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Implementation Strategies for Intelligent Sports Learning Environments

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Abstract: The academic circle has a general consensus on the composition of space under information technology. The network virtual space based on information technology has also been added. The increase of the space in the learning process will inevitably bring about the change of teaching and learning forms and the reconstruction of models. In terms of functional support, it is multidimensional. It is not only a physical space for free practice, but also a social space for learning-related interactive activities to pursue self-liberation. Naturally, it is also a psychological space [1]where the inner spirit can develop.
Learning space in education is no longer just to meet the needs of knowledge transfer, nor exists only as a place for learning activities, but has changed from the demand and supply of things to the demand for human development, from the focus on the result to the focus on the process, enhancing the correlation between various elements, and becoming a learning space integrating the process and the result. The full understanding and reasonable setting of the learning space play an important role in the implementation of intelligent education, especially in the development of intelligent learning.

Keywords: sports intelligent education; new PE class application; effective learning

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1. Application strategy

1.1. Application framework of sports Intelligent Learning space

Due to the different cognition objects, different disciplines will inevitably bring differences in the practice of smart education. The learning of sports skills is staged, which should conform to the cognition laws of different stages, and cannot be designed in a unified mode. The existing research on sports Intelligent Learning space has not divided each stage of sports skills in detail, and lacks theoretical guidance of framework. This study will follow the learning of service skills, excavate the learning needs of each stage, design and construct the Intelligent Learning space by the learner-driven principle, and form a theoretical system for guiding practice, which has substantial and innovative value for the theory of the Intelligent Learning space of sports.

The application framework of space construction in this study takes learner-driven as the center and sports learning characteristics as the starting point to meet the needs of different types of sports skill learning. It is constructed in stages from the formation rules of skill learning, and the three dimensions of Intelligent Learning are constructed at each stage from the three comprehensive perspectives of cognitive, emotional and social learning. In the process of design and construction, the characteristics of intelligent learning are satisfied. From the perspective of technology, ability and

process, the basic functions and characteristics of the learning space are fully considered, and a Intelligent Learning space suitable for motor skill learning is constructed by means of wisdom empowerment. (Figure 1)

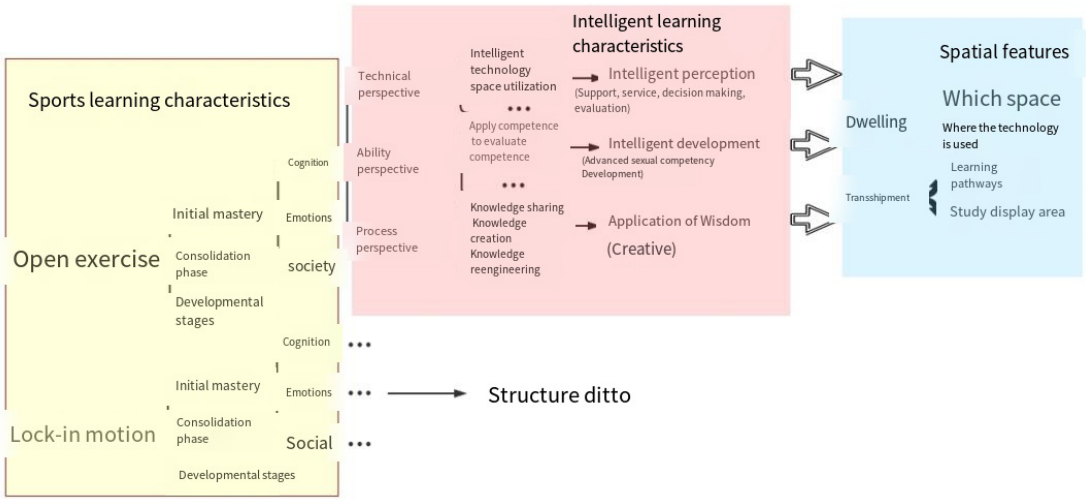

Figure 1. Sports Intelligent Learning space application framework

2. Practical application direction

Practical application is the purpose of constructing sports Intelligent Learning space, and it is also the only standard to measure the value of this new mode. According to the application framework of sports Intelligent Learning space, in order to better guide sports education practice, Relying on the sports Intelligent Learning space, five application strategies can be established, namely, the connection of virtual space and physical space, the mixing of online and offline learning, the integration of formal learning and informal learning, the connection of school environment and social environment, and the transformation of learning evaluation.

2.1. Physical space and virtual space connectivity

Smart education is the advanced stage of education informatization. Network information technology, as an important support means of education informatization, makes physical space dissolve and form a distributed system[2]. Intelligent Learning space, as the carrier of smart education, mainly consists of physical space and network virtual space in terms of the composition of learning space.

