

# Accelerating the implementation of science education strategy to promote the general education of global SDGs

Lu, Weiling ✉

Graduate School, Lyceum of the Philippines University – Batangas, Philippines ([87681183@qq.com](mailto:87681183@qq.com))

Received: 25 May 2024

Available Online: 15 July 2024

Revised: 25 June 2024

DOI: 10.5861/ijrse.2024.24656

Accepted: 10 July 2024



ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

## ***Abstract***

Sustainable Development Goals (SDGs) General Education is an innovative project sponsored by the United Nations Sustainable Development Goals (SDG Action #39168) Public Education and Participation Project, approved by the United Nations Secretary and managed by the United Nations Economic and Social Affairs, which aims to promote public participation in the implementation of the United Nations Sustainable Development Goals through education for all. 2020 China successfully reaches one of the goals After China has successfully achieved one of the goals of poverty eradication in 2020, education equity and quality education will become important reform directions in the future. From the policy of "double reduction" in education to quality education that promotes the all-round development of moral, intellectual, physical, social and aesthetic development, and from the combination of youth learning content and personal protection, as well as personal knowledge and skills to achieve the SDGs, many policies guarantee the development of education in a more equitable and sustainable direction, therefore, it is necessary to accelerate the implementation of science and education strategies to help promote Global SDGs General Education.

***Keywords:*** science education strategy, SDGs, general education

## **Accelerating the implementation of science education strategy to promote the general education of global SDGs**

### **1. Introduction**

The 20th Party Congress report pointed out that "China's development into a period of strategic opportunities and risk challenges coexist, uncertainty and unpredictable factors increase, a variety of 'black swan', 'gray rhinoceros' events may occur at any time. " Comprehensively build a strong socialist modernization, the road ahead, we must adhere to the bottom line thinking, to be prepared for danger, for a rainy day, to adhere to the five major principles, adhere to and strengthen the overall leadership of the Party, adhere to the road of socialism with Chinese characteristics, adhere to the "trinity" to implement the strategy of science and education.

SDGs as a global language, internationally shared value system and practice, help shape the international community discourse system of initiatives and actions across countries, so that all join hands to solve global challenges and create a better world. As an integral part of Education for Sustainable Development (ESD), the SDGs General Education provides a systematic theoretical and practical approach to teaching and learning for Education for Sustainable Development Goals (ESD for SDGs). It uses the 17 highest priority global challenges - the UN Sustainable Development Goals (SDGs) - as a conceptual framework, local and global real-life examples as a factual basis for interdisciplinary learning and application of sustainable knowledge and skills, and guides learners to explore the content, importance, relevance, and personal engagement of the SDGs. The goal of promoting the achievement of the SDGs is achieved. China has made outstanding contributions in these areas.

#### *1.1 Accelerating the implementation of innovation-driven development strategy to promote global SDGs general education*

For individuals, SDGs liberal education focuses on a flexible skill and competency base for learners, including ensuring the development of basic skills (literacy and numeracy) and higher-level thinking, creativity, problem-solving, and social and emotional skills, providing opportunities to learn and practice collaborative and critical thinking approaches. For society and the nation, the acquisition of knowledge, skills and attitudes related to sustainable development is both a common cognitive foundation for China as a world power that needs to tell the Chinese story in a global discourse system, and a basic compulsory course to train successors with a sense of great power and responsibility. Guided by the strategic needs of the country, gather forces to carry out original and leading scientific and technological research, and resolutely win the battle of key core technologies. Accelerate the implementation of a number of national major science and technology projects with strategic global prospective, and enhance the capacity of independent innovation. Strengthen basic research, highlight originality, and encourage free exploration. Enhance the effectiveness of science and technology investment, deepen the reform of the mechanism for allocating and using financial science and technology funds, and stimulate innovation vitality. Strengthen the in-depth integration of industry-university-research led by enterprises, enhance goal orientation, and improve the level of transformation and industrialization of scientific and technological achievements. Strengthen the main position of enterprise science and technology innovation, play the leading and supporting role of science and technology-based backbone enterprises, create a favorable environment conducive to the growth of science and technology-based small, medium and micro enterprises, and promote the deep integration of the innovation chain industry chain capital chain talent chain, which is a material guarantee to help promote global SDGs general education.

