Be in awe of education, for it shapes the soul of human,
Be cautious to technologies, for its adoption has to be effective,
Be entangled with 'wisdom', for uncertainty tends to be increasing,
Be serious to academics, for academic research needs evidence.

-Dean Ronghuai Huang, delivered at the closing ceremony of the Second US-China Smart Education Conference on March 20, 2017

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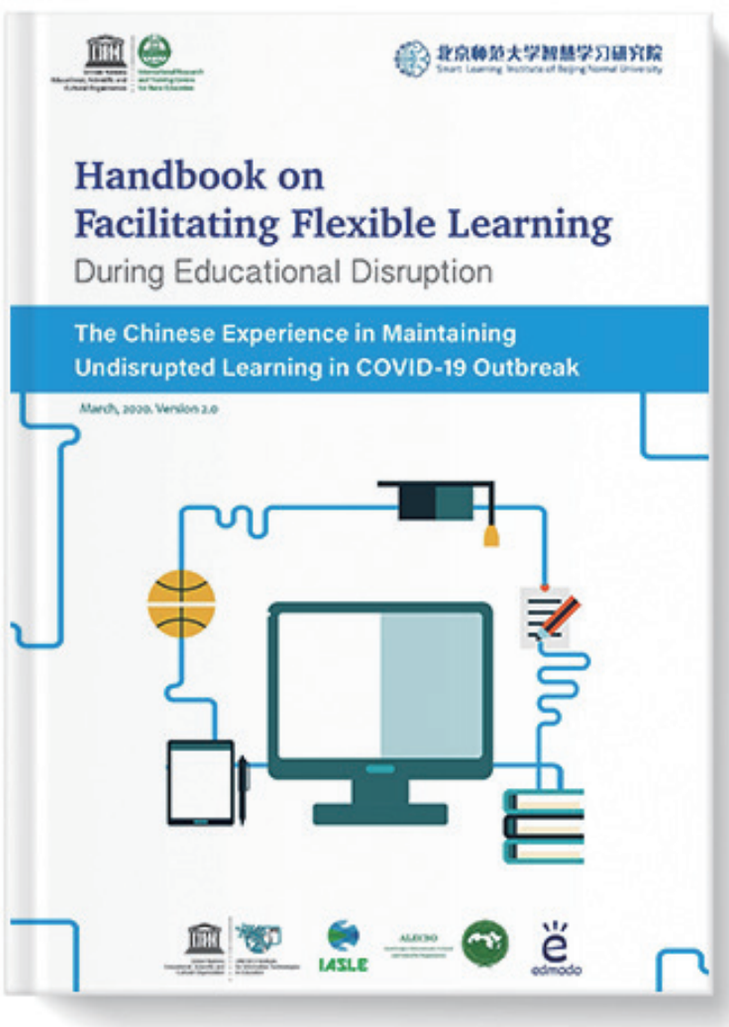


北京师范大学智慧学习研究院
Smart Learning Institute of Beijing Normal University

Smart Learning Institute of Beijing Normal University

The Smart Learning Institute (SLI) of Beijing Normal University is a comprehensive experimental platform involving scientific research, technology development and instructional teaching, which is jointly established by Beijing Normal University and a global educational technology company, Elernity (a subsidiary of NetDragon). SLI focuses on finding learning patterns powered by ICT, creating smart learning environment and platforms for lifelong learning, as well as supporting diversified, personalized and differential learning needs for digital learners.

- Focusing on the methods of design, optimization and evaluation for learning environment as well as developing the key technologies for learning environment engineering aims at providing a widely-spread solution for promoting smart learning.
- Constructing the theory of smart learning and exploring the approaches of integrating ICT with Education aims at offering an international exchange and cooperation platform to smart learning research.
- Studying on the characteristics and patterns of schooling, family education, community education, enterprise learning and public learning aims at providing support for constructing a learning-oriented society and smart city.
- Expanding the experimental areas and schools for smart learning as well as exploring the characteristics of ICT-based instruction and the models of future schools aims at promoting educational transformation and innovation.

Co-Dean Dejian LIU

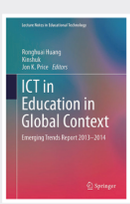
Chairman of the Board, Executive Director of NETDRAGON, The Special Allowance Expert in State Council, Co-Dean of Smart Learning Institute of Beijing Normal University, Chair Professor at the College of Education of Harvard University.

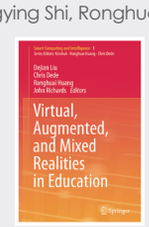
Co-Dean Ronghuai HUANG

Co-Dean of Smart Learning Institute of Beijing Normal University, Director of UNESCO International Research and Training Centre for Rural Education, Director of National Engineering Laboratory for Cyberlearning and Intelligent Technology.

Open Series in Springer

- Lecture Note in Educational Technology
  Series Editors: Huang, R., Kinshuk, Jemni, M., Chen, N.-S., & Spector, J.M.
- Smart Computing and Intelligence
  Series Editors: Huang, R., Kinshuk, & Dede, C.
- New Frontiers of Educational Research
  Series Editors: Zhongying Shi, Ronghuai Huang, Zuoyu Zhou.





Springer's Journals

- Smart Learning Environment
  (The Official Journal of IASLE)
  Editors: Huang, R., Kinshuk, & Soloway, E.
- Journal of Computing in Education
  (The Official Journal of GCSCE)
  Editors: Huang, R., Hwang, G.-J., Kong, S.-C., & Chen, W.

北京师范大学智慧学习研究院
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Design and Learning Laboratory

Study on the features and patterns of design, computational and innovative thinking for youth; Develop courses and books about design methodology, computational thinking and ICT; Build cooperative platform with world-renowned universities, enterprises and institutes for design and innovation.

The 48H Competitive Game of Education Design (2019.01)

Discuss with Prof. Larry Leifer at d.School of Stanford University (2017.04.11)

Smart City and Learning Environment Laboratory

Release Conference of White Paper: Smart Learning Environments in China 2015 (2015.09.20)

Index Report of Smart Learning Environments in Chinese Cities

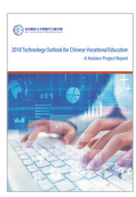
2016 Report of the Cyberlearning Products Development Index in China

Study on the typical learning fields in smart cities and learning societies; Create database of smart learning environment; Publish serial reports on learning environment as well as service industry and products of cyberlearning.

Open Educational Resources (OER) Laboratory

Study on the solution of OER under its impact to the developing countries; Construct the OER community for The Belt & Road countries; Publish reports on the trends of ICT in education.

The Third US-China Smart Education Conference (2018.03)



Series of Horizon Report in China

At a Glance: Education Development in the Belt & Road Countries

Smart Learning and OER International High-end Forum (2017.05.25)

ICT-based Instruction Center

Initial Conference in Experimental Area of Smart Education in Fuquan, Guizhou Province

101 Education PPT Solution

Explore the methodology of integrating ICT into education with large-scale experiments; Study on the solutions of smart classroom and smart campus; Provide the services for transferring education through the bridge of the theory and practice.

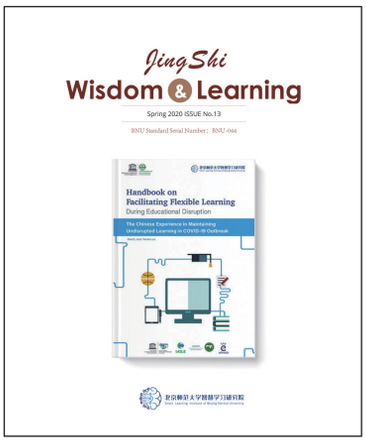
Educational Robotics Center

Study on the scenarios of robotics in education and the trend of artificial intelligence; Develop the courses for robotic education and STEAM education for K-12 schools. Design educational robotic for various learning fields, such as school, family, etc.

2016 Educational Robotics White Paper: The Global Development

The Next Big Thing: Global Development Status and Trends in Educational Robotics

Prototype of Educational Robotics



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The Chinese Experience on "Disrupted Classes, Undisrupted Learning" Contribution to the "New Type" of Global Education —— The Webinar Entitled "How to Keep Students Learning during Schools Disruption in COVID-19 Situation"

Since January 2020, the Coronavirus (COVID-19) has rapidly spread worldwide. According to UNESCO statistics, by March 10, nearly 363 million students around the world have been affected by not going back to their schools. In Asia, Europe, the Middle East and North America, 15 countries have announced school and university closures nationwide and 14 have announced regional closures. To step up emergency responses and give effective guidance, UNESCO conducted a videoconference of global high education officials on March 10 to share strategies to minimize learning disruption worldwide. China's Ministry of Education has launched an initiative entitled "Disrupted Classes, Undisrupted Learning" and published free and open high-quality educational resources that can be chosen by teachers across the country to teach over 270 million students from their homes.