The characteristics of sports learning include the dependence of sports practice on physical space, and the practice of sports technology requires sports venues. The fixed physical space provides very convenient conditions for spatial connectivity. Information technologies such as the Internet of Things are used to establish online channels and link into cyberspace, so that learning elements in physical space such as venues can be combined with elements in cyberspace. To form spatial connectivity.

2.2. Mixing offline and online learning

Sports Intelligent Learning space includes online learning space. Mixing offline learning and online resources in the learning process will bring new elements and better optimization[3] to the learning process, especially for students to cultivate advanced abilities, create a deep learning environment, and make the process of sports learning a comprehensive field of education.

Sports Intelligent Learning space contains the dimension of intelligent development and reflects its ability perspective. With the assistance of intelligent technology and the mixing of network learning resources, learning data can be intelligently analyzed and learners can be given accurate learning path selection. With the support of adaptive learning, the

preparation before class and the practice after class are supported by abundant resources. The independent learning ability of learners can be cultivated, and the interest in sports learning can be enhanced by improving the learning experience.

These new interactive relationships will bring certain changes to students' emotional promotion and teachers' role transformation. Therefore, fully understanding and accurately grasping the role and influence of these interactive relationships on the learning process can bring more promotion to the learning process and ability cultivation. (Table 1)

Table 1. New interactions and interactive relationships arising from the mix of online and offline learning

Interaction between and Interactive types	Changes brought about by new types of learning relationships
Teachers interact with students	The changing role of the teacher
Student to student interaction	Promote meaning construction, emotion promotion, learning "buffer zone"
Students interact with resources	Pervasive learning, increased levels of engagement in learning activities, increased support for self-directed learning, and promotion of implicit knowledge mastery
Teacher and resource interaction	Process resource utilization, teaching design diversification
Student interaction with technology	The needs of information literacy, learning 'scaffolding', mobile and distributed learning
Teachers interacting with technology	Learning environment design, the main means of informal learning linkage

The primary change of the new learning interaction is the challenge brought by the role of teachers, which is mainly reflected in the change of the role of teachers from the teaching role to the guiding role. In the process of the application of sports Intelligent Learning space, teachers are the creators of the situation and the guides of learning. Such a learning environment should be student-centered, and the interaction between teachers and students will be transformed into student-led interaction. Traditional PE teaching emphasizes teachers' demonstration and students' imitation, which is a kind of inculcated learning interaction. In the process of the application of PE Intelligent Learning space, as the support of intelligent technology and resources for students' learning has been greatly increased, teachers' main responsibility has shifted to guiding students in the process of meaning construction and correcting deviations. Then the positioning and significance of this kind of technology demonstration in formal learning will be different from that of traditional teaching. In the new interactive relationship, students belong to the strong side of interaction, and teachers provide control and help in learning links. Due to the communication platform and instant communication function of online courses, the interaction between teachers and students can be sustained and extended, which provides the possibility for sports learning under the social environment.

The interaction between students not only plays a good role in promoting learning in terms of construction and sharing, but also plays a good role in emotion. The interaction between students and resources refers to the interaction with the network space resources. In this space, the characteristics of learning resources are not limited by time and space, which leads to the ubiquity of learning styles, and makes continuous learning interaction possible. The interaction between teachers and online resources mainly reflects various roles in the construction of learning resources. Teachers are designers, producers, managers, supervisors and maintainers of online resources. At the same time, teachers also play the role of experts in the learning environment, providing students with the creation and support of task situations.

Multimedia is one of the characteristics of online resources. The complexity of sports technical movement learning lies in the fact that in addition to the explicit technical structure, the implicit knowledge such as the internal muscle feeling and the use of center of gravity of technical movements is more difficult in the learning process.

2.3. Integration of formal learning and informal learning

Compared with formal school education or continuing education, "informal learning" refers to the form of learning in which new knowledge is received in informal learning time and place such as extracurricular, work, life and social

interaction. In the sports Intelligent Learning space, due to the connection and combination of learning space, as well as the assistance of the Internet of Things, big data and artificial intelligence technology, the sports Intelligent Learning space can be improved. It provides technical support for learners' adaptive learning and teachers' learning monitoring and feedback, makes the learning process "perceptive", expands the learning space, and promotes the boundary between formal learning and informal learning to become more and more blurred. In this mode, according to "classroom", the formal learning becomes an aid to the learning process. And the extension of the proportion and time of informal learning in extracurricular, social and family, gives birth to the "whole process" learning idea that the integration of formal learning and informal learning should be established in sports Intelligent Learning space. (Figure 2)

