WORLD-CLASS UNIVERSITIES AND DISCIPLINES EVALUATION: METHODS AND RESULTS BASED ON THE EVALUATION PRACTICE OF CHINESE ACADEMY OF SCIENCE AND EDUCATION EVALUATION

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Abstract

Building world-class universities and disciplines is of extreme importance in China. Chinese Academy of Science and Education Evaluation has carried out the world-class universities and disciplines evaluation in order to know which universities are world-class universities, and which disciplines are world class disciplines. The evaluation employs a unique index system, and collects data in an authoritative and credible way. The evaluation results indicate that there is a huge gap between Chinese universities and world-class universities.

Keywords: *world-class universities, higher education evaluation, discipline evaluation, evaluation index system, Chinese higher education*.

1. Introduction

World-class university is a term adopted largely interchangeably with globally competitive universities, elite or flagship universities, those words have become the catch phrases in higher education since the 21st century. World-class universities are not only the cradle of science, technology and education, but also the fountain of modern culture and ideas. Establishing world-class universities is one of the most effective capacity building approaches for a developing country.

In the innovating era, with the fierce competition for talents all around the world, many countries realize the strategic importance of building world-class universities. Governments have introduced various "Excellence Initiatives" in countries such as Germany, Demark, Russia, South Korea, Spain, Egypt and so on. The world-class university movement is reshaping the landscape of the world higher education.

World-class universities have common characteristics, for instance, excellence in education, research, development and dissemination of knowledge, and the activities contributing to the cultural, scientific and civic life of society (Levin, et.al.,2006). Those characteristics can be condensed into six key words, which are "world", "research", "students",

"education", "knowledge" and "create" (Slyusarenko, Olena,2015). Creating a culture of innovation is the essence of becoming and staying a world-class university (Tierney, William G., 2014). World-class universities' policies can bring public value, such as increased exogenous resources, systemic improvement, reputational benefits in higher education (Cremonini, Leon et.al.,2014). To build world-class disciplines is the foundation of world-class university establishment. With a major concentration of teaching and research it is possible for a specialized university to become a world-class university (Zhimin Liu, et.al.,2016).

Rather than self-declaration, the elite status of world-class universities relies on international recognition (Altbach & Salmi, 2011). As the main way of higher education academic performance evaluation, the continued importance of university rankings has served to fuel the growth of the world-class university movement. The ranks of the Times Higher Education (THEs), US News & World Report (USNWR), Quacquarelli Symonds World University Ranking (QS), Academic Ranking of World Universities (ARWU) have done the world universities rankings by employing different index systems. Nowadays, the higher education stakeholders commonly use those four major global university ranking systems. The relationship, functions and effects of universities rankings and world-class universities building are examined by numerous studies (Lu Liu, Zhimin Liu, 2016; Van Raan, 2005; Aguillo et al., 2005; Hazelkorn, 2007; Rauhvargers, 2013). In view of the significance of universities evaluation, the Chinese Academy of Science and Education Evaluation has conducted global universities ranking since 2007. Moreover, the Chinese Academy of Science and Education Evaluation's global universities ranking aims to providing references for education authorities, universities, students and their parents, and other stakeholders to have a comprehensive understanding of the panorama and details of the universities.

Universities rankings have attracted more and more attention from all walks of life. Nevertheless, the evaluation and ranking practice of the Chinese Academy of Science and Education Evaluation has rarely introduced to the world. This paper tends to analyze 2017-2018 global universities ranking results of the Chinese Academy of Science and Education Evaluation. The evaluation idea and methodology will be discussed systematically and thoroughly.

2.Evaluation Principles

Given the considerable differences of the universities ranking's ideas and goals, it is important to know the principles of a certain universities ranking. The leading idea of the Chinese Academy of Science and Education Evaluation is putting the universities' teaching, research, social service performance and social contribution as the basic standard. The ranking makes every effort to guarantee to get the "scientific, reasonable, objective, justice" ranking results. Based on years of ranking experience and the above ideas, eight principles came into being gradually. Chinese Academy of Science and Education Evaluation adheres to the eight principles firmly in the evaluation, the eight principles can been seen below.