*1.2 Deepening the implementation of the strategy of strengthening the country with talents and boosting the general education of global SDGs*

After China has successfully achieved one of its goals of poverty eradication by 2020, education equity and quality education have become important reform directions. From "double reduction" to quality education that promotes the all-round development of moral, intellectual, physical, social and aesthetic development, several policies have ensured that education will be more equitable and sustainable. Integrating the content and purpose of learning with personal protection and sustainability of development to equip individuals with the knowledge, skills, and attitudes to achieve sustainable development goals and to act accordingly is part of what SDGs liberal education helps.

This is reflected in the statements made at the Party Congresses, including the 12th National Congress Report, which stated that education is "a strategic priority for economic development," the 15th National Congress Report, which stated that education is "a fundamental project for cultural construction," and the 16th National Congress Report, which stated that "education is a key element in the development of science and technology and the training of human resources. Education is the basis for developing science and technology and cultivating talents", and education is included in the scope of social construction focusing on people's livelihood; the report of the 17th National Congress points out that "education that satisfies the people"; the report of the 18th National Congress points out that "efforts are made to provide education that satisfies the people. The role of education in the development of the national economy has spiraled upward, with the report of the 17th National Congress pointing out "to provide education to the satisfaction of the people", the report of the 19th National Congress pointing out "to provide education to the satisfaction of the people", and the report of the 20th National Congress clarifying the strategic and fundamental position. In 2018, General Secretary Xi Jinping proposed two "big plans" at the National Education Conference, namely "education is the big plan of the country and the big plan of the Party", which highly summarizes the strategic position and key role of education in the overall development of the Party and the State. Such a new positioning fully reflects that education is a solid foundation for the future of the country and the nation, which is fully reflected in the report of the 20th National Congress. The strategic layout of talents, accelerating the construction of the world's important talent center and innovation highland, focusing on forming the comparative advantage of international competition for talents, and gathering the best talents from all aspects to the cause of the Party and the people, is the guarantee of talents for general education that helps to promote global SDGs.

*1.3 Accelerate the implementation of the science education strategy and promote the general education of global SDGs.*

The 20th Party Congress report pointed out that "China's development has entered a period in which strategic opportunities and risk challenges coexist and uncertain and unpredictable factors increase, and various 'black swan' and 'gray rhinoceros' events may occur at any time. " Comprehensively build a strong socialist modernization, the road ahead, we must adhere to the bottom line thinking, to be prepared for danger, for a rainy day, to adhere to the five major principles, adhere to and strengthen the overall leadership of the Party, adhere to the road of socialism with Chinese characteristics, adhere to the "trinity" to implement the strategy of science and education. Education and science and technology are important supports for social development. The 20th Party Congress report opens up a new stage, and for the first time, a separate chapter is devoted to the deployment of education, science and technology, and human resources, which is systematically elaborated in a major development strategy task. After China has successfully achieved one of the goals of poverty eradication in 2020, education equity and quality education have become important reform directions. From the "double reduction" to the promotion of quality education for all-round development of moral, intellectual, physical, social and aesthetic development, several policies have ensured a more equitable and sustainable development of education. Integrating the content and purpose of learning with personal protection and sustainability of development to equip individuals with the knowledge, skills and attitudes to achieve the SDGs and to act

accordingly is a policy guarantee for liberal education in the global SDGs.

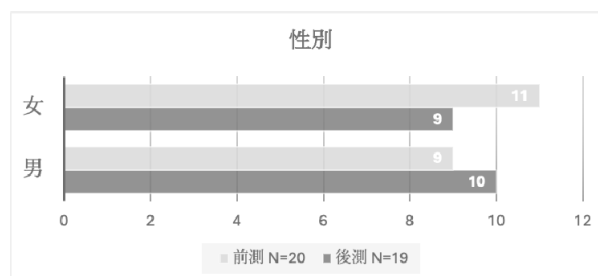
#### 1.4 Case study of in-depth implementation of science education strategy to promote global SDGs general education

A questionnaire survey and analysis report on the general education of SDGs among youths in Anhui and Taiwan: This study designed a pre-test and a post-test to compare the effectiveness of SDGs learning among youths in Anhui and Taiwan, including the cognitive, affective, and skill components. In particular, the study aimed to compare whether the subjective perceptions of college students on both sides of the Taiwan Strait had changed as a result of the course, and the results of the changes.