On March 13, 2020, an international webinar entitled "How to Keep Students Learning during Schools Disruption in COVID-19 Situation" was held online from 17:00 to 19:00 (GMT+8). The webinar was organized by the Smart Learning Institute of Beijing Normal University (SLIBNU) and UNESCO International Research and Training Centre for Rural Education (INRULED), co-hosted by UNESCO Institute for Information Technologies in Education (UNESCO IITE), Arab League Educational, Cultural and Scientific Organization (ALECSO), International Association of Smart Learning Environments (IASLE), and supported by the global online learning community Edmodo, a subsidiary of NetDragon Websoft Holdings Limited (HKSE: 0777). Several international scholars, educational enterprise representatives and international organizations from different countries and regions were invited to discuss how to effectively apply the "Disrupted Classes, Undisrupted Learning" initiative with the current issues and strategies in different regions.

Dejian Liu

Co-Dean of SLIBNU and Chairman of NetDragon

Mr. Dejian Liu pointed out that due to the COVID-19, schools in different places postponed the beginning of the new semester. Therefore, in response to the "Disrupted Classes, Undisrupted Learning" initiative, SLIBNU has conducted an academic research team to explore the current situation of online learning during the COVID-19. Meanwhile, NetDragon has started providing high-quality and valuable online educational services for millions of students during the pandemic.

Tao Zhan

Director of UNESCO IITE

Tao Zhan mentioned that the handbook shared China's experience of implementing online learning during the COVID-19 outbreak and is expected to help our colleagues around the world. Also, UNESCO IITE would like to invite all the experts and scholars to share more about their experience and strategies of online learning.

Junfeng Yang

Professor of Hangzhou Normal University

This handbook was realized by the research team led by Co-Dean Ronghuai Huang and Dejian Liu and discussed seven core elements for providing flexible learning, namely (1) network infrastructure, (2) learning tools, (3) digital learning resources, (4) instructional organization, (5) learning methods, (6) supports and services, and, (7) collaboration between governments, enterprises and schools. Several suggestions are also presented to help international educators and researchers apply similar cases studies in their respective contexts.

Natalia Amelina

Senior National Project Officer in Education, UNESCO IITE

In order to jointly resolve educational problems in emergencies, UNESCO has to understand the needs of the students who are currently in quarantine or from countries that are seriously affected by the pandemic, such as China and Italy.

Mohamed Jemni

ICT Director of ALECSO

Mohamed Jemni mentioned that ALECSO is helping many teachers and students in the Arab region to better conduct online teaching during the COVID-19 outbreak by sharing open educational resources via ALECSO hub and producing MOOCS and training programs.

Fabio Nascimbeni

Assistant Professor of Italy

The Italian Ministry of Education, Universities and Research (MIUR) announced the suspense of all schools and universities during March 5-15, 2020. The Assistant Prof. Fabio Nascimbeni, living in Italy, introduced the situation of schools in Italy and emphasized on the importance of active teaching, rigorous leadership and cautious policy-making.

Daniel Burgos

Professor of Educational Technology at the Universidad International de La Rioja (UNIR)-Spain

Daniel Burgos proposed to apply online learning by covering two aspects, namely “learning analytics and personalized learning” as well as “informal and formal comprehensive open science”. He also presented case studies of using learning analytics to provide both descriptive and predictive online support services.

Okhwa Lee

Chungbuk National University, Korea

Prof. Okhwa Lee summarized the challenges in face of the first large-scale school suspension in Korea, including lack of face-to-face classes, regulations for online learning and sufficient training. Currently, KERIS, Korea MOOCs and other online teaching resources are being utilized in Korea.

Said Dahdahjani

Iranian designer

Mr Said Dahdahjani stated that Iranian teachers and students are familiar with online teaching and they are using devices like smart phones to carry out classes, assignments and evaluation.

Kinshuk

Professor of University of North Texas, USA

Prof. Kinshuk said that the University of North Texas had adopted a series of measures to control the pandemic, including reducing the number of students attending on-campus activities, as well as providing on-time technical support when needed.

Gabriela Grosseck

West University of Timisoara

Prof. Carmen Holotescu mentioned that the Ministry of Education and other relevant departments in Romania had collaborated with schools to give them guidance on how to apply online learning. Various public services were provided, such as digital materials, TV channels and Open Educational Resources. Additionally, online learning communities had also been built via Edmodo.

Jianhua Zhao

Professor of Southern University of Science and Technology, China

Jianhua Zhao introduced how to arrange course structure and organize online discussion in online classrooms. He summarized the lessons learnt during the pandemic, such as students' online learning methods, the advantages of online teaching, and the teachers' role in personalized environment.

Dean Huang further mentioned that the webinar provided a solid ground to learn from each other during the COVID-19 and highlighted the following concluding remarks.

First, it is a global opportunity to define "future education". The COVID-19 outbreak has spread so fast that the imbalance of ICT implementation and skills between different regions, cities and rural areas can be a challenge. However, despite this imbalance, as well as the difference in society, economy and culture, all countries and regions are providing online education. This will promote students and teachers to think over the mode of future education.

Second, online learning, unlike traditional classrooms, is a new type of education featured with flexible teaching and active learning. Amid the suspension of plenty of schools across the world, flexible teaching and active learning can ensure the "undisrupted learning" of students. The Chinese experiences have shown that there were seven core elements to ensure large-scale online learning, namely reliable ICT infrastructure, suitable learning resources, friendly digital learning tools, convenient instructional devices, personalized learning methods, flexible instructional organization, effective supports for teachers and learners, as well as close collaboration between government, enterprises and schools.

Third, human life is very important during the COVID-19 outbreak. Therefore, physical, mental and health safety are the primary concern for students and parents. Also, the relationships between human beings, environments, societies including virtual ones in cyberspace should be taken into consideration.

Fourth, this is an important test for inclusive education. It is necessary for the government and society to allocate educational services in a balanced way by considering students with special needs, providing equal learning opportunities for both rich and poor families and for students from urban and rural areas. These services include learning resources, authoring tools and platforms.

Term Explanation: Flexible pedagogy

We re-conceptualize flexible pedagogy as a learner-centered educational strategy, which provides choices from the main dimensions of study, such as time and location of learning, resources for teaching and learning, instructional approaches, learning activities, support for teachers and learners. In this way, teaching and learning can be flexible rather than fixed. This can help promote easy, engaged and effective learning.

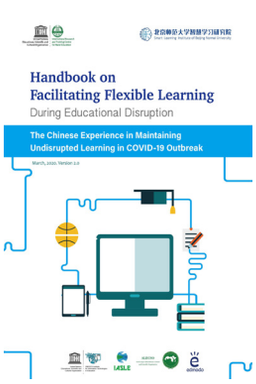
Fifth, this is a special period where we can see the importance of ICT in Education. This is further seen in China where teachers made use of ICT in schools, including the development of digital resources, and online teaching. This large-scale online learning practice is expected to be an important opportunity to promote educational transformation through ICT. It can further improve the ICT literacy of teachers and students, optimize schools' ICT environments, and transform educational concepts and teaching methods.

UNESCO IITE Released Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak

Co-Dean of Smart Learning Institute of Beijing Normal University, Chairman of NETDRAGON Dejian Liu and the team from Hangzhou Normal University released the Handbook on Facilitating Flexible Learning During Educational Disruption: the Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak.

The handbook was completed by the research team led by Co-Deans Ronghuai Huang and Dejian Liu. It discusses seven core elements for providing flexible learning, namely (1) network infrastructure, (2) learning tools, (3) digital learning resources, (4) instructional organization, (5) learning methods, (6) supports and services, and (7) collaboration between governments, enterprises and schools. Inspired by the united solidarity and innovative experiences of millions of teachers and students, this handbook aims to define the term “flexible learning” with vivid examples and touching stories. Several suggestions are also presented to help international educators and researchers apply similar cases studies in their respective contexts.

Now, the handbook is released on the official website of United Nations Educational，Scientific，and Cultural Organization Institute for Information Technologies in education (UNESCO IITE), and is spread all over the world with the help of UNESCO, covering more than 180 countries and 11,000 schools. The handbook was reported by many new media like People.cn, gmw.cn, Tencent News, NetEase News, The Paper, Sohu, PhoenixNet, Sina Education. It also instructs educational researchers and educators at all levels.



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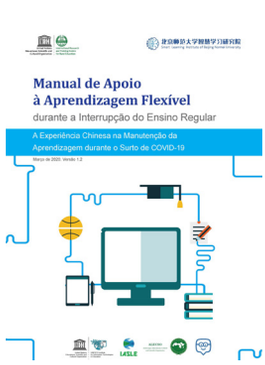
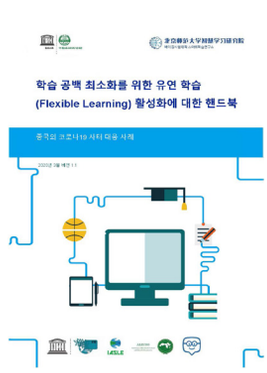


Portuguese

Arabic



Korean

Based on the Chinese practices and experience above, this handbook identifies the following seven core elements of effective online education in emergencies.

(1) Ensuring reliable network infrastructure, which can handle millions of users simultaneously, is crucial to support smooth online learning experience without interruption.