First of all, the adherence of the combination of management-oriented and market-oriented.

In the second place, dealing with the relationship between qualitative and quantitative research properly, adhering to the principle of the combination of qualitative and quantitative evaluation.

Thirdly, dealing with the relationship between input, product and efficiency properly, giving consideration of input, product and efficiency in evaluation.

Fourthly, dealing with the relationship between natural science and social science properly, adhering to the principles of natural science and social science of equal importance, and putting classified evaluation principle into practice.

Fifthly, dealing with the relationship between scale and efficiency properly, laying particular stress on efficiency appropriately.

Sixthly, dealing with the relationship between quantity and quality properly, laying particular stress on quality appropriately.

Seventhly, dealing with the relationship between teaching and research properly, laying appropriate stress on research of top universities.

Eighthly, dealing with the relationship between Chinese data and foreign data properly, laying appropriate stress on foreign data.

The Chinese Academy of Science and Education Evaluation adheres to those eight principles strictly so as to provide scientific and objective reference to universities' stakeholders.

3.Research Methods

3.1 The evaluation objects and scopes

The 2017-2018 world-class universities and disciplines' evaluation of Chinese Academy of Science and Education Evaluation includes 1506 universities and their disciplines worldwide. We adopt the unified data source and the unified statistical standard in the process of universities and disciplines' evaluation. The universities which have two or more disciplines in American Essential Science Indicators database (ESI) are in the range of the world-class universities in this ranking. It is worth mentioning that Chinese universities which have one or more disciplines in ESI are the evaluation objects as well. In addition, ESI database sets 22 disciplines in total, including an interdisciplinary subject. Ranking according to their paper's rate of citing of universities or research institutions by different disciplines, only the top 1% of the disciplines can be included in the ESI disciplines ranking list. There are altogether 5620 universities and research institutions in the ESI disciplines ranking. We screen the qualified universities based on the screen standard strictly, as a result, only 1506 universities meet our requirements, the 1506 universities act as the objects in the evaluation. As far as this is concerned, the objects quantity and representativeness can be guaranteed.

We investigate all the evaluation objects thoroughly, and put the university which uses different names as one university. For instance, "ETH ZURICH" and "SWISS FED INST TECHNOL ZURICH" are one university in different names in fact, and the merged university's name is Swiss Federal Institute of Technology. Therefore, the data of Swiss Federal Institute of Technology is the added date of ETH ZURICH" and "SWISS FED INST TECHNOL ZURICH" in our evaluation. Besides, the merged universities are PIERRE & MARIE CURIE UNIV - PARIS 6 and UPMC, UNIV TAMPERE and TAMPERE UNIV, VITA-SALUTE SAN RAFFAELE UNIV, UNIV VITA SALUTE SAN RAFFAELE and VITA SALUTE SAN RAFFAELE UNIV, and more than other 100 universities.

3.2 Data collection

We use the data from April to May 30th in 2017 in American ESI database as the paper indicator. As for the patent indicator, we adopt the American Derwent Innovations Index (DII) data from 2012-2016. In accordance with the disciplines setting characteristic of ESI and DII, we put the chemistry, electronic & electric and engineering those three disciplines' patent into chemistry, physics and engineering in ESI respectively. We downloaded the patent data in July 20th in 2017. Web ranking data is an essential part of university ranking. We take the Webometrics Ranking of World Universities (WRWU) which was conducted by the Spanish National Research Council Cybermetrics Lab as the web ranking references. We downloaded the web ranking's data in May 6th, 2017.