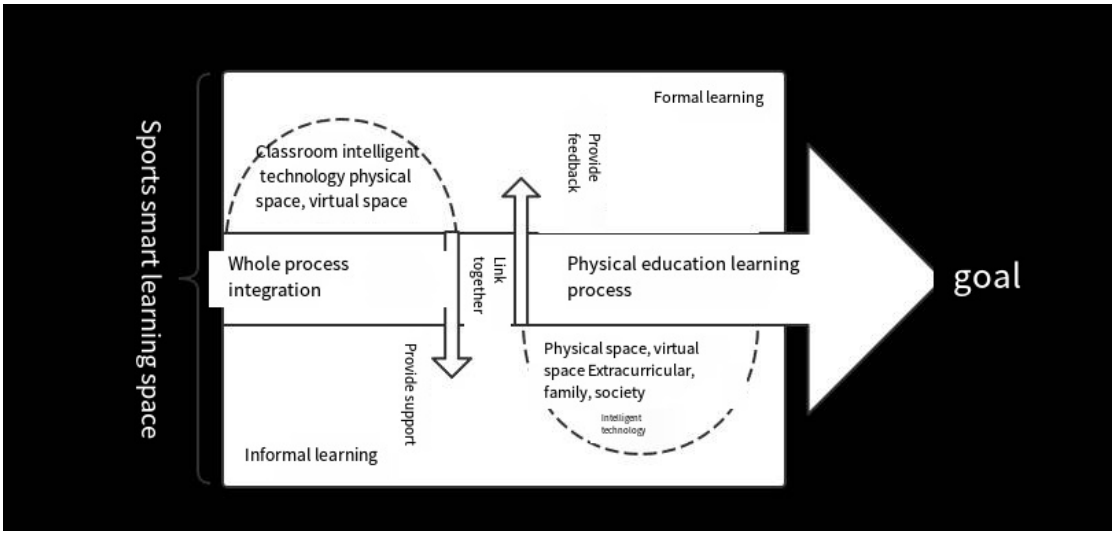

Figure 2. Integration of formal and informal learning in sports Intelligent Learning space

"Whole process learning" is the practical demand of various educational subjects nowadays, and it is also the goal of improving education quality under the background of education informatization. Take colleges and universities as an example, according to the regulations of the education department, only one class of public physical education is arranged every week, and most of the rest of the time, students do physical exercise and skills learning after class. The intelligent technology of sports Intelligent Learning space is used to fully tap the feedback of sports learning during informal learning time, and form a mutually feeding system with formal learning. Through the analysis of learning situation obtained through informal learning, learners and teachers can carry out accurate learning feedback, which can be explained and corrected in a centralized manner in formal learning, improving learning efficiency. Instant communication and intelligent assisted learning system enable students to receive guidance in the process of after-school sports practice without limitation of time and space, and realize the universality of sports learning. Cultivate lifelong physical education habits.

With the continuous evolution of the learning stage of sports skills, this integration will be closer, and the weight of learning activities will tilt to informal learning. For example, in the development stage of sports skills learning, skills will become more proficient, and the flexible use of skills in real competitions and activities will become the learning goal. On campus, extracurricular sports activities will be more large-scale. The social network support platform of the sports Intelligent Learning space can gather the learners on campus, but also can establish learning contact with social learners, form a sports community, share learning experience, and display learning results, and play the function of the learning space. The rich sports learning resources in the network space can also meet the needs of watching high-level competitions and improving learning by technology[4].

2.4. Connecting the school environment with the social environment

Learning is a process that runs through an individual's life, in which only about one fifth of the time is spent on learning in the context of school, and four fifths of the time is spent on learning in the context of society. So how to train students to

carry out sports activities, learn sports skills, develop sports habits, and establish sports interaction and communication in the context of real society? These are the sports qualities that should be cultivated in the context of the school. However, the traditional sports learning space is often lacking for the lifelong sports literacy cultivation under the social environment, which is divorced[5] from the real social life. The most notable feature is the authority and centralization of teachers, and students lack the ability of independent learning. Individuals cannot learn sports skills without the social environment of physical education teachers.

Nowadays, in the Internet era, individuals' life, work, development and social communication all depend on the Internet. People's first way of thinking is to solve various problems through the Internet, and the same is true for sports behavior, such as technical learning through online courses, sports display through social media, or sports competitions through the Internet. In short, the sports life under the current social environment should be networked and digital. Craig Deed points out that the evaluation of informal learning space and the evaluation of learning experience in higher education must take life experience into account. This sentence emphasizes that the learning space should provide a social context. Sports Intelligent Learning space brings a rare opportunity to create a social environment under the school environment. Through sports technology learning, communication and the establishment of a community of practice under the network environment, it is consistent with the sports life under the current social environment. Therefore, the social environment of sports Intelligent Learning space should be used to cultivate learners' lifelong sports ability.