The questionnaire will be administered as follows: first, the instructor in Taiwan will design a questionnaire based on his or her previous research and teaching results. Then, before the co-curricular course was held on both sides of the Taiwan Strait, the lecturer on the mainland side was asked to administer the questionnaire at the beginning of the first class (pre-test), and the whole class was asked to answer the pre-test questionnaire in paperback. The Google questionnaire could not be used online in mainland China, so the paper questionnaire was used instead. The paper questionnaires were collected and emailed back to the instructor in Taiwan for primary data research and collation. At the beginning of the first class, the instructor in Taiwan invited the class to answer the Google questionnaire directly online (pre-test) and analyzed the pre-test in the background.

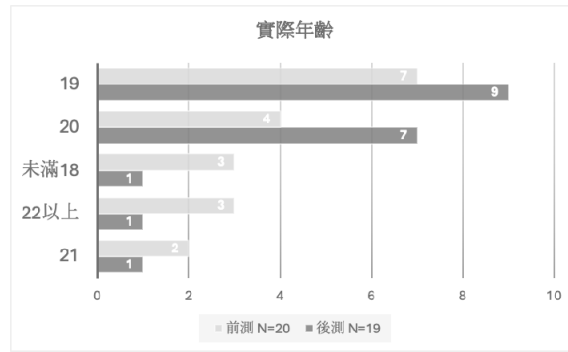
The post-test questionnaire was administered in the same manner as above, and the instructors on both sides of the Taiwan Strait led the process separately. After three consecutive weeks and three cross-strait co-curricular sessions, at the end of the third co-curricular session, the instructors on the mainland side provided paper questionnaires to the mainland students to answer, and then emailed them back to the instructors on the Taiwan side after the session. On the Taiwan side, the lecturer invited students to answer the Google questionnaire on the spot immediately after the third lesson, and then analyzed and compared the study afterwards.

The reason for the difference in the number of students between the two sides of the Taiwan Strait is that the number of students taking the course in Taiwan was relatively small (the maximum number of students taking the general education course in the university was 40), so the number of students who answered the questionnaire online was 19-20. On the mainland side, the class size was larger, and the number of people tested before and after was around 45-70. Therefore, when doing a comparative study, this study paid special attention to the degree of difference between the pre and post-tests, rather than the number of respondents. For the gender ratio, the proportion of females on the Taiwanese side was significantly larger than that of males. This is because the Taiwanese side is an art university and the proportion of enrolled females is 60%, but it does not affect the results of this study.



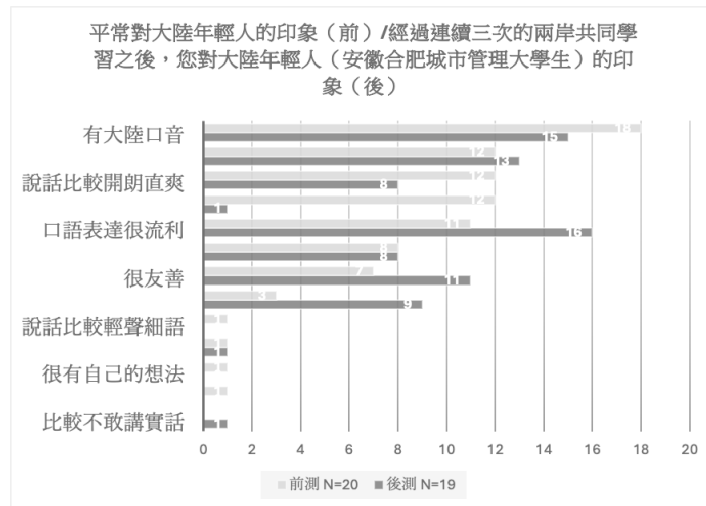
**Figure 1:** Comparison of pre and post-tests between students in Taiwan (top) and China (bottom) - gender

In order to ensure that the subjects were of similar age, college students from both sides of the Taiwan Strait were selected as freshmen and sophomores beforehand for comparison.