The connotation of the indicators from the above databases are as follows. First of all, the **Most Cited Papers** refer to the paper which the total citations list in top 1% in ESI database in a certain year and certain subject. In the second place, **Highly Cited Researchers**. We adopt global Highly Cited Researchers data published by Thomson Reuters technology information group in 201. In the third place, the **International Cooperation Paper** refers to the published paper which was compiled in cooperation by researchers from different countries

and areas. Fourthly, the **Number of Distinguished Alumni**. We use the world's top 100 most influential figures selected by 'Time Magazine' in recent 10 years, and the graduates' number who are Nobel Prize Winners and the Fields Medal Winners. Fifthly, **the 22 disciplines in ESI**. Arranged alphabetically, the disciplines are: Agricultural Science, Biology & Biochemistry, Chemistry, Clinical Medicine, Computer Science, Economics & Business, Engineering Science, Environmental Science and Ecology, Earth Sciences, Immunology, Material Science, Mathematics, Microbiology, Molecular Biology and Genetics, Integrated Interdisciplinary, Neuroscience and Behavioral Science, Pharmacology & Toxicology, Physics, Plant & Animal Science, Psychiatry and Behavioral Sciences, Social Sciences and Space Science.

3.3 The Establishment of Evaluation Index System

The world-class universities and disciplines' evaluation index are composed by faculty, teaching level, the capacity for scientific research, reputation influence of those four elements. As for university scientific research competitiveness evaluation, we use webometrics ranking as the reference indicators to examine universities' reputation. The number of highly cited papers is employed as the supplement indicator of research influence in the web context. So as to establish a comprehensive strength evaluation index from research outputs to realistic influence and then to the internet influence. Web ranking as the main internet influence indicator. We add reputation influence because web ranking has a wide coverage, all the data come from the internet, it will make the developing countries' universities have a place in universities ranking. The non-prestigious universities have a chance to show themselves in the ranking. However, other universities rankings do not possess these advantages, because the other universities rankings usually focus on the prestigious universities who have a long history, high social status, academic competence and influence. Therefore, it is hard to evaluate universities in underdeveloped area in the ranking system.

The web ranking in Chinese Academy of Science and Education Evaluation's 2017-2018 world-class universities and disciplines employs the data from Spanish National Research Council Cybermetrics Lab's Webometrics Ranking of World Universities, and the Chinese Key Universities Web Influence Ranking conducted by Wuhan University. The indicators are divided into five categories. Firstly, **the scale of websites**. Calculating the number of universities' website pages from important search engines such as Google, Yahoo!, Alta Vista, All the Web and Bing. Secondly, **the number of academic documents**. We search the academic papers, reports, and other related academic research documents in a certain university's website via Google Scholar. Thirdly, **the richness of the documents**. The number of various kinds of documents collected from search engines such as Google,Yahoo!,Alta Vista,All the Web and Bing. Different formats documents in Adobe Acrobat (pdf), Adobe Postcript (ps), Microsoft Word (doc), Microsoft Powerpoin (ppt)and Microsoft Rich Text Format (rtf)are included. Fourthly, **the number of be linked of the university's website**. Calculating the number of be linked of the university's website in the search engines like Yahoo!. Fifthly, **the display degree**. The display degree is calculated proportionally based on the number of a university's related web pages and the university entry's page views from Baidu. Every university's web rankings are calculated by the above five indicators proportionally. The detailed evaluation index system can been seen in figure 1.

Figure 1. Word-class universities and disciplines' evaluation index system

First grade indexes	Second grade indexes
Faculty	full-time teachers
	high cited scientists
Teaching	prestigious alumni
	the disciplines in ESI
Research	the published papers
	citations per papers
	international cooperation papers
	patents
Reputation influence	web influence
	highly cited papers

4. The definition of world-class universities and disciplines in world-class universities and disciplines evaluation of Chinese Academy of Science and Education Evaluation

It is necessary to clarify the operational definition of the world-class universities and disciplines before the ranking. According to Chinese Academy of Science and Education Evaluation's world-class universities and disciplines' definition, we define the top 600 universities as the world-class universities in the total 1506 universities. We divide the world-class universities into three levels after taking some Chinese universities' individual university mission and planning into consideration. The top 100 universities are the world's top universities. We mark five stars (5★) to those universities. The top 101-300 universities are world's high-level famous universities. We award four stars (4★) to those universities. The top 301-600 universities are world's high-level well-known universities. We award three stars (3★) to those universities. The world's top universities and world's high-level famous universities are world-class universities in our ranking.