The connection between the network space and social learners makes it easier to produce a practice community in line with the social environment, and connect the campus environment with the social environment. In terms of the selection of cyberspace, we should also strive to diversify. On the basis of using online resource platforms, we should also make full use of various forms of social media resources and platforms, such as short video platforms. Compared with the sharing of knowledge achievements of other disciplines, the display of sports skills is more dynamic. A sports technology video display, like motion decomposition picture display, brings more intense visual stimulation and more intuitive and three-dimensional feelings, and comments and likes are also an effective way to better establish interaction with the presenter. In the practice community, we can better obtain the guidance of "core members" and help other members as "core members".

From the perspective of practical application, teachers should keep the three members of the practice community in the same space at the same time. For example, self-organizing (community), social learners and students can all cross in the communication and discussion area of cyberspace at the same time, or cross in the short video platform, or gather social learners and students for offline communication and guidance through the MOOCs platform. No matter in any space and field, each member can communicate with each other through the meaning of skills acquired in the process of technical learning, and construct the meaning of convergence from different perspectives, so as to facilitate the better mastery of sports technology. (**Figure 3**)

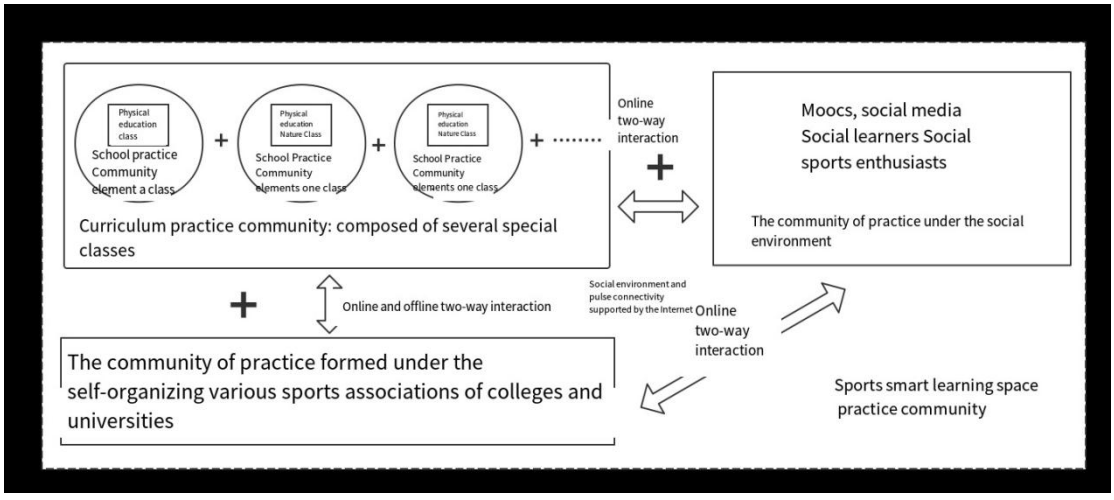

Figure 3. The practice community in sports Intelligent Learning space makes the school context and social context effectively connect

Due to the multi-spatial nature, the creation of the community of practice should be the integration of multiple communities, so as to make it closer to the sports needs under the social environment, and emphasize the real contribution of students to the community of practice. Various associations and social learning groups in the self-organization can effectively connect with the sports curriculum learning community, self-organization and the community of practice is also a mutually beneficial relationship. For example, the football, basketball and volleyball associations in the school, most of the members of these associations are voluntary and have a certain level of sports. For ordinary students in various courses of sports in colleges and universities, the members of these associations can become technical instructors and assessment experts for middle school students to share technical achievements online in the practice community under the school environment.

3. Suggestions and vision

The sports Intelligent Learning space will present the learners' sports learning process with informatization and data, so how to ensure data security and students' privacy is the direction and focus of future research.

In 2022, the concept of the meta-universe is ready to emerge, and is called the first year of the meta-universe. The proposal of the meta-universe is not only based on the concept of hype. Accurately seize the advantages of this discipline, and vigorously promote the construction of sports intelligent learning space, is the physical education teaching to seize the commanding heights of education meta-cosmic reform, but also to realize the advantageous opportunity of overtaking the curve.

Disclosure statement

The author declares no conflict of interest.

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