Research on the Evaluation Index System of Sports Information of Colleges and Universities in Beijing

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*Abstract—S*ome research shows that there exist problems on the development of sports information of colleges and universities in Beijing. Therefore, it becomes a mission for educational management departments and physical educators of colleges and universities in Beijing on how to scientifically develop and utilize the information resources and how to serve colleges and universities better. This article will carry out further research on sports information, and aim at sports information construction to establish a scientific evaluation index system and have a verification and application.

Keywords：sports education of colleges and universities; evaluation index system; sports information

I. INTRODUCTION

In recent years, China's sports undertaking is in a stage of flourish development. The success of the 2008 Olympic Games and the project of the sports information construction which was put forward in "The development of sports undertakings in China 12th Five Year Plan (61)" provide opportunities for the development of the sports information network in Beijing. However, some research shows that there exist problems on the development of sports information of colleges and universities in Beijing. Its specific performance is in the areas of the low value of the study and utilization of sports information theories, the lag of hardware and software development of sports information, the low information quantity and quality, the insufficient of high quality sports websites of colleges and universities, the unrealized co-construction and sharing of the information and the database construction lacking full service ability. Therefore, it becomes a mission for educational management departments and physical educators of colleges and universities in Beijing on how to scientifically develop and utilize the information resources and how to serve colleges and universities better. This article will carry out further research on sports information, and aim at sports information construction to establish a scientific evaluation index system and have a verification and application.

II. RESEARCH OBJECT AND METHOD

A. Research Objects

The research objects are that we extracted 46 from 89 colleges and universities which are on the list of the 2011 Beijing ordinary higher education entrance qualification which Ministry of Education announced. It accounts for 47.2% of the total, and the number of ordinary colleges and universities is 33 (58 in total), accounting for 56.9%；the number of higher vocational colleges is 12 (25 in total), accounting for 48%；the number of independent colleges is 1 (5 in total), accounting for 20%．

B. Research Methods

- Literature and data: we searched the Internet and consulted a large amount of information, literature information and sports information core journals.
- Survey and interview: we extracted 21 experts from all kinds of schools and had an interview with them, and among them are 2 well-known professor, 5 professors, 11 associate professors, 2 lecturers and 1 assistant. Then we summarized and sorted the interview results.
- Complex system construction: we established the evaluation index system at all levels of sports informatization of the colleges and universities in Beijing, and had an index selection and standardization. And we used the analytic hierarchy process to calculate the specific weight of evaluation index system of sports informatization. Then we used multi-indexes comprehensive evaluation to establish team worker staffing, evaluation methods and analysis of evaluation results.

III. THE RESULTS AND ANALYSIS

A. The Basis of the Construction of the Evaluation Index of Sports Informatization of colleges and universities in Beijing

We divided 46 sports information network home pages of colleges and universities into 4 categories. The first one, the sports information network is the secondary site of the school site. The second one, there is not sports information network home page in the school website, but

there is an introduction to sports departments in school home. The third one, there is the name of sports department on school home, but there is not relevant introduction to the sports department. The fourth one, the school website is without any information about sports department (Table I).

	The first Class	The second Class	The third Class	The forth Class
Colleges and Universities	28	5		
Vocational Colleges	5	5	2	
Independent College				1

Note: 1. The deadline of this table statistics is on August 25, 2011; 2. The first class: there is a page; the second class: There is an introduction; the third class: there is not home or introduction; the forth class: there is not any information about sports department.

From the statistics above we can know the results. The first class has 33 colleges, which accounts for 71.74%. The second class has 10 colleges, which accounts for 21.74%. The third class has 2 colleges, which accounts for 4.34%. And the fourth class has 1 college, which accounts for 2.17%.

The ratio shows that sports department has been had consciousness of sports network information. According to the survey, we can find that the contents in the home pages of the first and second classes are not enough, for it is just basic information like profiles, teaching and training groups. (Table II). The updates lack of timely. In 21 universities, 80% of contents are more than one year, which accounts for 48.8% of all. 25 universities, which accounts for 58.1% of all, still use static web pages and the network technology is obsolete. And there are 30 web pages lacking of beauty, and the design is crude, which affects use. And this phenomenon accounts for 69.8%. So the service function of sports information is not fully at work.

TABLE II.   CONTENT CLASSIFICATIONS ON THE HOMEPAGES OF SPORTS DEPARTMENTS OF THE 43 COLLEGES AND UNIVERSITIES IN BEIJING

Contents on the Webpage	sports department webpage	Percentage
Profile	40	93
Sports news	15	34
Organization	30	70
Physical education	26	60
Mass sports	21	48
Sports training	22	51
Venues and facilities	18	42
Sports knowledge	10	23
Physical health	7	16
others	10	23

We can know from the statistics above that the construction of sports information resources and the information system are weak, and the management is relatively lagged. So it cannot form complete sports information resources, which cannot satisfy the needs of students to study and professional sports teacher to improve teaching quality, research capacity, training levels and competition performances. What's more? The slow update of sports information makes students lacking desires for learning new fitness method, fitness program, fitness theory, sports injury prevention and treatment, judge rules and enjoying games. The results of these problems are as followed.