Likewise, having a clear definition of world-class disciplines is the precondition of world-class disciplines' evaluation. We delimit the number of the world-class disciplines according to the 22 disciplines' evaluation units. We define the top 10% disciplines in a certain field of a university or research institution are the world-class disciplines. There are three levels of world-class disciplines. The top 1% (includes 1%) of a certain subject in a research institution or university is the world's top disciplines. The top 1%~5% (includes 5%) of a certain subject in a research institution or university is the world's high-level famous disciplines. The top 5%~10% (includes 10%) of a certain subject in a research institution or university is the world's high-level well-known disciplines.

In addition, Chinese world-class universities ranking is the same as the first-class universities competiveness ranking in Chinese Universities and Disciplines Evaluation Report (2017-2018). Chinese first-class disciplines in Chinese first-class disciplines ranking are the five stars (5★) disciplines in Chinese Postgraduate Education and Disciplines Evaluation Report (2017-2018).

5.Results

We get six major world-class universities and disciplines ranking lists, which are constituted by 40 sub ranking lists. The six major world-class universities and disciplines ranking lists are as follows. Countries and areas' research competiveness ranking, world-class universities comprehensive competiveness ranking, world-class universities' ranking by disciplines (22 disciplines in total), world-class universities' ranking by first grade indexes (4 first grade indexes), class universities' ranking by basic indexes (10 basic indexes), Chinese world-class universities and disciplines ranking (2017). This paper lists part of the ranking results in figure 2 to figure 4.

5.1 Countries and areas' research competiveness ranking

Figure 2. Countries and areas' research competiveness ranking (top 20)

Ranking	Countries/ areas	Papers	Cited papers	Patents	High-cited paper	Web ranking	International cooperative papers	Total score
1	America	100.00	100.00	100.00	100.00	100.00	100.00	100,00
2	China	74.53	69.59	53.78	58.79	65.16	80.51	90,70
3	English	53.69	56.06	24.02	52.72	56.45	52.98	73,08
4	Japan	49.03	51.61	37.90	37.54	46.75	49.55	70,50
5	French	50.16	52.09	21.34	46.56	45.76	28.63	67,75
6	Germany	48.71	46.53	19.74	46.17	47.79	37.81	66,86
7	South Korean	38.95	34.47	39.22	29.70	36.36	39.93	62,67
8	Italy	42.76	43.80	12.84	39.61	43.10	34.15	62,66
9	Spain	38.52	39.09	19.22	32.50	41.23	28.97	60,25
10	Canada	38.01	34.66	17.19	35.47	37.04	39.64	59,75
11	China-Taiwan	34.89	38.10	27.37	23.73	37.95	34.59	59,74
12	Australia	36.03	33.54	14.96	33.55	36.71	40.01	58,48
13	Brazil	32.86	29.06	17.79	22.77	32.00	23.86	53,22
14	Turkey	30.87	31.97	7.52	22.55	29.79	30.65	52,21
15	Sweden	26.46	27.03	4.09	25.15	26.32	29.97	49,49
16	Netherlands	26.25	23.03	8.34	26.32	22.82	25.01	48,39
17	India	24.29	25.36	11.05	17.73	22.38	20.31	47,02
18	Poland	23.66	23.03	6.54	17.46	24.18	21.18	45,28
19	Iran	25.26	23.24	1.47	18.01	23.01	25.29	44,81
20	Belgium	20.96	20.31	10.19	20.61	19.89	15.33	44,37

5.2 World-class universities comprehensive competiveness ranking

Figure 3. World-class universities comprehensive competiveness ranking

Ranking	Universities	Countries/areas	Total score
1	HARVARD UNIV	USA	100.00
2	UNIV CAMBRIDGE	UK	94.33
3	STANFORD UNIV	USA	90.32
4	COLUMBIA UNIV	USA	89.75
5	NORTHWESTERN UNIV	USA	86.98
6	YALE UNIV	USA	86.72
7	UNIV EDINBURGH	UK	86.66
8	JOHNS HOPKINS UNIV	USA	86.45
9	UNIV MICHIGAN	USA	86.41
10	UNIV HONG KONG	China-HK	85.95
11	UNIV WASHINGTON	USA	85.67
12	UNIV TOKYO	Japan	85.09
13	UNIV TORONTO	Canada	84.11
14	UNIV CALIF BERKELEY	USA	84.07
15	UNIV CALIF LOS ANGELES	USA	83.74
16	UNIV PENN	USA	83.11
17	DUKE UNIV	USA	83.09
18	OHIO STATE UNIV	USA	83.06
18	MIT	USA	83.03
20	UNIV BRITISH COLUMBIA	Canada	82.18