(2) Using friendly learning tools is beneficial to learners in finding and processing information, constructing knowledge, collaborating with peers, expressing understanding, and evaluating learning effects in concrete ways.

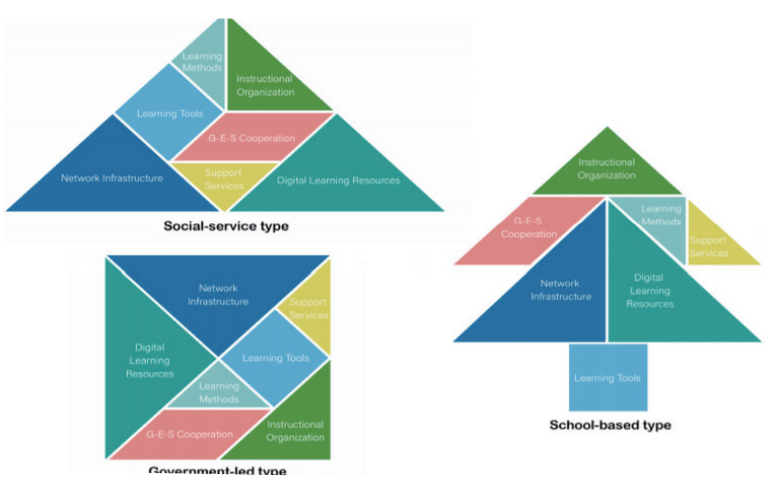
(3) Suitable digital learning resources are the premise and foundation for effective online education.

(4) During the period of preventing the pandemic, according to the scale of participants and their cognitive levels during the learning process, schools at all levels and kinds can guide students to choose appropriate learning methods on the basis of specific and applicable educational scenarios.

(5) Promoting effective methods to organize instruction by adopting a range of teaching strategies, such as case studies, open debate and discussions, learners-led discovery, experiential learning, etc.

(6) Providing instant support services for teachers and learners on learning about urgent school and governmental policies, using effective learning technologies, tools, and resources and collaborating between the government, schools, enterprises, families, society, etc.

(7) In the face of the current needs of online education during the epidemic and its future development, the government should play multiple roles in policy guidance, overall coordination and effective supervision, etc. The government should also coordinate enterprises, schools, research institutes, families, the society, etc. to build smooth communication platforms, select suitable learning resources, provide convenient learning tools, encourage diverse learning methods and support flexible teaching methods. Effective support services for online education will be provided through the close cooperation of multiple parties.



Seeking Educational Response to COVID-19 Outbreak —— The Webinar Entitled "How to Help Children Be Active Learners at Home during Educational Disruption"

On behalf of the research project team, Dejian Liu, Co-Dean of SLIBNU and Chairman of NetDragon, and Junfeng Yang, Professor of Hangzhou Normal University shared the Guidance on Active Learning at Home in Educational Disruption: Chinese experience on promoting student's self-regulation skills during COVID-19 outbreak. This handbook was completed by the research team led by Co-Dean Ronghuai Huang and Dejian Liu and discussed three parts, namely "Protecting yourself, and prevent from COVID-19", "Becoming active learner during educational disruption" and "Keeping healthy at home". The handbook explained in detail the potential problems during the process of active learning caused by both external and internal factors. With vivid pictures, this handbook presented the practical experience of active learning from students all over the country, and offered specific suggestions with a great variety of cases and relevant theories. Mr. Dejian Liu pointed out that several students, especially senior students who are about to graduate, are worried about the effect of learning at home. It does not only prove that students firmly believe in their schools, but also mean that new issues that should be considered have arisen. In response to the situation, the academic team will complete this handbook on active learning, which is supported by Edmodo, to explore how to help students improve their ability of self-monitoring and self-regulated learning.

Dejian Liu

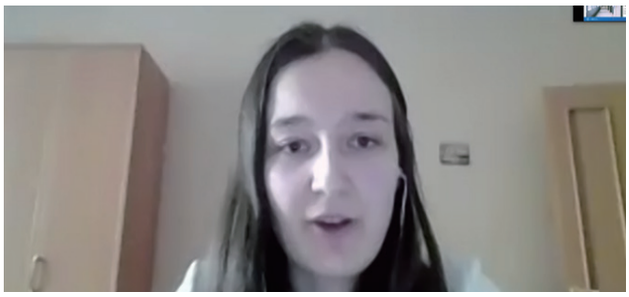
Co-Dean of SLIBNU and Chairman of NetDragon

Students were anxious during the outbreak and worried about the effects of studying at home. This not only reflects the students' trust to the teaching work of the school, but also brings new topics for educators. Hence, the academic team wrote this handbook, supported by NetDragon's Edmodo product, and actively explored countermeasures to help students improve their ability of self-monitoring and self-learning.

Tao Zhan

Director of UNESCO IITE

Dr. Tao Zhan mentioned the desire of further cooperation between UNESCO IITE and SLIBNU on the series of projects. Further efforts should be made to release the handbook in multiple languages, and support teachers and students via webinars, free online courses, as well as the consultation offered by experts.



Galina Konyaeva

Program Assistant of Teacher Professional Development and Networking Unit, UNESCO IITE

UNESCO has collaborated with various private IT companies, online-learning providers and major universities to construct online teaching platforms, distance learning systems, online courses and feedback systems. She also mentioned that UNESCO was devoted to covering more countries with suitable educational measures and offering more comprehensive digital learning resources.

Junfeng Yang

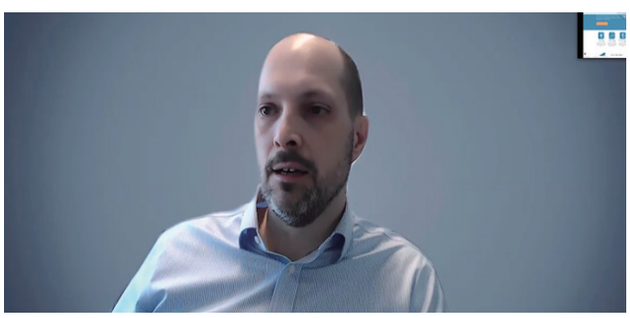
Professor of Hangzhou Normal University

This handbook discussed three parts, namely “Protecting yourself, and prevent from COVID-19”, “Becoming active learner during educational disruption” and “Keeping healthy at home”. The handbook explained in detail the potential problems during the process of active learning caused by both external and internal factors. With vivid pictures, this handbook presented the practical experience of active learning from students all over the country, and offered specific suggestions with a great variety of cases and relevant theories.

Hao Yang

State University of New York at Oswego, U.S.

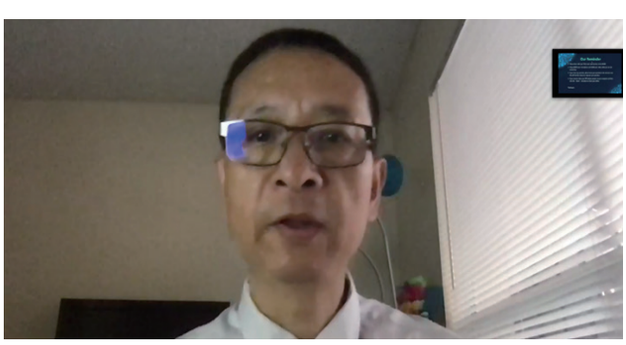
Prof. Harrison Hao Yang pointed out that American high schools had adopted some online learning platforms to help students watch instructional videos, receive teaching materials and notifications.



Joseph South

Chief learning officer at ISTE

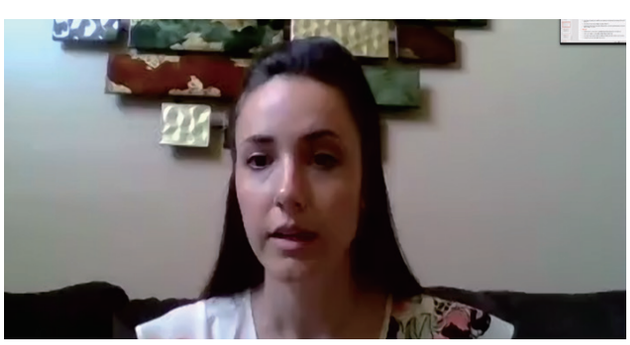
ISTE has created a website called “Learning Keeps Going” for educators, students and parents to get the help that they need. Meanwhile, ISTE has also hosted weekly webinars to share the latest online learning resources and discuss the issue of active learning.



Xiaoxue Wang

Professor of Florida Gulf Coast University

Prof. Charles Xiaoxue Wang pointed out that Florida Gulf Coast University had adopted systematic approaches to support students’ active learning. He also mentioned that the Association for Educational Communications and Technology (AECT) has hosted a number of webinars to discuss the situation of active learning during COVID-19 outbreak.



Amanda Rose

A Dunbar High School Teacher, Fort Myers, Florida, U.S.

Amanda Rose introduced the current situation of students’ active learning in Dunbar High School.