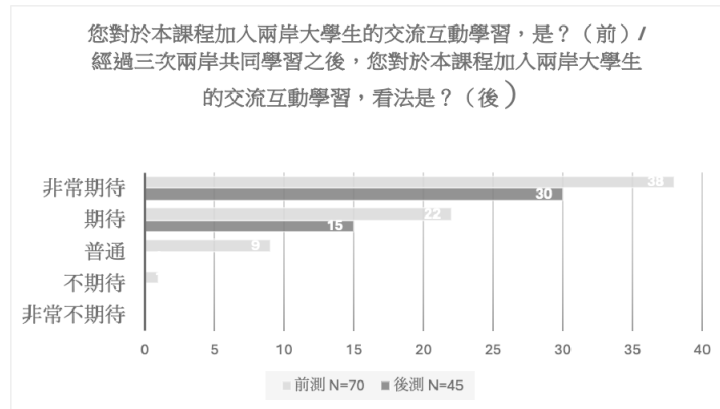
**Figure 2:** Pre- and post-test comparison between students in Taiwan (top) and China (bottom) - Age

The personality traits of the young people on both sides of the Taiwan Strait are highly similar. Although the accents of the young people on both sides of the Strait are different in the comparison of the pre and post-test questionnaires, the impressions of each other's personality traits are that they all consider each other "very friendly". In addition, Taiwanese students think that their mainland counterparts are very fluent in speaking, which is something worth learning from.



**Figure 3:** Pre- and post-test comparison between students in Taiwan (top) and China (bottom) - Overall impression

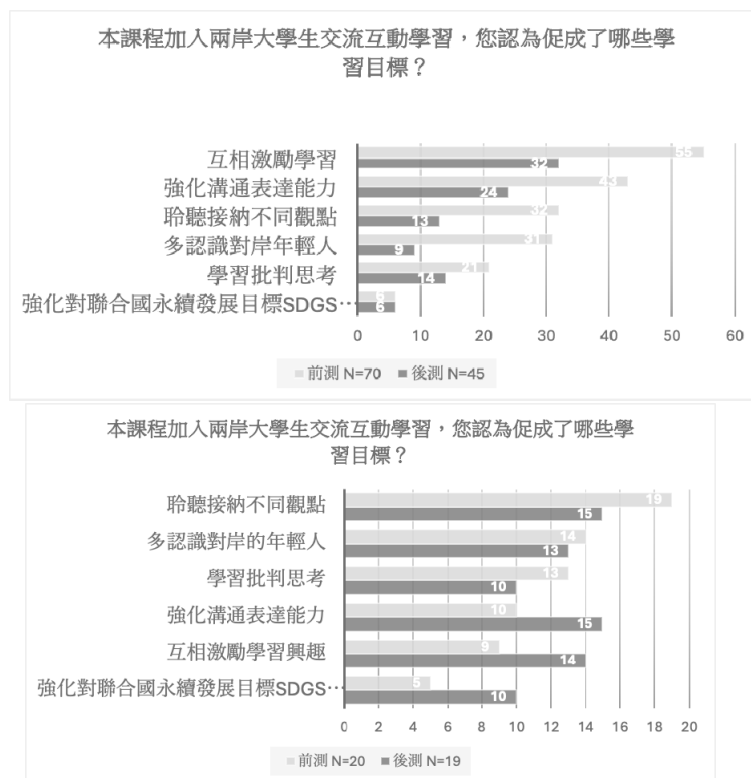
From the comparison of the pre- and post-tests, we can see that the majority of students in both sides of the Taiwan Strait answered "looking forward" and "very much looking forward" to joint study and exchange. On both sides of the Taiwan Strait, only a very small number of students answered "not looking forward to" in the pre-test, but the number of students who answered "not looking forward to" and "very much not looking forward to" in the post-test was zero on both sides of the Taiwan Strait. Obviously, the effect of the exchange is that it has effectively raised the expectation of the young people on both sides of the Taiwan Strait for exchange and interaction.



**Figure 4:** Comparison of students' pre and post-tests in Taiwan (top panel) and mainland China (bottom panel) - Expectations

The effectiveness of the learning objectives, on the other hand, varied significantly. In the pre-test, listening to and accepting different opinions was the most expected learning goal. In the post-test, "strengthening communication and expression skills," "listening and accepting different opinions," and "motivating each other to learn" were the learning outcomes of the Taiwanese students.