5.3 World-class universities' ranking by disciplines (22 disciplines in total)

Figure 4. World-class universities' ranking by disciplines (22 disciplines in total)

Disciplines	Universities (total score) top 10 as examples
1.AGRICULTURAL SCIENCE (563 universities in total)	WAGENINGEN UNIV & RES CTR (100.00), UNIV CALIF DAVIS (89.48), CHINA AGR UNIV (89.32), CORNELL UNIV (86,77), UNIV SAO PAULO (86.52), GHENT UNIV (86.23), ZHEJIANG UNIV (83.27), UNIV FLORIDA (82.37), UNIV GUELPH (81.77), UNIV ILLINOIS URBANA-CHAMPAIGN (79.25)
2.BIOLOGY& BIOCHEMISTRY (645 universities in total)	HARVARD UNIV (100,00), MIT (81.10),CHINESE ACAD SCI (80.36),STANFORD UNIV (78.71),UNIV LONDON (77.89),UNIV CALIF SAN DIEGO (77.71), UNIV CALIF BERKELEY (75.77), UNIV COPENHAGEN (75.50),UNIV TORONTO (75.48),UNIV MICHIGAN (75.24)
3.CHEMISTRY (890 universities in total)	ZHEJIANG UNIV (100.00), UNIV CALIF BERKELEY (96.85), UNIV CHINESE ACAD SCI (96.51), TSING HUA UNIV (95.49), NORTHWESTERN UNIV (94.49), PEKING UNIV (92.68),NANYANG TECHNOL UNIV (92.66),MIT (92.11)UNIV SCI & TECHNOL CHINA (89.80),FUDAN UNIV (89.20)
4.CLINICAL MEDICINE (1303 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (82.08),UNIV TORONTO (78.45),JOHNS HOPKINS UNIV (78.42),DUKE UNIV (71.68), UNIV PENN (71.46), UNIV WASHINGTON (71.27),UNIV MICHIGAN (70.55), UNIV PITTSBURGH (70.54), UNIV CALIF LOS ANGELES (70,06)
5.COMPUTER SCIENCE (311 universities in total)	TSING HUA UNIV (100.00), STANFORD UNIV (97.50), NANYANG TECHNOL UNIV (97.34), MIT (96.20), UNIV TEXAS AUSTIN (94.29), UNIV CALIF BERKELEY (93.40), HARVARD UNIV (92.42), UNIV PARIS SACLAY COMUE (92.17), NATL UNIV SINGAPORE (90.69), UNIV LONDON (89.27)
6.ECONOMICS & BUSINESS (226 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (96.05), UNIV CALIF BERKELEY (88.44), STANFORD UNIV (87.86), UNIV CHICAGO (86.94), MIT (85.84), UNIV PENN (83.67), ERASMUS UNIV ROTTERDAM (80.25), DUKE UNIV (78.96)
7.ENGINEERING (1004 universities in total)	HARBIN INST TECHNOL (100.00), ZHEJIANG UNIV (92.58), TSING HUA UNIV (92.20), IIT (87.38), SHANGHAI JIAO TONG UNIV (86.92), XIAN JIAOTONG UNIV (84.75), SOUTHEAST UNIV (84.22), NATL UNIV SINGAPORE (84.21), NANYANG TECHNOL UNIV (83.38), MIT (82.10)
8.ENVIRONM & ENT ECOLOGY (586 universities in total)	UNIV CALIF DAVIS (100.00), UNIV CALIF BERKELEY (99.31), UNIV MINNESOTA (98.09), UNIVERSITY OF NORTH CAROLINA (97.44), WAGENINGEN UNIV & RES CTR (97.40), UNIV BRITISH COLUMBIA (94.82), UNIV QUEENSLAND (93.84), UNIV FLORIDA (92.88), UNIV OXFORD (92.82), SWEDISH UNIV AGR SCI (92.27)
9.GEOSCIENCE (377 universities in total)	UNIV COLORADO BOULDER (100.00), COLUMBIA UNIV (92.63), SORBONNE UNIV (COMUE) (89.45), UNIV WASHINGTON SEATTLE (89.10), UNIV PARIS SACLAY COMUE (88.52), CHINA UNIV GEOSCI (86.65), PIERRE & MARIE CURIE UNIV - PARIS 6 (84.88),UNIV CALIF SAN DIEGO (84.86), UNIV CALIF BERKELEY (93.89),UNIV LEEDS (82.52)
10. IMMUNOLOGY (380 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (82.76), UNIV CALIF SAN FRANCISCO (79.77), UNIV PENN (77.69), JOHNS HOPKINS UNIV (76.28),UNIV OXFORD (75.11), UNIV WASHINGTON SEATTLE (73.63), EMORY UNIV (73.00), UNIV PITTSBURGH (70.53), SORBONNE UNIV (COMUE) (69.26)
11.MATERIALS SCIENCE (599 universities in total)	TSING HUA UNIV (100.00), NANYANG TECHNOL UNIV (98.05), MIT (94.25), UNIV CHINESE ACAD SCI (93.17), NATL UNIV SINGAPORE (91.03), STANFORD UNIV (87.59), CHINA UNIV TECHNOL (87.08), NORTHWESTERN UNIV (87.05), GEORGIA INST TECHNOL (86.64), FUDAN UNIV (86.52)