• Part of the sports teachers have outmoded knowledge phenomenon. And it is the bottleneck problem of restricting the colleges and universities physical education reform.

• The students lack of fitness theory knowledge. So, they cannot have a scientific exercise.

• It makes the contradiction between teaching and learning expanding.

• It cannot meet the needs of quality education.

• The level of sports science research is low, and achievements are few.

B. The Necessaries of the Construction of the Evaluation Index of Sports Informatization of Colleges and Universities in Beijing

According to the analysis of the development situation of sports information, we can know that the development of sports information is in poor condition like lacking repository and duplication of information. Therefore, how to examine their own problems and how to make up their deficiencies are quite practical problems. So it is very necessary to evaluate the development level of sports information and know about the development situation and deficiencies and then according to the evaluation results to set an example, correct plans, lead it developing healthily and establish a scientific evaluation index system of colleges and universities in Beijing.

The construction of the information evaluation index system of colleges and universities in Beijing can provide a basis for the management and control of sports information construction and application. The system can help the education management organization sum up experience and correct the deviations in time, so it can lead sports information developing in a healthy and ordered way. It has some validity and feasibility of using this evaluation index system to evaluate sports information construction and management, have a more specific detection, and then improve the level of sports information. In short, according to the problems which exist in sports information of colleges and universities in Beijing, we can draw a conclusion that it is not only necessary but also essential to establish an evaluation index system.

C. The Principles of the Construction of the Evaluation Index System of Sports Informatization of Colleges and Universities in Beijing

Choosing a reasonable and representative index to compose the sports information evaluation index system is a key point of evaluating the development level of sports

information. Therefore, when we establish the evaluation index system, we should follow the 6 basic principles, that is, systematicness, consistency, independence, testability scientificalness and comparability. And in the process of standardization management, we should hold the trend to guarantee the contrast among indexes. Only when we adhere to principles above can we establish a suitable evaluation index system to reflect the original appearance of things. [2]

D. The Establishtion of the Evaluation Index System of Sports Informatization of Colleges and Universities in Beijing

- The Establishment of the Evaluation Direction of Sports Informatization of Colleges and Universities in Beijing

According to the concrete analysis of sports information of colleges and universities in Beijing and the five substantive discussion of advanced assessment methods which was put forward by Professor Zhang Chengfu [3], we can drew the conclusion that when we evaluated the informatization evaluation index system of colleges and universities in Beijing, we should start with both the hard direction and the essence, and then put them into the development cycle. At the same time, we took the "input - output - outcomes - benefit" evaluation framework which is used by the E-government in the United States for reference [4], confirmed the 4 evaluation directions that are the evaluation of the sports information resources on campus, the evaluation of the office automatic system on campus, the evaluation of the sports portal on campus and the evaluation of the sports information environment on campus and regarded them as first-level indexes. Then, according to the complex system evaluation theory, we had the index selection and standardization. Ultimately, we established the sports informatization evaluation index system of colleges and universities in Beijing, which included 4 first-level indexes, 11 second-level indexes, and 40 third-level indexes(TABLE III).

TABLE III. THE CONSTITUENT LIST OF THE THE LEVELS OF THE SPORTS INFORMATION EVALUATION INDEX SYSTEM OF COLLEGES AND UNIVERSITIES IN BEIJING

Level indicator	Two level index	Three level index
A1. Sports Information Resources on Campus	B1. Development Level of Database	C1.The database cov-ers C2.Data sharing deg-ree C3.Safety measures C4.Database technology
	B2. Information Quality	C5. Correctness C6. Timeliness C7. Authoritative C8.Information utiliz-ation C9.Value information
	B3. Information Resource	C10. Leadership decision C11. Sports teaching application C12. Application of sports team C13. Application of group activities C14. Information contents
A2. OA System	B4. System Application	C15. Coverage of OA system C16. OA system rate C17. OA system usability
A3. Sports Portal on Campus		C18 . The OA system efficiency
	B5. Benefit	C19. Teachers and students return C20. Influence of Campus C21. application scope
	B6. Website Construction	C22. Page design C23. Site search and navigation C24.User information C25. Webpage browses
	B7. Site Content	C26. Column content C27. Open government C28. Online services C29. Information update frequency
	B8. Site Operation	C30. Website update C31. Network link C32. Stability C33. Government interaction
	B9. Public Influence	C34. satisfaction C35. Impact strength
A4. Sports Information Environment on Campus	B10. Human Capital	C36. The person responsible for C37. Personnel training
	B11. Regulation Rules	C38. Information system C39. Information security system C40.Specialized personnel