Corrina McEwan

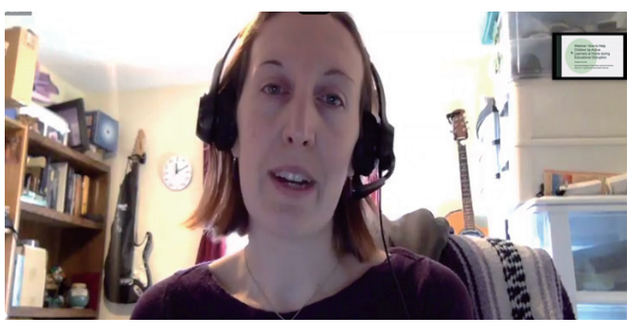
Head of Online Learning at Nisai Group

Corrina McEwan mentioned that since the school closure at all levels in the UK, students had received all sorts of support from schools and society. Schools have created a wide range of homework packs for students, including self-assessment, mock exams, exercise books, etc. However, students lack reasonable learning routine, specialist support and guidance, as well as social learning.

Maiga Chang

Professor of Athabasca University, Canada

Dr. Maiga Chang shared the goals for students' active learning from three perspectives, namely gamification, training and reward, and learning analytics.



Elisabeth Stucklen

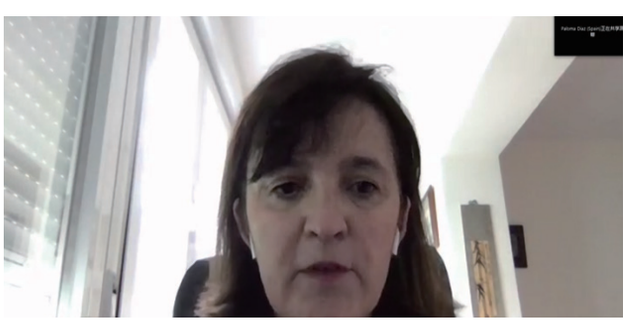
Instructional Designer from Online Learning Consortium (OLC)

Elisabeth Stucklen mentioned that all of the New Hampshire (NH) schools have been closed since March 16. They have carried out distance learning and encouraged students to make reasonable daily learning schedule.

Heng Luo

Associate Professor of Central China Normal University, China

Dr. Heng Luo mentioned that Wuhan has implemented "one district one policy" and "one school one model" via "Wuhan Edu Cloud" and "Online Classroom for High School". Wuhan has also utilized all types of live streaming tools, social software, online surveys for instruction, management and evaluation.



Paloma Díaz

The Universidad Carlos III de Madrid, Spain

Prof. Paloma DiazIn said that teachers should strengthen the interaction with students and prepare for the courses together. She emphasized that transformation from traditional teaching to online teaching was not just about getting access to online resources, but an overall paradigm shift. Therefore, educators need to consider how IT can be better used to increase educational abilities in all aspects.

Joel Schmidt

University of Applied Management, Germany

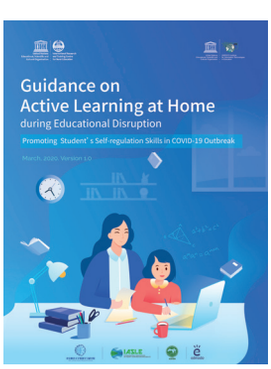
Prof. Joel Schmidt pointed out that schools in Germany adopted an educational portal "MEBIS", providing multimedia resources, exam archives, learning platforms, online learning tools, etc. Students were able to conduct active learning with a variety of learning methods and tools, such as systematic courses, teacher-created courses and communication tools such as Zoom, etc.

Guidance on Active Learning at Home during Educational Disruption: Promoting student's self-regulation skills during COVID-19 outbreak is released

Apr. 5th, 2020, UNESCO INRULED, UNESCO IITE, Smart Learning Institute of Beijing Normal University, ALECSO and IASLE, supported by the global online learning community Edmodo, a subsidiary of NetDragon Websoft Holdings Limited, have jointly released the handbook entitled Guidance on Active Learning at Home during Educational Disruption: Promoting student's self-regulation skills during COVID-19 outbreak. The handbook was completed by the team led by Co-Deans Ronghuai Huang and Dejian Liu from Smart Learning Institute of Beijing Normal University. It is the second handbook in the series after the first one the Handbook on Facilitating Flexible Learning.

Co-Dean of Smart Learning Institute of Beijing Normal University Ronghuai Huang uses ten key words to describe the scene that China supports "Disrupted Classes, Undisrupted Learning" by online education. The key words are flexible teaching, self-learning; choices according to needs, respect for differences; open resources, scientific and technological support; led by government, organized by school; interaction between school and home, social participation. With the participation of schools, teachers, students and parents, the initiative "Disrupted Classes, Undisrupted Learning" is well implemented by using online platforms. For now, abundant online learning resources and various equipment provide students with sufficient materials and convenient methods. In the meantime, it also brings some problems. Students tend to lack autonomy and indulge in entertainment. Their self-regulatory ability needs to be improved. To solve these problems, Dean Huang gives following suggestions.

- Scheduling learning and playing in balance.
- Selecting learning resources on demand.
- Studying and playing in a team.
- Forming self-monitoring and self-control habits accompanied by family members.
- Accessing learning outcomes by online tools.
- Carrying out self-reflection on learning progress.
- Exercising daily and moderately.



English

Chinese

French

Arabic

Use AI and Internet Education to Support Disrupted Classes, Undisrupted Learning

In order to implement the "Notice of the Ministry of Education on Effectively Preventing the Pneumonia Epidemic Caused by the Novel Coronavirus Infection" and ensure the online education during the postponement of the school, National Engineering Laboratory for Cyberlearning and Intelligent Technology, Smart Learning Institute of Beijing Normal University and Unit for ICT in Education, UNESCO held the webinar entitled "Use AI and internet education to support Disrupted Classes, Undisrupted Learning". About 30 delegates from corporations like Tencent, Huawei, Tomorrow Advancing Life, IFLYTEK, NetDragon, Tianwen Digital Media, Songshu AI and Beijing Royal School Education Group attended the webinar. Chief of Unit for ICT in Education, UNESCO HQs, Doctor Fengchun Miao and the Chief of National Engineering Laboratory for Cyberlearning and Intelligent Technology, Professor Ronghua Huang also attended the webinar.

Expert Opinions

Fengchun Miao

Professor Miao said that UNESCO and other international organizations were all concerned about the pandemic in China, and they believed that China could conquer the pandemic. Meanwhile, how to use ICT to teach during the pandemic also attracted attention. The upcoming UNESCO "Artificial Intelligence and Inclusive Education" Learning Week in the early March could be a great opportunity for the world to hear China's voice. Ministry of Education issued relevant policies in a very short time and postponed school start date. On the premise of safety of students and teachers, laying a solid foundation was still the most important task for students. With the development of ICT, the speed and the level of China's education informatization has been ahead of many countries. Its international influence increased significantly. China is one of the very few developing countries that can support the "Disrupted Classes, Undisrupted Learning", and it will be a case that has global influence.

Ronghuai Huang

Professor Huang said that the pandemic brought a huge challenge to education. The MOE's initiative "Disrupted Classes, Undisrupted Learning" showed the humanistic care to students and teachers nationwide. There were currently more than 200 million students in school. To solve the problems of students at different levels, we needed to coordinate the government, universities, research institutes and corporations. To minimize the adverse impact on education, we needed to take full advantage of the achievements of our country's education informatization. Corporations could carry out inter-regional and inter-school collaboration through teaching platforms, teaching resources and teaching tools, expanding the coverage of high-quality educational resources. They could also help schools in different regions to conduct customized online learning activities and other online teaching activities, provide supports and follow the result, realizing high-quality "internet + education".

On the webinar, delegates from corporations also provided many solutions and reported the work they did during the pandemic. The delegate from Huawei said, to support online education, Huaweicloud provided free technical support to educational institutions and schools, and more people will receive the service in the future. The delegate from Tencent said: "platforms like Tencent Cloud, Tencent Meeting and Tencent Campus are now available to help distant management and remote working. Tencent Class gathers many famous teachers and resources. More than 50 teachers provide live lectures and the platform is free for schools."; the delegate from Tomorrow Advancing Life said that TAL had provided online education systems to more than 5 million students and teachers, and also provided one-to-one technical training to teachers. NetDragon Huayu's delegate introduced the cooperation between the corporation and districts affected seriously by the pandemic in Hubei. They used products like 101 education PPT, connected with Hubei Education Cloud to help students in those districts study. The delegates from IFLYTEK, Songshu AI and Tianwen also shared the resources and technical support they provided.

The webinar discussed how to cooperate in inventing new models. The webinar also discussed how to realize better education supervision and data analysis, how AI can intervene scientifically, and how to apply information sharing and management.

"Online Education supports Disrupted Classes, Undisrupted Learning"——A Webinar Held by Beijing Normal University Affiliated School League

On 27 February, the webinar entitled "Online Education supports Disrupted Classes, Undisrupted Learning" was co-held by National Engineering Laboratory for Cyberlearning and Intelligent Technology, Smart Learning Institute of Beijing Normal University and Beijing Normal University Affiliated School League.