12.MATHEMATICS (194 universities in total)	KING ABDULAZIZ UNIV (100.00), PIERRE & MARIE CURIE UNIV - PARIS 6 (92.06),UNIV PARIS SACLAY COMUE (91.04), STANFORD UNIV (90.76),SORBONNE UNIV (COMUE) (90.23), UNIV CALIF BERKELEY (84,21), UNIVERSITY OF NORTH CAROLINA (83.09), PRINCETON UNIV (82.91), UNIV MICHIGAN (82.48),UNIV SORBONNE PARIS CITE-USPC COMUE (81.49)
13.MICROBIOLOGY (277 universities in total)	HARVARD UNIV (100.00), DUKE UNIV (79.73), WASHINGTON UNIV (79.05), UNIV LONDON (76.72), UNIVERSITY OF NORTH CAROLINA (75.96),UNIV PENN (74.70), MIT (74.66), UNIV OXFORD (74.18), ROCKEFELLER UNIV (73.86), CORNELL UNIV (73,68)
14.MOLECULAR BIOLOGY& GENETICS (426 universities in total)	HARVARD UNIV (100.00), MIT (85.49), UNIV CAMBRIDGE (76.75), UNIV LONDON (75.50), UNIV OXFORD (74.94), UNIV MICHIGAN (74.92), STANFORD UNIV (73.12), UNIV CALIF SAN DIEGO (72.78),UNIV WASHINGTON (72.12), UNIV PENN (70.86)
15.MULTIDISCIPLINARY (57 universities in total)	HARVARD UNIV (100.00), MIT (87.46), UNIV LONDON (83.45), UNIV OXFORD (82.97), STANFORD UNIV (77.43), IMPERIAL COLL LONDON (76.12), UNIV CAMBRIDGE (75.35), UNIV COLL LONDON (73.23), YALE UNIV (72.49), SORBONNE UNIV (COMUE) (72.45)
16.NEUROSCIENCE & BEHAVIOR (499 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (89.35), UNIV COLL LONDON (86.34), UNIV CALIF SAN FRANCISCO (82.16), STANFORD UNIV (79.38), UNIV PENN (78.53), UNIV CALIF LOS ANGELES (77.78), JOHNS HOPKINS UNIV (77.54), UNIV TORONTO (76.66), WASHINGTON UNIV (76.61)
17.PHARMACOLOGY & TOXICOLOGY (567 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (91.42), UNIVERSITY OF NORTH CAROLINA (86.61), UNIV N CAROLINA CHAPEL HILL (83.52), KAROLINSKA INST (82.14), UNIV COLL LONDON (80.65), SEOUL NATL UNIV (79.81), MONASH UNIV (79.50), UNIV EDINBURGH (78.66), UNIV CALIF SAN FRANCISCO (78.58)
18. PHYSICS (513 universities in total)	MIT (100.00), UNIV CALIF BERKELEY (98.17), UNIV PARIS SACLAY COMUE (97.84), STANFORD UNIV (95.69), UNIV TOKYO (93.79), UNIV CHICAGO (91.92), UNIV CAMBRIDGE (90.81), TSING HUA UNIV (90.71), PIERRE & MARIE CURIE UNIV - PARIS 6 (90.09), SORBONNE UNIV (COMUE) (90.08)
19.PLANT & ANIMAL SCIENCE (765 universities in total)	UNIV CALIF DAVIS (100.00), UNIV FLORIDA (99.62), GHENT UNIV (98.71), CORNELL UNIV (98.33), UNIV BRITISH COLUMBIA (95.00), MICHIGAN STATE UNIV (94.27), UNIVERSITY OF NORTH CAROLINA (92.82), UNIV TOKYO (91.45), WAGENINGEN UNIV & RES CTR (91.45), SWEDISH UNIV AGR SCI (91.23)
20.NEUROSCIENCE & BEHAVIOR (499 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (89.35), UNIV COLL LONDON (86.34), UNIV CALIF SAN FRANCISCO (82.16), STANFORD UNIV (79.38), UNIV PENN (78.53), UNIV CALIF LOS ANGELES (77.78), JOHNS HOPKINS UNIV (77.54), UNIV TORONTO (76.66), WASHINGTON UNIV (76.61)
21.SOCIAL SCIENCE, GENERAL (881 universities in total)	HARVARD UNIV (100.00), UNIV LONDON (97.44), UNIVERSITY OF NORTH CAROLINA (80.55), JOHNS HOPKINS UNIV (79.92), UNIV TORONTO (79.40), COLUMBIA UNIV (78.78), UNIV WASHINGTON (78.66), UNIV COLL LONDON (77.91), UNIV OXFORD (77.61), UNIV MICHIGAN (77.58)
22.SPACE SCIENCE (91 universities in total)	CALTECH (100.00), HARVARD UNIV (95.66), UNIV CALIF BERKELEY (94.04), UNIV ARIZONA (84.55), PRINCETON UNIV (83.92), SORBONNE UNIV (COMUE) (83.74), PIERRE & MARIE CURIE UNIV - PARIS 6 (83.61), UNIV PARIS SACLAY COMUE (83.52), JOHNS HOPKINS UNIV (83.06),PSL RES UNIV PARIS (82.73)