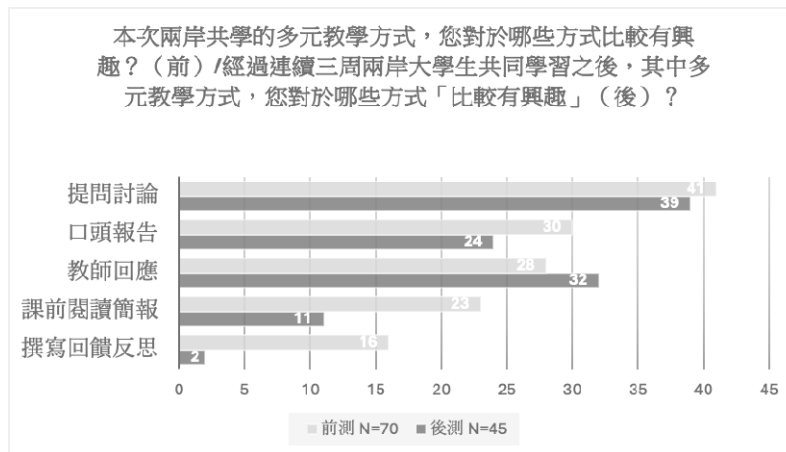
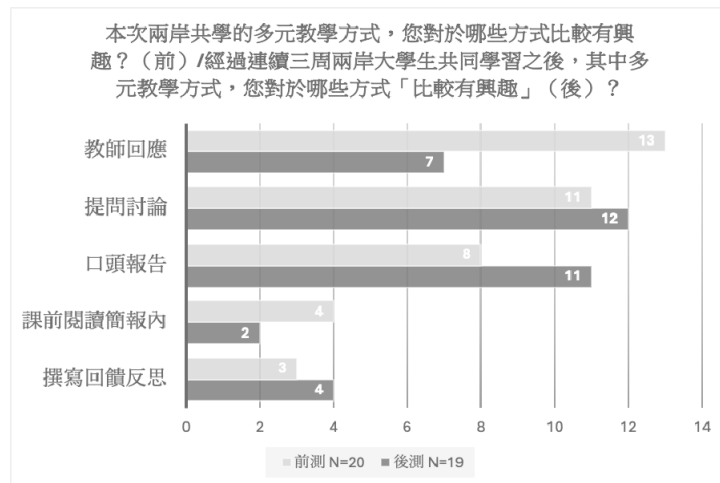
The most expected learning goal expressed by the mainland students in the front side was "motivating each other to learn", and in the back side, they still thought they had achieved the goal of "motivating each other to learn", followed by "strengthening the ability to communicate and express". A more obvious difference is that the mainland side also believes that the goal of "learning to think critically" has been achieved. From the textual descriptions, we can further interpret and analyze that mainland students are good at citing their own experiences in the process of learning, verifying and comparing, and then achieving critical thinking. The textual feedback from the Taiwanese students also showed some critical thinking ability, but there was less ink on their own life experiences.



**Figure 5:** Comparison of pre and post-tests between students in Taiwan (top) and China (bottom) - Teaching Objectives

One of the highlights of this cross-strait study is the diversified teaching methods. In the pre-test, Taiwan students were most interested in "teacher response" and "question and discussion". After the actual implementation, the post-test of Taiwanese students showed that "questioning and discussion" and "oral report" were the most interesting teaching methods. "Teacher response" fell to the third place. This shows that Taiwanese college students prefer a common learning style in which college students are the main participants.

In the pre-test, Mainland students were most interested in "questioning and discussion" and "oral presentation". In the post-test, "question and discussion" was still the most popular teaching method, followed by "teacher response" and then "oral report". It is obvious that they highly valued the final comments of the teachers on both sides of the Taiwan Strait in each class, especially the responses and feedback from the mainland teachers.



**Figure 6:** Comparison of Pre- and Post-tests between students in Taiwan (top) and China (bottom) - Teaching methods

To summarize the comparative analysis of the pre and post questionnaires on both sides of the Taiwan Strait, it can be found that

(a) At the cognitive level, the students who participated in the cross-strait study were highly interested in the interactive "questioning and discussion" because of the cross-strait factor, and they also rated the oral presentation highly. In addition, since the oral presentations were given by university students from Taiwan, and the topic was focused on the SDGs, most of the reporters thought that they had strengthened their knowledge and learning about the SDGs.

(2) In terms of affective structure, the students from both sides of the Taiwan Strait obviously felt each other (very friendly) significantly through online communication and learning together. It is obvious that the exchange and interaction have positive effects on enhancing goodwill and good feelings. In addition, the Taiwanese college students clearly affirmed that the mainland college students were "fluent in oral expression". The charts and textual descriptions of the post-test questionnaires fully demonstrate the affirmation and praise of the Taiwanese side, which in turn led to self-reflection and learning on the part of the Taiwanese university students.