Director of National Engineering Laboratory for Cyberlearning and Intelligent Technology, Dean of Smart Learning Institute of Beijing Normal University, Professor Ronghuai Huang, together with his teammates, attended the webinar. Teachers from the School of Educational Technology, Yanyan Li, Zhizhen Zhang, Lili Tong, Vice-President of Beijing Normal University Education Group Li Luo and more than 30 delegates from 10 schools affiliated to Beijing Normal University were invited to the webinar.

Expert Opinions

Ronghuai Huang

Professor Huang shared the latest research achievements to improve students' abilities of flexible learning and active learning during the pandemic. He said that teachers should transform the traditional methods to a new one, leading students to learn online from listening, reading, writing and discussing. Teachers are supposed to fully use the resources they have, to focus on studying and organizing students learning, stimulating students' motivation and cultivating students' comprehensive abilities. He also suggested that in order to develop students' abilities of self-learning, we should support students to make plans independently, to supervise and evaluate themselves on their own.

Li Luo

Ms. Luo shared the spirit of the speech given by Jianping Cheng, Secretary of the Party Committee of BNU, when he inspected Beijing Normal University Education Group. She encouraged schools affiliated to BNU to fully use the internet and resources of BNU and the group to conduct patriotism education, life and health education, labour education and family education, in order to improve students' comprehensive qualities.

The webinar, whose theme was "Disrupted Classes, Undisrupted Learning", focused on what to learn and how to learn in online education. The headmaster, chief of teaching and research team, and head teacher Dingguo Sun, Junpeng Li and Yanguo Gao shared their experience. School's delegate said that the affiliated schools made some achievements in online student management, online group learning, online ability cultivation and online tools choosing. And some problems like the reduction of interaction between teachers and students, the delay of feedbacks and the excessive burden of teachers occurred. Experts gave some suggestions to solve these problems. Considering the specific form of online teaching, Zhizhen Zhang suggested teachers reduce their sense of control, respect the differences and adopt a task-driven method to improve students' comprehensive abilities. Lili Tong said teachers should fully use the platform, coordinate the resources, and implement the one-stop strategy. Yanyan Li said teachers can try the strategy of designing blended learning, increasing student activities and presenting learning result.

This webinar was customized by experts from Beijing Normal University and affiliated schools. It was the first webinar that gathered university, group and affiliated schools in the field of group informatization. The webinar improved the informatization reform, which can help education, conducted by BNU research institutes and schools, by answering school's questions and helping them to think clearly. Also, the webinar accumulated experience in "internet + education", the collaboration of education research and practice, and cooperative innovation of teaching reform so that we can lead the follow-up research.

The Initiative that Internet Education Technology Organizations should Prevent the Pandemic and Implement the "Disrupted Classes, Undisrupted Learning"

In order to implement the spirit of Xi Jinping's instructions, to implement the decisions and deployments of the CPC Central Committee and State Council on pandemic prevention and control, to implement the requirements of documents of the Ministry of Education, to support "Disrupted Classes, Undisrupted Learning" by using internet education, proposed by the National Engineering Laboratory for Cyberlearning and Intelligent Technology, 27 internet education technology platforms and corporations develop the initiative that internet education technology organizations should prevent the pandemic and implement the "Disrupted Classes, Undisrupted Learning".

The initiative that internet education technology organizations should prevent the pandemic and implement the "Disrupted Classes, Undisrupted Learning"

1. Give priority to the prevention and control of pandemic.
2. Ensure a smooth communication platform.
3. Provide free, open and appropriate digital resources.
4. Speed up developing convenient learning tools.
5. Provide different learning methods according to local status quo.
6. Support scientific and flexible teaching plans.
7. Provide effective technical support in time.
8. Gather resources to develop close collaboration between the government, corporations and schools.
9. Carry out volunteer education activities actively.
10. Enhance research cooperation and communication.

Initiator: Internet Education Technology Platforms and Corporations

13 Feb. 2020

Initiators (listed in no particular order)

Education Technology Platforms:

National Engineering Laboratory for Cyberlearning and Intelligent Technology

State Key Laboratory of Virtual Reality Technology and Systems

National Engineering Research Center for E-Learning

National Engineering Laboratory for Educational Big Data

National-Regional Engineering Laboratory for Cyberlearning Data Analysis Technology

Key Laboratory of Modern Teaching Technology, Ministry of Education

MOE Engineering Research Center for E-Learning Technology

MOE Engineering Research Center for E-Learning and Education Public Service

The Joint Laboratory for Mobile Learning，Ministry of Education- China Mobile Communications Corporation

MOE Research Center for Online Education

Beijing Normal University Advanced Innovation Center for Future Education

Basic Education Big Data Application Institute of Beijing Normal University

Smart Learning Institute of Beijing Normal University

Education Technology Corporations:

Beijing Normal University Education Group

China Mobile Chengdu Institute of Research and Development

Fujian Hua Yu Education Technology Co., Ltd.

IFLYTEK CO.LTD.

HUAWEI TECHNOLOGIES CO., LTD.

Alibaba (China) CO., LTD.

Tencent Technology (Shenzhen) Co., Ltd.

Beijing Baidu Netcom Science and Technology Co., Ltd.

Lenovo Group

Good Future Group

Cernet Corporation

MOOC-CN Information Technology (Beijing) Co., Ltd.

Tianwen Digital Media Technology (Beijing) Co., Ltd.

Shanghai Songshu AI Technology Co., Ltd

The Webinar on Xiongan's Experience on "Disrupted Classes, Undisrupted Learning"

In order to promote the "Disrupted Classes, Undisrupted Learning" in Xiongan New Area, the Smart Education Demonstration Zone, Smart Learning Institute of Beijing Normal University was invited by the Bureau of Public Services of Xiongan to understand the status of internet education in the three counties of Xiongan New Area and explore the application of internet education in future education. About 30 guests including experts from the Smart Education Demonstration Zone, officials from the Bureau of Public Services of Xiongan and Hebei Province Primary and Secondary School Teachers' Continuing Education Center, delegates from the Bureau of Education of Rongcheng County, Anxin County and Xiong County, and headmasters of schools were invited to the webinar. The webinar discussed the application of the internet, resources, platforms and tools in online education, the challenge and needs of online education. It also discussed the results of online education, the feedback from students and parents, and the experience of online education. Then, the webinar proposed some suggestions on how to implement online education.

Expert Opinions

Ronghuai Huang
Dean of Smart Learning Institute, Deputy Leader of the Panel of Smart Education Demonstration Zone, Ministry of Education

It becomes a new normal during the pandemic to have classes, seminars and meetings online. "Disrupted Classes, Undisrupted Learning" is a challenge for teachers, headmasters, government and parents. Xiongan New Area, as the Smart Education Demonstration Zone, has many valuable methods which can provide experience to other cities. Because of the COVID-19, experts in the world are trying to come up with some solutions and learn from China's experience. The Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak, released by Smart Learning Institute was expected to offer resources to countries, helping them to find solutions for online learning and discussing problems like how to guide student learn actively.

Shuanglong Zhang
Deputy Director of the Bureau of Public Services of Xiongan

Mr. Zhang introduced the plan that how primary and secondary schools were run during the pandemic. The plan requires the Bureau of Education of the three counties to make plans, coordinate the strength and the education resources. It also requires the Bureau to use information technology, internet resources and platforms. Then the plan needs the Bureau reasonably arrange online teaching, research, Q&A and education instruction while guarantee online education, work coordination, psychological counseling for students and health guidance for teachers and students.

Di Wu
Expert of Smart Education Demonstration Zone, Professor of Central China Normal University

Professor Wu believed that currently, informatization teaching will be improved a lot after the pandemic. We need to fully recognize the advantages of online teaching and face-to-face teaching and combine the two methods. Teachers have the initiative and creativeness. Professor Wu said, to realize effective management of online teaching, a typical indicator is that the more interactions between students and teachers, the more effective the supervision will be. We need to increase group interactions and individualized interactions. Especially individualized interactions such as one-to-one assistance and resources pushing. The management problems can be solved with the help of some online tools and management methods. Actions on policy-making and management mechanism should be taken.

Shaoqing Guo
Deputy Leader of the Panel of Smart Education Demonstration Zone, Professor of Northwest Normal University

Professor Guo said “online teaching is not only moving to another place. It must receive the concept of “Internet + Education”. Teachers should adopt new teaching methods, use appropriate techniques to change students’ ways of learning. Professor Guo believes “Disrupted Classes, Undisrupted Learning” is an “internet+” teaching ability examination for teachers. It requires teachers to improve the ability to design online teaching activities. Every activity should have a specific goal and an efficient organization to encourage students to move, to think, to do.

Delegates from the Bureaus of Education of the three counties in Xiongan New Area introduced their experience on “Disrupted Classes, Undisrupted Learning”. Headmasters introduced the application of internet, resources, platforms and tools in the process of online education. They also shared how the educational resources were used and the results of online teaching. Then, they came up with some needs and problems occurred in online teaching.

