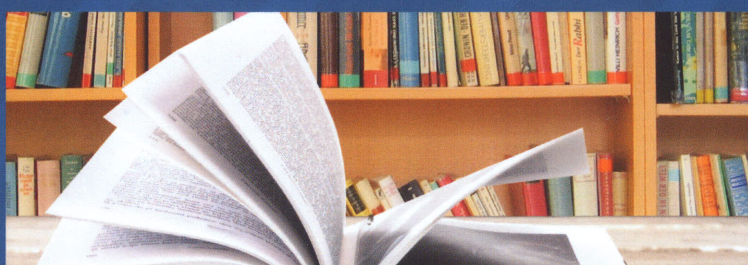


# ERMM2019

## **2019 5th International Conference on Education Reform and Modern Management**

September 22-23, 2019 | Shanghai, China





## Preface

2019 5th International Conference on Education Reform and Modern Management (ERMM2019) is an annual event which will be scheduled to be hosted in Shanghai, China from the date of September 22, 2019 to September 23, 2019. It welcomes all the researchers, students, scholars and professionals in the related fields to participate in this academic feast for sharing and presenting related scientific payoffs in good faith.

As an international refereed conference, ERMM2019 is dedicated to the advancement of the theory and practice of Education Reform and Modern Management. It looks forward to promoting collaborative excellence between academicians and professionals from Education Reform and Modern Management, aiming to build strong networks of leading researchers and pioneers in Education Reform and Modern Management worldwide. Furthermore, ERMM2019 will provide an opportunity for academicians and professionals from various fields with cross-disciplinary interests to bridge the knowledge gap, promote research and the evolution of Education Reform and Modern Management.

Moreover, ERMM2019 has strong desire for being the premier international forum for Education Reform and Modern Management focused researchers, practitioners and industry specialists to present and discuss the latest accomplishments, challenges, and future directions. It will feature invited speeches, paper presentations and social networking event. Looking back the previous conferences, the first, second, third and fourth ERMM have been hugely successful. ERMM2014, ERMM2015, ERMM2016 and ERMM2017 were all indexed by CPCI-SSH.

By the submission deadline, ERMM2019 had called for significant contributions to all major fields of the Education Reform and Modern Management in the theoretical and practical aspects. Simultaneously, some experts which are engaged in the research fields had also joined the conference for reviewing all the submitted manuscripts. All the papers contributed to us had been reviewed using a double-blind review process. Besides this, each article will be reviewed by two or three experts. This approach was adopted by the general assembly to ensure the fairness and rigor of the review.

By means of strict and professional review, the reviewers selected 58 excellent articles from the 194 submitted manuscript. These accepted articles which will be submitted for publishing are included in this book. And there are 5 chapters in this book which are divided by the different topics.

Chapter 1: Education Reform and Teaching Innovation  
Chapter 2: Management, Economic and Business  
Chapter 3: Tourism, Culture and Social Sciences  
Chapter 4: Teaching Research and Application  
Chapter 5: Culture and Social Issues

Here, we would like to sincerely thank all the individuals and organizations who have made great efforts to organize this conference. It's believed that the success of the ERMM2019 cannot be achieved without the hard work of everyone, including the authors who submit papers to us; the members of International Scientific Committees who are responsible for the reviewing; the Atlantis Press which will publish all the papers and the co-sponsor: the Science and Engineering Research Center, Hong Kong.

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# A Novel Formula for Evaluating the Scholarship of Teaching and Research in University

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**Keywords:** Higher Education, Scholarship of teaching, Academic evaluation, Faculty performance appraisal, Formula.

**Abstract. Purpose:** To come up with an objective, fair and yet easy-to-understand approach to conduct annual teaching and research appraisal of faculty in university; **Procedures and Methods:** Collecting data of funds, the number of articles and reviews with high impact factor and the number of outstanding papers from 25 universities, respectively, then trying different calculation methods to compare the efficiency of faculty; **Results:** Taking impact factor, essential science indicator of papers and total funds three popular and important factors into consideration, we composed a novel formula to quantitatively determine teaching and research productivity level of faculty in universities; **Conclusions:** A novel formula for faculty performance appraisal was proposed to enhance the construction of world-class universities and world-class disciplines in China.

Since 2000, paying more attention on research and less on teaching has been gradually prevailing in most of universities of mainland China, which severely affect teachers' teaching efficacy and promotion. This orientation has seriously frustrated the enthusiasm and efficiency of teachers in teaching work, resulting in a continuous decline in the quality of undergraduate teaching. On June 20<sup>th</sup>, 2018, leaders of more than 150 national universities in mainland China gathered at Sichuan University participate in the conference of the Ministry of Education to accelerate the construction of a high level of undergraduate education. Finally, they converged to the joint commitment of Chengdu to claim that cultivating novel talents is the core mission of higher education in the era of the rejuvenation of the nation, namely, the so-called "the first class undergraduate education declaration" or "Chengdu Declaration", and a new undergraduate education initiative of "taking undergraduate education as the base" and promoting the "four regressions", that is, "return to common sense, principal obligations, original desire aspiration and fond dream" to be the basic compliance of the reform and development of higher education <sup>[1]</sup>, adhering to people-centered education, moral education as the first principle, taking high moral values establishment and talents cultivation as the fundamental tasks of higher education in China.