One of the most obvious changes of the cross-strait study is that it has strengthened the willingness of young people on both sides of the Taiwan Strait to interact and learn. In the post-test questionnaire, both the mainland side and the Taiwan side gave zero answers for (not expecting) or (very much not expecting). On the contrary, the proportion of those who answered (very much looking forward) or (looking forward) always remained in the top two. This shows that careful and professional arrangement of cross-strait co-curricular courses can positively contribute to the interaction of college students.

(3) In terms of skills, students from both sides of the Taiwan Strait were most positive about the learning effectiveness of the course (strengthening communication and expression skills), followed by (motivating each other to learn). This shows that the students' responses are clearly in line with the teaching goal of cross-strait learning set at the beginning of this study, which is to strengthen learning and communication skills through cross-strait learning together. The difference is that the Taiwanese university students think it is important to "listen to and accept different opinions", while the mainland university students think it is important to (learn to think critically).

## 2. Reference

- Baylis, J., Owens, P., & Smith, S. (Eds.). (2017). *The globalization of world politics: An introduction to international relations*. Oxford University Press.
- Cai Tuo. (2001). The globalization of culture and its impact on international relations. *Tianjin Social Science*, 5.
- Chong, A., & Hamilton-Hart, N. (2008). Teaching international relations in Southeast Asia: historical memory, academic context, and politics—an introduction. *International Relations of the Asia-Pacific*, 9(1), 1-18.
- Cui Xinjian. (2004). Cultural identity and its roots. *Journal of Beijing Normal University: Social Science Edition*, (4), 102-104.
- Han Zhen. (2010). On national identity, national identity and cultural identity: An analysis and reflection based on the philosophy of history. *Journal of Beijing Normal University: Social Science Edition*, (1), 106-113.
- Miao, Jingming and Xu, Shao-Yan (2018). *The first annual meeting of the Teaching Community of Political Science and International Relations was held in Chenggong, Tsinghua University, Beihang University Press Social Science Books, January 16, 2018*.
- Peterson, S., Tierney, M. J., & Maliniak, D. (2005). Teaching and research practices, views on the discipline, and policy attitudes of international relations faculty at US colleges and universities. Williamsburg, VA: Program on the Theory and Practice of International Relations, The Wendy and Emery Reves Center for International Studies College of William & Mary.
- Schmidt, B. C. (1998). *The political discourse of anarchy: a disciplinary history of international relations*. SUNY Press.
- Simpson, A. W., & Kaussler, B. (2009). IR teaching reloaded: Using films and simulations in the teaching of international relations. *International Studies Perspectives*, 10(4), 413-427.
- Waever, O. (1998). The sociology of a not so international discipline: American and European developments in international relations. *International organization*, 52(4), 687-727.
- Wang, D. (2017). The Tsinghua experience in liberal arts education - Dialogue with Cao Li, Vice President of Xinya School, Tsinghua University. *Guangming Daily*, November 7, 2017.
- Webber, J. (2005). Independence Day as a Cosmopolitan Moment: Teaching International Relations. *International Studies Perspectives*, 6(3), 374-392.



- Weber, C. (2001). The Highs and Lows of Teaching IR Theory: Using Popular Films for Theoretical Critique. *International Studies Perspectives* 2: 281-287.
- Wu Pei-Min (2018). How do college students change? Dean: Students should be allowed to attend classes without drowsiness, *United Daily News*, January 18, 2018.
- Xing Yue (2017). *Introduction to international relations* (2nd edition), Peking University Press, November 2017.
- Xing Yue (2018). Tsinghua University Undergraduate Education Philosophy and OBE Teaching Model, 1st Tsinghua University International Relations Teaching Seminar, January 13, 2018, Beijing, Conference Room 3, Near Spring Garden, Tsinghua University.
- Yan, Xue-tong (2018). Textbook Development of International Relations, The First Workshop on Teaching International Relations at Tsinghua University, January 13, 2018, Beijing, Conference Room 3, Near Spring Garden, Tsinghua University.
- Yan, Xue-Tong and He, Ying (2017). *Analysis of international relations* (3rd ed.), Peking University Press, September 2017.