Haijun Zeng, Deputy Dean of Smart Learning Institute of Beijing Normal University, made a concluding speech for the conference. He said “just like what Mr Mingyuan Gu said, the changes of society, especially the innovation of science and technology, are changing the environment, concepts and methods of education. However, neither the essence of education nor the responsibilities of teachers will ever change. Schools and teachers will not disappear. We should keep learning during and after the pandemic, understanding the essence of education and the changes brought by the development of technology. We should let teachers and students play their own role with the help of new techniques so that we can adapt to the new era and nourish the citizens of the future society.

Dean Huang Gave a Lecture on Online Learning Strategy to Help Basic Education Teachers Improve their Online Teaching Ability

On Feb.16th, Beijing Normal University Basic Education Teachers Online Education Ability Training Project live lecture (the third lecture) – collaborative learning strategy and online group learning organization– was released on BNUONLINE.

- The lecture introduced 7 basic facts of online learning:
- online learning is a teaching strategy of "technology for learning";
- tasks, resources, methods and services are the 4 elements of online learning; problem-oriented tasks can improve the results of online learning;
- the preparation of learning resources needs to follow the "multimedia learning rules";
- online learning methods are closely related to independent learning abilities;
- online learning services cannot do without learning tools;
- the construction of collaborative knowledge is one of the most efficient online collaborative learning methods.

Collaborative learning

Collaborative learning is a behavior that learners participate in groups and help each other under an incentive mechanism in order to achieve common learning goals and maximize the achievements of individuals and groups. (Huang Ronghuai, 2020)

6 methods of online group learning:

1. Online "Thinking, Writing, Discussing and Enjoying": Thinking-Writing-Pairing-Sharing;
2. Online round table conference;
3. Online puzzle game;
4. Edit concept maps cooperatively;
5. Explore community in the online learning space;
6. Use the "Knowledge Forum" to construct collaborative knowledge.

The lecture also gave 5 key elements of cooperative (collaborative) learning:

1. Positive interdependence;
2. Individual responsibilities;
3. Group growth;
4. Social skills;
5. Face to face interaction.

Professor Ronghuai Huang was Invited to Attend UNESCO's First Webinar on the Educational Response to COVID-19

UNESCO'S first webinar on the educational response to COVID-19 was held on Mar.20th 2020. The webinar invited government officials, practitioners and experts from over 50 countries including Italy, Rwanda, France, Korea and China. China's Director-General of Department of Science and Technology, Ministry of Education, Mr Chaozi Lei, and Co-Dean of the Smart Learning Institute of Beijing Normal University, Mr Ronghuai Huang were also invited.

The role of the Ministry of Education in promoting collaboration between government, enterprises, universities, and schools was highlighted also by China's Director-General of Department of Science and Technology, Ministry of Education, Mr Chaozi Lei, and Co-Dean of the Smart Learning Institute of Beijing Normal University, Mr Ronghuai Huang. In this regard, the Ministry of Education has worked with education companies to provide free services and online curriculum resources for K12 students, universities, and the public. Training is also provided to help teachers adapt to the new learning environment and to master online teaching skills. Through a recent study, the Ministry of Education found that 80% of teachers are ready to use more ICT s in their work going forward.

To address equity challenges, Catherine Kane from the World Health Organization (WHO) recommended learning from approaches used in emergency situations, including measures to ensure that students who rely on school meals do not go hungry when schools close. Italy's advisor to the Minister of Education, Professor Alberto Melloni, highlighted the importance of a whole community approach. Christine Niyizamwiyitira, Head of Department of ICT in Education at the Rwanda Education Board said the board is developing learning guides to support students, parents, and teachers. The teacher's central role in guaranteeing education continuity was stressed by the Director-General of France's National Center for Distance Education (CNED), Michel Reverchon-Billot. Integrating different digital solutions to ensure a seamless learning experience was emphasized by Mr. Hwansun Yoon from the Republic of Korea's Education & Research Information Service (KERIS).

At the end, Ms. Stefania Giannini, UNESCO Assistant Director General for Education said we all need to learn from each other, and we could build a stronger education system out of this crisis.

Professor Ronghuai Huang was Invited to attend UNESCO's Webinar on Learning Cities

Because of COVID-19, many members of UNESCO Global Network of Learning Cities were facing serious challenges. On Mar. 19, on the webinar held by UNESCO Institute for Lifelong Learning, delegates from cities like Beijing (China), Shanghai (China), Fermo (Italy), Kashan (Iran), Manizales (Colombia) introduced the solutions in their countries, providing a reference to other 180 cities to make contingency plans and devise distance learning method.

Professor Huang introduced Beijing's experience. Beijing Municipal Education Commission spread the use of online learning. Parents and teachers' priority is the convenience and health of children when they study at home. Besides, digital schools in Beijing set up courses at all levels. The main problem that concerns many cities and countries is how to evaluate and manage students when they study at home. In Beijing, teachers and parents invigilate online and at home respectively. Beijing Radio & Television Network produced a program series, inviting delegates from Beijing Municipal Education Commission to answer parents' question and ease their anxiety. At the end, Smart Learning Institute and UNESCO IITE released the Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak. The handbook was expected to offer resources to countries, helping them to find solutions for online learning.

Project Status

Build up the Network of International Experts

This quarter we have connected 34 experts from 13 countries including Russia, the United States, Tunisia, Italy, Spain, Iran, Morocco, Korea, Romania, Nairobi, England, Germany and Norway.

Author: Tingwen Chang

AI and Computing Thinking Education Platform and Training

The platform has 734 online courses and resources and 16 live lectures. Visitors of the platform come from 29 provinces. We developed 30 AI research problems which primary and middle school students can try to solve, and we begin to work on transforming the AI problems into teaching schemes for primary and middle school to implement at the next stage.

Author: Youjie Yao

Deep Cooperation with Beijing Normal University Education Group

We completed the group's two plans: Instruction of Smart School Construction and Standard of Smart School Education; we helped invent the Schools Attached to Beijing Normal University Education Informatization Scheme; we submitted NetDragon's Smart School Construction Solution to the group.

Author: Yongzhong Wang

Construction Service of Smart Education Demonstration Zone

We cooperated with Wuhou District, Chengdu to make the Five-Year Development Plan for Smart Education in Wuhou District, and to select the school to implement the planned project, CIO talents and core teachers; in March, the project "The Education Reform and Development Plan" during the 14th Five-Year Plan in Pinggu District was launched, and the research proposal and the planning framework design had been confirmed by the Education Commission; we discussed the training school for teachers from Changping and the 14th Five-Year Plan in Handan, Hebei;

we promoted the NetDragon Huayu Product Solutions to Guian New Area School Attached to Beijing Normal University and Qingyang School Attached to Beijing Normal University.

Author: Yongzhong Wang

Research Report on Future Education

We wrote the report with the Future Education Center of Beijing Normal University, and we held meetings to discuss the research proposal and the research progress, asking for advice from experts; we collected education corporation cases from the EdStars and the Chinese Association for Non-Government Education.

Author: Yongzhong Wang

Intellectual Property Declaration

We completed the risk assessment of the trademark application of the following projects: “Global Smart Education Conference”, “Global Competition on Design for Future Education”, and “Yuanzhuo Project”. We completed a rapid review of a patent application that entered the substantive examination. We promoted the patent applications of “an edge computing platform of learning environment construction” and 12 achievements from “Global Competition on Design for Future Education”.

Author: Jingjing Jin

A Column Entitled Flexible Learning was Added to the Official Website

On 12 Mar. 2020, we added the column “Flexible Learning” to the official website. We now have a total of 830 articles on international trends, expert opinions and learning resources。

Author: Hongyan Gui

Books & Articles

Research Achievements: Yuanzhuo Project Course Series

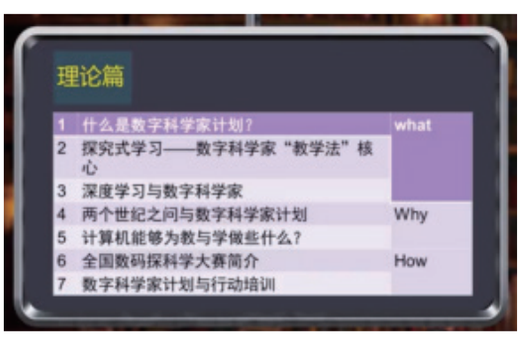
Youth Artificial Intelligence Innovation Initiative, also known as Yuanzhuo Project, was initiated by Beijing Normal University, co-hosted by National Engineering Laboratory for Cyberlearning and Intelligent Technology and other research institutes and corporations. The initiative aims to cultivate the teenagers' abilities to solve problems by using original algorithm, to improve the coordination of industry, university and research, to apply the achievements of AI corporation to education, and to make China become the center of AI innovation in the world.

Courses by Famous Teachers of Yuanzhuo Project

Five Minutes to Learn Algorithm (Xiaoru Wang)

The course teaches the algorithm by telling familiar stories with logical thinking, vivid language and amazing ideas.