- The Establishment of the Evaluation Index of Sports Informatization of Colleges and Universities in Beijing

We selected 21 sports experts who had achievements in sports management and sports information and had three rounds questionnaires. In the first round, we sent 4 first-level indexes and 11 second-level indexes to experts, and we recycled 19 back. The valid return rate is 90.5%. After Collation, statistics and analysis, we established the first-level and second-level indexes and their weight. And based on these, we had the second round. The main point in the second round was consulting opinions on 40 third-level indexes. During this round, we sent out 21 questionnaires, and recycled 20 back. The valid return rate is 95.2%. There were 32 indexes entering the third round after organizing experts' opinions. The main point of the third round was making judgments of the weight of indexes. During this round, we sent out 21questionnaires, and recycled 21 back. The valid return rate is 100%. Then, we used the hierarchy analysis software YAAHP V0.5 to judge the relationship among the same level indexes. Finally, we got the 4 first-level indexes, 11 second-level indexes and 32 third-level indexes.

- The Final Weight of the Evaluation Index System of Sports Informatization of Colleges and Universities in Beijing

We used analytic hierarchy process AHP to calculate the weight of every index, and the final results are shown in table IV.

Table 4 FINAL RESULTS OF THE AHP TO CALCULATE THE WEIGHT OF EVERY INDEX.

Level indicator	Wi	Two level index	Wi	Three level index	Wi
A1.Campus sports information resources	0.3709	B1.Database developme level	0.1856	C1.The database cov-ers	0.0777
				C2.Data sharing deg-ree	0.0680
				C3.Safety measures	0.0399
		B2.Information quality	0.1331	C4. Correctness	0.0755

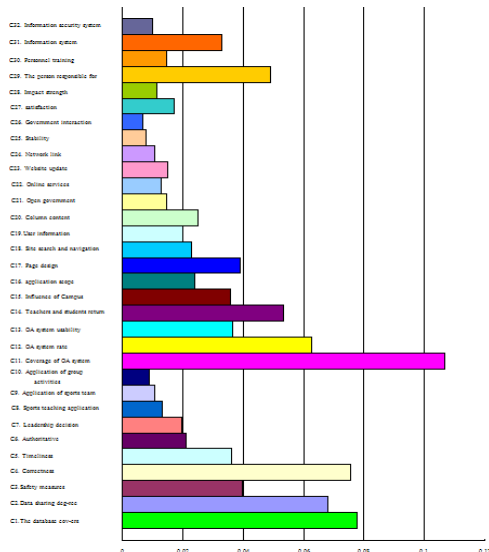|					C5. Timeliness	0.0363
					C6. Authoritative	0.0213
				B3.information resource	0.0523	C7. Leadership decision	0.0196
						C8. Sports teaching application	0.0131
						C9. Application of sports team	0.0108
						C10. Application of group activities	0.0088
A2. OA System	0.3193	B4.System application	0.2061	C11. Coverage of OA system	0.1068
				C12. OA system rate	0.0626
				C13. OA system usability	0.0367
		B5. Benefit	0.1132	C14. Teachers and students return	0.0534
				C15. Influence of Campus	0.0358
				C16. application scope	0.0240
A3.Campus sports portal	0.2035	B6.Website construction	0.0819	C17. Page design	0.0390
				C18. Site search and navigation	0.0229
				C19.User information	0.0200
		B7. Site content	0.0522	C20. Column content	0.0249
				C21. Open government	0.0145
				C22. Online services	0.0128
		B8. Site operation	0.0406	C23. Website update	0.0152
				C24. Network link	0.0107
				C25. Stability	0.0079
				C26. Government interaction	0.0068
		B9. Public influence	0.0287	C27. satisfaction	0.0172
				C28. Impact strength	0.0115
A4.Campus sports information environment	0.1063	B10. Human capital	0.0636	C29. The person responsible for	0.0489
				C30. Personnel training	0.0147
		B11.Rules regulations	0.0427	C31. Information system	0.0328
				C32. Information security system	0.0099

Figure 1 The weight of each index distribution map

IV. CONCLUSIONS AND RECOMMENDATIONS

This research is on the basis of the development situation of the sports information of universities in Beijing, and it establishes the system of the sports informatization evaluation index system which includes 4 first-level indexes, 11 second-level indexes and 32 third-level indexes of the sports information resources on campus, the office automatic system on campus, the sports portal on campus and the sports information environment on campus. The application of analytic hierarchy process to get the weight of all levels of indexes overcomes the disadvantage that a few experts made indexes by experience and makes the indexes more objective. The construction of the evaluation index system can reflect the development level of sports information more accurately and provide a reference for further construction of the sports informatization of colleges and universities in Beijing.

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