Obviously, one of the tasks of the conference was trying to adjust the previous evaluation policy in which one-sided emphasis was put on scientific research instead of teaching in colleges and universities of mainland China. Earlier since 1990's, project funds, SCI papers and talent titles have gradually been used to measure the value of teachers and ranks of universities across the country. This excessive pursuit of "academic GDP" encourages advisors to recruit more graduates because only this way can they rapidly gain more benefits – funds, rewards, reputations and social status. Meanwhile, their university can improve their rankings among national universities, which will further help university gain more funding and resources. This looks like a good virtuous circle, and **Figure1** is a typical and popular comparison among Chinese universities. Briefly, only funds and SCI papers are considered teachers' merits. And this inadvertently undermines the teaching and training of undergraduates. Or the greater emphasis on research has harmed the teaching of undergraduates.

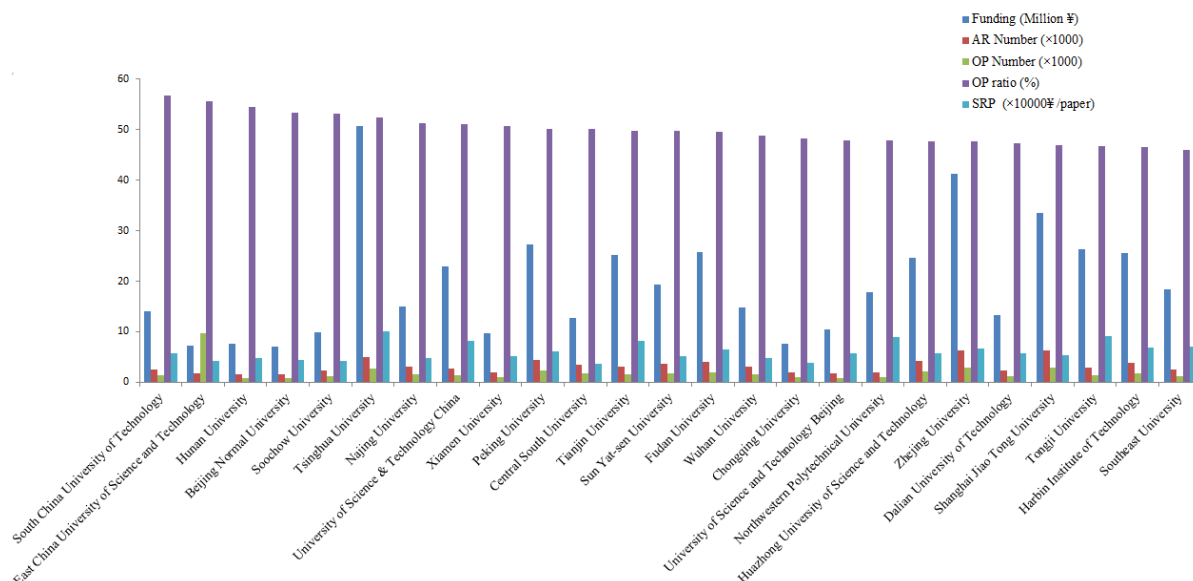


Figure 1. Comparison of 25 main universities of mainland, China in 2016.

Funding, the number of SCI articles and reviews (AR) with high impact factor, and the number of outstanding papers of AR are the three most popular evaluation criteria for the annual performance of a faculty member and current university rankings in China. From this figure, readers can easily find that universities with higher funding do not necessarily own higher OP ratios. Similarly, teachers with a lot of research funding may not be able to publish more outstanding papers. Therefore, Output should be the only criterion to measure teachers' performance. In other words, funding should be considered as the denominator of the teacher's annual performance.

Note: AR – articles + reviews papers; OP – outstanding papers;

OP ratio (%) =  $\text{NOP} / \text{N}_{\text{AR}} \times 100$ ;

SRP – scientific research price per paper =  $\text{Funding (¥)} / \text{N}_{\text{AR}}$

Recently, a cartoon (**Figure 2**) posted on a Linked-In webpage titled “Reclaiming our role” by Steven Laymon vividly depicts the common expectations of the higher education system and profoundly reflects the educational reality of today's world <sup>[2]</sup>. As we all know, educators in colleges and universities must not only play a part in inheriting culture, developing intelligence, and maintaining discipline, but also foster creativity of students. However, most educators are not doing enough in this respect. The Chengdu Declaration means that the new reform policy for higher education in China is underway. However, the way and extent of policy implementation is a key factor in determining the future and quality of undergraduate education at colleges and universities of China.