Digital Scientist Teaching Method (Chengjie Mao)

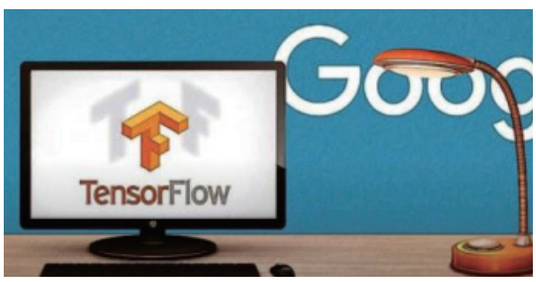


The course series demonstrate the digital scientist teaching method from the perspective of theories, methods, courses and technologies.

Course for Python Examination (First Level) (Jin Xiang)

The course is made for Python Examination (First Level) of Chinese Institute of Electronics. It is suitable for children and adults who have never learned python.

Deep Learning Based on TensorFlow（Rongxiao Cai）



The course introduces Deep Learning based on TensorFlow. Combined with TensorFlow, it provides a clearer introduction and algorithm implementation.

Play Together: AI Microlecture （Qigang Lv）

The course is an introduction to AI programming and it is suitable for three-grade primary school students and older. In this course, students can learn translation, broadcasting, voice recognition, video detection, text recognition, picture recognition, and simple machine learning. Students can have a basic understanding of AI. The course requires a personal computer with camera, microphone and installed Kittenblock, a programming software based on scratch3.

Programming Thinking Enlightenment Course（Xiangling Zhang）

Programming thinking enlightenment course only requires simple tools like building blocks. The course is about programming thinking instead of specific programming language. It focuses on cultivating the programming thinking of kids.

Yuanzhuo Project Corporation Course

Yuanzhuo Project launched a series of courses, including 15 questions of AI provided by NetDragon Hua Yu Education Technology Co., Ltd., high-quality programming introductory experience courses for children provided by Codemao, Scratch programming enlightenment and 21-day to learn programming provided by Jima Edu, artificial intelligence enlightenment provided by SenseTime, the AI courses for children provided by Class100, intelligent humanoid robot programming class from Lejurobot, cross-scientific unplugged programming class from UBITECH, drone simulation breakthrough course from Sichuangyouxue, Paracraft 3D animation and programming course for children provided by Tadfook, Python programming: AI introduction course from Feiruiao, Teenage Programming: Visual Intelligence, Predictive Intelligence, Scientific Drawing Course from Curiosity Programming, Love Bear Series AI online course from Intelligent Future, AI course for primary school from Tencent Education and courses for secondary school computer production training.

Yuanzhuo Project Free Online Live Courses

Disrupted classes, undisrupted learning. Yuanzhuo Project gathers a group of high-quality free live courses provided by teachers across the country. Professor Lei Fan brought us ten lectures about the artificial intelligent algorithm. The lectures include the well-known algorithm in the field of artificial intelligence and machine learning, combined with high school information technology curriculum standards and computational thinking. The lectures are suitable for teachers and students who have a foundation in computer and math. From Feb. 22nd to Mar. 28th, National Engineering Laboratory for Cyberlearning and Intelligent Technology and Smart Learning Institute of Beijing Normal University provided free live courses about artificial intelligent algorithm and programming thinking enlightenment for students, parents and teachers. The Post Doctor from Beijing Normal University Xiangling Zhang brought 5 live courses about programming thinking enlightenment from Feb. 23rd, discussing how to cultivate kids' programming thinking in an interesting way with parents. The lectures are suitable for kids and parents to watch together, and they are also suitable for teachers who teach programming to young children.

Handbook for COVID-19 Prevention (multi-language)

The Smart Learning Institute of Beijing Normal Beijing Normal University (SLIBNU) and the Arab League Educational, Cultural and Scientific Organization (ALECSO) released Handbook for COVID-19 Prevention (multi-language series) (available in Chinese, English, Arabic, Korean, German, French, Spanish, Japanese, Persian and Urdu) to help people, especially international students in China and people in other countries, to have a basic understanding of the novel coronavirus and prevent themselves from the virus.

China Education Daily | Ronghuai Huang: Grasp Key Factors, Promote Online Education

China Education Daily published Professor Ronghuai Huang's article "Grasp Key Factors, Promote Online Education," providing a reference for conducting large-scale online education during the pandemic prevention and control period and the transition period after the pandemic.

Method: The foundation of education informationalization guarantees the application of large-scale online education.

Firstly, inter-departmental coordination ensures a reliable network, guarantees live streaming, VOD and downloading of learning resources.

Secondly, provide high-quality educational resources in various ways, so that teachers can choose appropriate resources according to needs.

Thirdly, regions and schools strengthen the training for teachers and guide them to conduct online teaching.

Fourthly, teachers learn to choose appropriate platforms and tools to teach online in multiple ways.

Question: Confront the difficulties and needs in conducting online education.

Firstly, the network congestion can occur when a large number of teachers and students try to get resources by live steaming, VOD or downloading.

Secondly, it is difficult to meet the needs of every school and teacher because of the structural shortage of high-quality educational resources in this special time.

Thirdly, some teachers do not have sufficient online education technical skills to meet the requirement of the unexpected large-scale online education.

Fourthly, teachers and students are separated in different places in online education. The adaptability, self-learning ability and self-discipline of students are important factors which will affects the results.

Suggestions: Network, resources, platforms, services and research should be put together to promote online education.

Firstly, enhance inter-departmental and inter-regional coordination mechanisms, develop broadband and infrastructure, start to design and demonstrate the national network for education.

Secondly, gather resources and tools from society, let the national platform and internet education enterprises play a role.

Thirdly, organize education instruction committee and professional organizations to provide guidance and support for primary and middle school teachers to conduct online education.

Fourthly, carry out social experimental research on "internet + education" and AI education application, guide and conduct online education scientifically.

Fifthly, publicize typical application and experience of online education and tell stories about online teaching and learning.


信息化 03

抓住关键要素 有效推进在线学习

研精覃思 春天如约"云上"

如何认识和促进学生的主动学习

Exclusive Interview with Academicians

Jie Chen: How does AI promote innovation and development of universities' discipline construction?

Academician Jie Chen puts forward many valuable suggestions on the origins of AI development, the impact of discipline construction in higher education, the specific cases of university practices from the perspective of AI and discipline construction. He says: Today's AI has exceeded the research boundary of information science itself. It will empower traditional disciplines, accelerate the merging of different disciplines, open the boundaries of various disciplines further, derive new disciplines growth points, and promote the innovation of interdisciplinary knowledge, forming interdisciplinary and coordinated development of multiple disciplines. He pays attention to the cultivation of AI talents. Universities establish AI schools and research institutes and set up AI majors. He suggests that the characteristics of AI should be combined, the needs of artificial intelligence talents should be emphasized, and the basic frontier research of AI should be stressed, the empowerment of AI for other disciplines should be highlighted. Learning from the experience of the United States and other developed countries, combining with Tongji University's AI discipline construction, he proposes a preliminary "artificial intelligence +" discipline construction practice path.

Authors: Sanfa Cai, Qian Wang, Yang Shen

Qinping Zhao: VR + AI Can become an ultimate educational technology

Academician Qinping Zhao comes up with many valuable suggestions in terms of the connotation of virtual reality and AI technology, the combination of virtual reality and AI technology, the application of virtual reality in education, the realization path of technology and the development trend in the future. He says, with the development of technology, the 3I characteristics of VR have evolved into 4I, the combination of VR and AI can become an ultimate educational technology. The smart learning environment constructed by VR should be based on participants' IT skills. It has characteristics of experience, interactivity, credibility and evaluability. Academician ZHAO also combines the elements of teaching and learning, proposes 10 points for the application and research of VR+ education to break through. Meanwhile, he calls on researchers to explore the ethical issues of VR education and ethical regulations on industry, policymakers and education administrators.

Authors: Yang Shen, Xing Lu, Haijun Zeng

Jianping Wu: National network for education will promote China's education informationization to a new level

Academician Jianping Wu has introduced the core technology of the Internet and the course of the development of China's Education and Research Network (CERNET). The groundbreaking innovations in key technologies of IPv6 by Academician Wu's team have made CERNET a pioneer of the world's Internet construction: CERNET has become the largest academic network in the world. Academician Wu has also concerned about the application of "Internet + education". Based on the current status of Internet education, Academician Wu has discussed the necessity of building National Network for Education (N2E) from the aspects of bridging the digital divide, promoting education equity and ensuring the healthy growth of teenagers. In addition, he has also defined the concept and connotation of the proposed National Network for Education, and analyzed the basic framework of the construction of National Network for Education and the potential transformative impacts on educational management. He has indicated that, National Network for Education will provide fast, stable, green and safe education services, and facilitate the deployment of various emerging technologies in education as a supporting platform for smart education. Thus, it will play a positive role in the construction of educational resources and educational reform. In the future, the National Network for Education will become an intelligent information infrastructure that serves as the platform for the whole chain of "teaching, learning, management, evaluation and testing", which will promote China's education towards higher-quality and balanced development.