Part of the results of world-class universities' first grade indexes ranking, and world-class universities the second grade indexes ranking are included in this ranking. The Chinese first-class universities and disciplines ranking are the substantial components in this world universities and disciplines ranking system. The Chinese Academy of Science and Education Evaluation's world-class and world-class disciplines ranking (2017-2018) did a lot Chinese first-class universities and disciplines ranking at the same time in order to know the difference and common points between Chinese first-class universities and world-class universities. All the results can be found in world-class and world-class disciplines ranking report (2017-2018). It is helpful for Chinese universities to know the education quality in a worldwide context. The evaluation results can serve as the pushing hands for Chinese universities to promote the world-class universities and disciplines' construction agenda.

6. Conclusion

Although there are different global universities rankings, the rankings' function, aim, methods, index system and the results vary to some extent. The Chinese Academy of Science and Education Evaluation's world-class universities and disciplines ranking insists on its own evaluation principles, and have its own characteristic. In accordance with the idea based in China with global visions, the ranking results will help China and other countries' universities to have an overall understanding of the world universities' developing status and trends. More importantly, the results will help the universities fully realize their status in a broad context, thus to know the gap between the individual university and the world-class universities. The ranking results would act as the guide for individual universities, even the educational authorities all around the world to carry forward the world-class universities and disciplines' building initiatives.

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