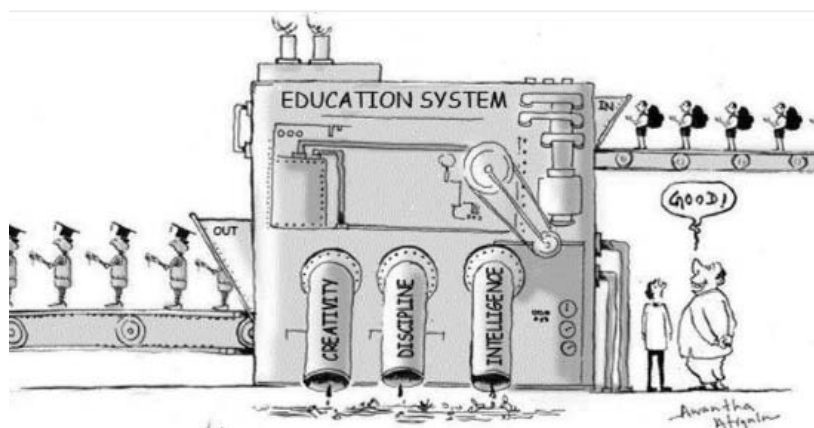


Figure 2. Higher Education Factory

Since the early 1990s, China's higher education has gradually become an industry, and officials are accustomed to regarding colleges and universities as advanced talent processing factories. When they

hear and see the increasing direct costs (fund investments) in public resources such as buildings, equipment and management, and plentiful freshmen of high quality, they cannot help laughing "Good!" intentionally or unintentionally neglecting the essential connotation of higher education – knowledge innovation and personality molding. As we know, universities are the main body of knowledge innovation and the special "factory" for personal training. In this sense, research projects and graduates should only be treated as IN rather than OUT. The criteria for assessing the work of educators should be the ratio of OUT to IN, or faculty performance (FP). Or  $FP = N_{(OUT)} / N_{(IN)}$ .

In 1990, Ernest Boyer proposed the scholarship of teaching and divided it into four separate but overlapping dimensions: Discovery, Integration, Application, and Teaching in his *Scholarship Reconsidered* <sup>[3]</sup>. Discovery and integration focuses on the nature and the meaning of the phenomenon, respectively. Application is a true engagement of theory and practice, while genuine teaching is a dynamic process of imparting, transforming and innovating knowledge that keeps students and teachers mutually questioning. Obviously, only well-read scholars can communicate the vitality of their fields, and such active, creative teaching leads to lifelong learning and a continuity of knowledge between the generations and thus between all subsequent teachers and students <sup>[3]</sup>. This view indicated the establishment of the scientific status of teaching. "Teaching academic" is not a simple "activity" in the broad sense of teaching, but a series of research work, such as cognition, inquiry, reflection, innovation and communication. Teaching is not a minimal handling of the knowledge of the predecessors. Its academic essence requires the integration of teaching and scientific research, or the unity of the scientific research of university teaching and the teaching nature of scientific research <sup>[4]</sup>. Specifically, teaching should at least mean discovering novel knowledge through basic research, followed by establishing and developing interdisciplinary connections, then integrating and imparting knowledge and skills through curriculum construction, and finally effectively fostering and bringing up the outstanding "dual creative talents" <sup>[4]</sup>.

Frankly speaking, Boyer's view on the scholarship of teaching was warmly received, and the university community quickly requested methods by which to assess the varieties of scholarship. Then, Boyer proposed four key principles of assessment and six standards of excellence in all its forms in working on *Scholarship Assessed* <sup>[5]</sup>. The principles are the intellectualism of dignity and professional integrity of the scholarly experience, the standards for the various forms of scholarship, the evidence for scholarship, the process that occur, and the confidence in the process of requiring faculty wisdom and compassion <sup>[5]</sup>. The six standards were proposed under the above second principle emerged from a welter of practices of academia and its supports (e.g., publishing houses and journals) that are utilized to judge scholarship in its variety of forms. They were: (1) Thorough knowledge of the field; (2) Well-defined goals; (3) Appropriate methods and procedures used in the execution of the scholarship; (4) Use of the right resources in an effective or creative way; (5) Effective communication (indicating that scholarship is a public act) and (6) Significant results: Is the scholarship or service substantial or make a contribution? <sup>[5]</sup> Obviously, the four assessment principles and six excellent standards are just indexes for macro qualitative analysis, instead of quantitative analysis for comparison between different faculties. It is urgent to set up a scientific and impartial quantitative evaluation system for teaching and scientific research in order to enhance the development of higher education all over the world <sup>[6]</sup>.