Authors: Yang Shen, Yang Tian, Haijun Zeng

Academic Papers

Research on the Core Elements of Running a Huge Scale of Cyber-learning: A Case Study of “Disrupted Class, Undisrupted Learning” Supported Effectively by Online Education

Ronghuai Huang, Muhua Zhang, Yang Shen, Yang Tian, Haijun Zeng

Delivering the large-scale online education to hundreds of millions of students nationwide during the epidemic prevention and control period is unprecedented in history. In the face of various difficulties encountered in the online teaching of various schools at all levels during the prevention and control of the new coronavirus epidemic, this study first synthesizes the expert views of the webinars and the implementation, difficulties, experiences and recommendations of front-line education by principals, teachers and directors. Then from the perspective of super-large scale Internet education organization, this study discusses how online education can effectively support "Disrupted Class, Undisrupted Learning" according to seven elements: smooth communication platform, appropriate digital resources, convenient learning tools, diverse learning styles, flexible teaching organization, effective support services, and close collaboration among government, schools and enterprise. This study aims to provide theoretical basis for the government and schools at all levels to formulate relevant policies and guidelines, provide operational guidelines for teachers and students to conduct online teaching, and provide ideas and methods for enterprises, families and society to participate in and support online teaching as well.

Opening up Development Path of Educational Technology with Chinese Characteristics in New Era

Yunwu Wang, Ronghuai Huang, Zihan Peng, Yao Zhang, Yanxin Li

The development of educational technology in the new era is full of uncertainties. It is an urgent and important issue to choose the way for the future development of educational technology. The development of educational technology in China in the past century can be divided into three stages. We must deeply grasp the basic laws of the development of educational technology and choose the right development path of educational technology. The future development of educational technology must adhere to the development road of socialist educational technology with Chinese characteristics, cultivate outstanding and top-notch talents urgently needed for socialist modernization, persist in serving the strategic needs of the country, establish a comprehensive outlook of educational technology, speed up the construction of a theoretical system of educational technology with Chinese characteristics, and accelerate the subversive innovation in educational technology.

Functional Analysis Framework and Case Study of Educational Robot Products

Bojun Gao, Jingjing Xu, Jing Du, Ronghuai Huang

Educational robot has the characteristics of teaching applicability, openness, scalability and human-computer interaction friendliness, which has great potential in optimizing teaching and learning, while its function analysis is still not systematic. Therefore, a functional analysis framework of educational robot products, which included four dimensions of expression action, perceptual input, robot intelligence and social interaction was proposed from the perspective of user experience. Based on this, 40 educational robot products at home and abroad were evaluated and analyzed. In addition, combining the factors of teaching applicability and technology maturity, this paper also puts forward suggestions for the future research and development of educational robot products in China from the perspectives of promoting anthropomorphic development, enhancing perceptual intelligence, focusing on human intelligence, and realizing cultural interaction, and it is expected to provide reference for learning support services based on educational robot.

Requirements Analysis and Function Design of Educational Robot

Yunwu Wang, Ronghuai Huang, Zihan Peng, Yao Zhang, Yanxin Li

Based on the demand as the starting point, this paper adopted the method of questionnaire investigation and literature research, from the perspective of the user and research to analyse the demand of education robot: from the perspective of user, mainly summarizes the roles of education roborts required by three types of people inlcluding students (including elementary school, middle school students and college students), teachers (including early childhood teachers, primary school teachers, secondary school teachers) and parents; from the perspective of research, the characteristics of educational robot application requirements are analyzed from five aspects: STEAM education, treatment of physical and mental disabilities, second language learning, socialized education, and subject education. On this basis, the paper puts forward the key points that should be paid attention to in the functional design of educational robot, in order to promote the functional perfection and innovative application of educational robot, and promote educational robot to better serve education and teaching.

The Design and Key Problems Analysis of Educational Robot

Yanyan Li, Xin Li, Junxiu Wang

Educational robots have the characteristics of teaching applicability, openness, scalability and friendliness of human-computer interaction. They have great potential in optimizing teaching and learning. However, the current functional analysis of educational robots is still not systematic. To this end, from the perspective of user's experience, the article proposes a functional analysis framework of educational robots products including facial expressions, perceptual input, robot intelligence, and social interaction. The paper evaluates and analyzes 40 educational robot products on this basis. It also combines teaching applicability and technological maturity, proposes suggestions for the future research and development of educational robot products in China from the perspective of promoting anthropomorphic development, enhancing perceptual intelligence, focusing on real human intelligence, and realizing cultural interaction. The paper is expected to be a reference to learning support services based on educational robots.

Exclusive Interview

Huanhuan WANG

Purdue University, Ph.D.
Beijing Normal University, Post Doctor

Q Since you joined SLIBNU, you have participated in the construction and development of many ICT-based systems in the institute. Can you share with us the main results and your research experience?

A I joined SLIBNU in Sept. 2019 as a postdoctoral fellow instructed by Professor Ronghua HUANG and started working in Smart Learning Institute of Beijing Normal University. Our team majors in Smart Education and I mainly focus on constructing the Comparative Educational Research in Intelligent Era, the Compute Engine of Smart Learning Environment, the Framework of Teaching Behavior Computing, and the research on future education focusing on smart education.

Over the past year, I wrote 6 academic papers, the Handbook on Facilitating Flexible Learning, the Report on The Development of Smart Education (Abstract) and two chapters of a textbook. With the help of the institution, I participated in international conferences like 2019 AECT, 2019 EITT, 2020 ICALT. Various research projects have broadened my academic perspective. The institute performs as a platform, helping me cooperate with experts from all over the world. The first job of mine when I joined the institution was cooperating with the professor from Hangzhou Normal University, Junfeng Yang, on the project Comparative Educational Research in Intelligent Era. The project impressed me for it was the first time for me to devise a new research method. The most projects I have been in followed existing research method. This project was an innovation at a higher level, helping me to learn how to invent a brand-new research method. Furthermore, the first half of 2020 was also unforgettable. Due to the outbreak of COVID-19, many countries and regions had to suspend classes. Because of the initiative launched by China entitled “disrupted classes, undisrupted learning”, we researched flexible education during COVID-19 outbreak. By having webinars with teachers, academic-related staff and officers of the school, and analyzing the data from the internet, we published the first edition of the Handbook of Facilitating Flexible Learning in a very short time. The handbook became the derivation of many similar handbook and academic papers. This series of studies supported domestic and international education practice, started a trend in this area, and had a massive and positive impact.

A In such a short time, it is marvelous to participate in so many big projects. Is there any experience that you wish to share with us?

Q The work in the institution is intense. I cannot accomplish my work without efficient communication and collaboration between

my teammates. When I got the Ph.D., the priority for me was finding an institution and a team who major in online personalized learning which was the same as my research direction, then devoted myself into the work and got improved. Therefore, I shared my future work plan with administrative staff Dingwen Zhang and Professor Ronghuai Huang once I started my work in the institution. This kind of pre-work ensured the consistency between my research and my goal. For instance, the project Compute Engine and Teaching Behavior Computing, which I conducted, can also realize my previous study - the technology mechanism of feedback on personalized learning, so this consistency helped me dedicate myself into the research and feel meaningful.

A more important factor was teamwork. Many works of mine were instructed by Professor Huang. In the beginning, I was a little bit shy. Then I gradually found out that behind his strict face, Professor Huang is actually kind and patient. Even though the professor is really busy with his work, he always instructs us carefully. These new experiences help me work more smoothly and more efficient. Also, thanks to the participation of fellows from the institute, many works can finally be put into practice. The report of the compute engine could not be presented at ICALT conference without Wei Zhou's technical skills, Jing Du's friendly communication style and Zhenyu's help. Xing Lu's solid theoretical foundation and Bojun's communication skills played a significant role in collaboration with the experts from the World Bank so that we could complete the textbook on the transformation of digital learning. Without their help, we can achieve nothing. Respecting and trusting fellows with a tolerant heart can provoke their enthusiasm for learning new things and joining the research.

Q **In your next research and work, what is your focus?**

A Focusing on smart education, here are the two directions I plan to research in the future:

One is innovating new theories and methods of smart education with the team such as the framework of the compute engine of the smart learning environment. We will try to perfect the theoretical basis and test the effectiveness of the framework by collecting the data in practice. We proposed the methodology on the comparative educational research in intelligent era and we are going to propose the research method on the educational social experiment. We plan to demonstrate these two pieces of research and figure out how to put them into practice. Constructing the new educational methodology in intelligent era is important and also interesting. I hope I can explore further.

The other one is further exploring the compute problems in education. We have made a preliminary exploration of teaching behaviour computing and proposed a model of it. Based on these theoretical foundations, I am interested in focusing on this direction, such as analyzing the text data of teaching and learning through natural language processing and generating technology, understanding the subtext of it, and supporting teaching intervention. This kind of natural language processing technology can also be used to process inferior text data and to explore the subtext and rules behind the large-scale text data by the understanding of natural language. For now, the educational social experimental research project provides a large amount of text data, and the institute also cooperates with a team which is proficient in natural language processing. It can be a great platform for the research.