kulasegaram, K., & Rangachari, P. K. (2018). Beyond "formative": assessments to enrich student learning. *Advances in physiology education*, *42*(1), 5-14.

Kushwaha, R. K., & Maurya, H. K. (2024). Institutional Barriers to Inclusive Assessment for Students with Special Needs in Indian Higher Education. *Khwopa Journal*, *6*(2), 115-132.

Layne, T. E., & Yli-Piipari, S. (2015). Effects of the sport education model on university students game performance and content knowledge in basketball. *Journal of Sports Research*, *2*(2), 24-36.

Lee, E., & Hannafin, M. J. (2016). A design framework for enhancing engagement in student-centered learning: Own it, learn it, and share it. *Educational technology research and development*, *64*(4), 707-734.

Legrain, P., Escalié, G., Lafont, L., & Chaliès, S. (2019). Cooperative learning: a relevant instructional model for physical education pre-service teacher training? *Physical Education and Sport Pedagogy*, *24*(1), 73-86.

Liang, J.-M., Su, W.-C., Chen, Y.-L., Wu, S.-L., & Chen, J.-J. (2019). Smart interactive education system based on wearable devices. *Sensors*, *19*(15), 3260.

Light, R., & Fawns, R. (2003). Knowing the game: Integrating speech and action in games teaching through TGfU. *Quest*, *55*(2), 161-176.

Mariani, D., & Dewi, U. (2025). Literature Study: The Effect of The Problem-Based Learning Model Assisted by The Flipped Classroom on Mathematical Creative Thinking Ability. *Jurnal Pendidikan Indonesia*, *6*(1).

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.

Moriña, A. (2019). Inclusive education in higher education: challenges and opportunities. *Postsecondary educational opportunities for students with special education needs*, 3-17.

O'Neill, G., & McMahon, T. (2005). Student-centred learning: What does it mean for students and lecturers.

Palao, J. M., Hastie, P. A., Cruz, P. G., & Ortega, E. (2015). The impact of video technology on student performance in physical education. *Technology, Pedagogy and Education*, *24*(1), 51-63.

Pedersen, S., & Liu, M. (2003). Teachers' beliefs about issues in the implementation of a student-centered learning environment. *Educational technology research and development*, *51*(2), 57-76.

Pereira, J., Araújo, R., Farias, C., Bessa, C., & Mesquita, I. (2016). Sport Education and Direct Instruction Units: Comparison of Student Knowledge Development in Athletics. *J Sports Sci Med*, *15*(4), 569-577.

Pérez-Muñoz, S., Castaño Calle, R., Morales Campo, P. T., & Rodríguez-Cayetano, A. (2024). A systematic review of the use and effect of virtual reality, augmented reality and mixed reality in physical education. *Information*, *15*(9), 582.

Pitcher, M. A. (2024). *Transforming teacher role and practice: Assessment at the center* University of Illinois at Urbana-Champaign].

Prince, M. (2004). Does active learning work? A review of the research. *Journal of engineering education*, *93*(3), 223-231.

Rusli, R., Hashim, F., Akhir, N. M., & Nasrudin, N. (2023). Learning Management System (LMS) Preference Among Malaysian Educators: A Comparison Between Google Classroom And Microsoft Teams. *Asian People Journal (APJ)*, *6*(2), 212-228.

Seidel, S. B., & Tanner, K. D. (2013). "What if students revolt?"—Considering student resistance: Origins, options, and opportunities for investigation. *CBE—Life Sciences Education*, *12*(4), 586-595.

Selwyn, N. (2021). *Education and technology: Key issues and debates*. Bloomsbury Publishing.

Singh, J. (2016). Inclusive education in India–concept, need and challenges. *S. No. Paper Title Author Name Page No*, *97*.

Singh, N. (2011). Student-centered learning (SCL) in classrooms—A comprehensive overview. *Educational Quest-An International Journal of Education and Applied Social Sciences*, *2*(2), 275-282.

Steiner, G., & Posch, A. (2006). Higher education for sustainability by means of transdisciplinary case studies: an innovative approach for solving complex, real-world problems. *Journal of Cleaner production*, *14*(9-11), 877-890.

Sutadji, E., Susilo, H., Wibawa, A. P., Jabari, N. A. M., & Rohmad, S. N. (2021). Authentic Assessment Implementation in Natural and Social Science. *Education Sciences*, *11*(9), 534. https://www.mdpi.com/2227-7102/11/9/534

Thai, N. T. T., De Wever, B., & Valcke, M. (2017). The impact of a flipped classroom design on learning performance in higher education: Looking for the best "blend" of lectures and guiding questions with feedback. *Computers & Education*, *107*, 113-126.

Timm, D. M. (2008). Developing outcomes-based assessment for learner-centered education: A faculty introduction. *Journal of College Student Development*, *49*(4), 392-394.

Trudeau, F., & Shephard, R. J. (2008). Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity*, *5*(1), 10. https://doi.org/10.1186/1479-5868-5-10

Ukashatu, A. (2021). Emerging issues in educational measurement: authentic assessment. JISAE: Journal of Indonesian Student Assessment and Evaluation, 7 (2), 73–80. In.

Ukashatu, A., Muhammad, M., & Mahmoud, A. (2021). Emerging issues in educational measurement: Authentic assessment. *Journal of Indonesian Student Assessment and Evaluation*, *7*(2), 73-80.

UNICEF. (2022). The use of assistive technology in education: A guide for teachers and schools. In: UNICEF. https://www. unicef. org/eca/media/30671/file/Teacher's.

Valério, C., Farias, C., & Mesquita, I. (2021). Pre-service teachers' learning and implementation of student-

centred models in physical education: a systematic review. *Journal of Physical Education and Sport*, *21*(6), 3326-3338.

Van der Poll, A. E., Van Zyl, I. J., & Kroeze, J. H. (2019). A systematic literature review of qualitative gamification studies in higher education. Innovative Technologies and Learning: Second International Conference, ICITL 2019, Tromsø, Norway, December 2–5, 2019, Proceedings 2,

Varea, V., Riccetti, A., González-Calvo, G., Siracusa, M., & García-Monge, A. (2024). Physical Education and COVID-19: what have we learned? *Curriculum Studies in Health and Physical Education*, *15*(3), 340-357.

Villar, L. M., & Alegre, O. M. (2006). Online faculty development and assessment system (OFDAS). *International Review of Research in Open and Distributed Learning*, *7*(3), 1-19.

Wasilko, A. T. (2020). *An Investigation of Technology Implementation through the Lens of Student Centered Learning and the Technological Pedagogical Content Knowledge Paradigm* Duquesne University].

Webber, K. L. (2012). The use of learner-centered assessment in US colleges and universities. *Research in Higher Education*, *53*, 201-228.

Zhang, J., Xiao, W., Soh, K. G., Yao, G., Anuar, M. A. B. M., Bai, X., & Bao, L. (2024). The effect of the Sport Education Model in physical education on student learning attitude: a systematic review. *BMC Public Health*, *24*(1), 949. https://doi.org/10.1186/s12889-024-18243-0