Teaching, research and service are generally three major areas of evaluation employed by institutions of higher education, of which the former two are routinely viewed as the most critical components in faculty annual evaluation. And Ho Johnny C ever proposed a model to evaluate faculty research performance, considering not only quantity of publication, but also quality of publication and degree of individual scholarship as well <sup>[7]</sup>. However, the model did not take total citations of the academic articles into consideration, which is unfair to the faculty who published articles in journals with higher impact factors.

Teaching and scientific research is not only two hands, holding hand and pushing hand of discipline construction, but also the two key clades of academic ecosystem in colleges and universities. This requires adherence to correct academic ideas. Academics are the logical starting point of university and the origin of university governance <sup>[8]</sup>. In view of the current situation of



discipline construction in Chinese universities, it is imminent to establish a scientific and fair quantitative analysis system for evaluating teaching and scientific research in universities.

Whether teaching or scientific research, its evaluation should be based on the efficiency, or the ratio of output (OUT) to input (IN). Here, we coin the concept of "performance factor (PF)" to represent it, namely, the ratio of output to input (OUT / IN) can be assessed by the Performance Factor (PF) as follows:

$$PF = \sum_{i=1}^n IF / \sum_{i=1}^n G \quad (i, n \in \mathbb{Z}) \quad (1)$$

IF- impact factor of a journal publishing an article,

G- grant, scientific research funds - deducting management cost and labor cost (unit: 10000 ¥),

i- The number of papers of scientific research published in SCI journals,

n- The number of funds to receive funding,

Briefly, the performance factor (PF) or the IF score of the output and input of the actual funds per 10,000 ¥.

$$\text{Scientific research performance (SRP)} = m \cdot PF = \sum_{i=1}^m m_i \cdot IF_i / \sum_{i=1}^m G \quad (m, n, i \in \mathbb{Z}) \quad (2)$$

m- The total number of quotes from the papers included in the SCI Journal,

$m_i$  - The total number of quotes from peers for the research article (i),

$IF_i$  - The impact factor of the journal publishing the research article (i)

At present, the IF (impact factor, indicating grade of an SCI article), ESI (essential science indicators, indicating total citations of a SCI paper) and the total amount of funds are paid most attention to by scholars and their officials in universities of China. Taken the three factors into account, the formula should be generally accepted and welcomed by the teachers and researchers in the colleges and universities. Most of all, the formula can very well reflect the spirit of Document No.25, 2018 (2018 [25]) issued by China State Council titled "Notice of the State Council on optimizing the management of scientific research and improving the performance of scientific research" [9], or not only attach importance to the number of SCI papers, but also the quality of them (impact factor & total citation numbers) and the actual effectiveness of scientific research funds (the ratio of OUT/IN). Better yet, the formula can also be fit for evaluating the annual performance of engineers and management staff after proper optimization.

Teaching and scientific research is also the two important hands of the academic ecological system of colleges and universities. Only by "grasping two hands, both hands must be forceful", and establishing a novel scientific and fair quantitative evaluation system of teaching and scientific research, can the sustainable development of colleges and universities be discussed with the foundation and breath. Colleges and universities are like the cells of the body of society, just image, under the perpetual imbalance of a cell or the persistent imbalance of the physiological homeostasis in the body, how can the cells or the body develop in a sustainable way? There are many unusual observation dimensions to judge whether the development of a college or university is sustainable. A critical rational perspective is whether the academic ecosystem is balanced or not, and whether it can sustain and develop a virtuous cycle. Academics are the bases of the "school standing and school managing" and "leading the trend of societal culture".

In summary, Chengdu conference indicated the imbalance of teaching and scientific research in the academic ecological system of colleges and universities, only by setting up the view of "scholarship of teaching" and applying the novel formula to evaluate the scholarship of teaching, can we gradually restore the balance as soon as possible, further solid the most fundamental support for the sustainable development of a college or university in China.

Wishing Chengdu Declaration issued by Ministry of Education of China and Document No.2018 [25] issued by the State Council of China could surely make leaders of colleges and universities of China really calm down to consider how to run the undergraduate education, further intensify reform efforts and incline resources to lay a solid foundation for undergraduate education and promote the construction of world-class universities and world-class disciplines.

Last but not the least, proposed formula was directed mainly at individual teachers rather than institutions, meanwhile opinions and suggestions in this paper are just from scientists and do not represent official standpoints of the Chinese government.

## Summary

Based on the two policy documents, a novel formula was put forward for fairly evaluating faculty performance in colleges and universities, further solid the most fundamental support for the sustainable development of colleges or universities in China. Furthermore, the formula may be of referential value to higher education of other developing countries.

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