Institute of Chinese Studies
ICS
OCCASIONAL PAPER
No. 75
July 2021

COVID-19 and Online Learning in Rural China: Challenges, Impact, and Opportunities

Prateeksha Tiwari

Institute of Chinese Studies,
B-371 (3rd floor), Chittaranjan Park,
Kalkaji, New Delhi - 110 019
Landline Telephone: +91-11-4056 4823 Fax: +91-11-23830728
Email: info@icsin.org
Website: www.icsin.org

ABOUT THE AUTHOR

Prateeksha Tiwari is pursuing Masters in Philosophy (M. Phil) in China Studies at the Centre for East Asian Studies, School of International Studies, Jawaharlal Nehru University. She was also State Bank of India (SBI) Youth for India (YFI) Fellow at the SBI Foundation and completed 13-month long rural fellowship in Wankaner block, Gujarat. She was a Research Assistant (RA) at the Institute of Chinese Studies (ICS) where she assisted Dr. Jabin Jacob, Assistant Director, with his research work in data collection, analysis, and report writing. As part of her work at ICS, she did a comparative study between China's New Education Policy and India's Right to Education Act and their impact on rural education; handled the institute's website and backend. Started and edited a weekly newsletter and organized weekly Wednesday Seminars and 9th All India Conference of China Studies. She was also a Research Assistant (RA) under Prof. Ravni Thakur, Associate Professor, Department of East Asian Studies, Delhi University. She was a Guest Lecturer at the Delhi University (DU)

Contact: tiwari.prateeksha@gmail.com

ABSTRACT

In response to the COVID-19 pandemic, schools across China remained shut after the Spring Festival break and 200 million school children started new semester in February online. To minimise the learning losses due to institutional closure in students, the Ministry of Education (MoE) launched '停课不停学' (*tíngkè bù tíngxué*), roughly translated as "Suspending Classes Without Stopping Learning" ensuring uninterrupted curriculum-based instruction using networked cloud classrooms, online lectures, and pre-recorded videos sent via educational television.

Many issues surfaced in carrying out distance curriculum-based instruction and student engagement in rural China. Problems experienced by students, parents, and teachers lent to a deficient educational experience for majority of rural children during the school closure period. This has serious implications for students' lifetime educational attainment and income potential as well as nation's human capital accumulation. In this paper, I will discuss the policy response formation and educational experience in rural areas during 停课不停学. I will also discuss its impact as well as the challenges and opportunities which have implications for the future of rural education informatisation.

KEYWORDS

Online learning, COVID-19, rural China, education informatisation, ICT4E, educational technologies

Introduction

The COVID-19 pandemic has upended the 'normal' way of life and ICTs have been employed in various ways, both standalone and in combination with traditional methods, to allow partial continuation of social and economic activities (ITU 2020). ICTs have played an indispensable role in global emergency responses to the outbreak of COVID-19 pandemic since March 2020 (WHO 2020, FAO 2020). The overnight global shift to a mode of school education relying heavily on the use of ICTs has catapulted the subject of educational technologies and ICT4E into public and policy discussion (United Nations 2020).

As COVID-19 spread rapidly across China in the early months of 2020, the Ministry of Education (MoE) indefinitely postponed reopening of educational institutions after the Spring Festival break as part of disease containment and social distancing protocols (MoE 2020e). On 17 February 2020, 270 million students started the spring semester from the confines of their home over various online and distance education platforms under the MoE's emergency crisis mitigation response 停课不停学 (*tíngkè bù tíngxué*), roughly translated as "Suspending Classes Without Stopping Learning" (MoE 2020a). The educational experiences of students in this duration varied greatly depending upon their geographical location, school type, and socioeconomic background (Gulati 2020). These educational experiences are expected to adversely affect the existing educational divides, particularly the rural-urban educational divide, which will further have lasting consequences on human capital development in China.

This paper will discuss China's emergency education response to COVID-19 pandemic looking at policymaking and pedagogic considerations involved in its formulation. It will be followed by the educational experience in rural areas during this period. The impact of school disruption on the future of education informatisation will be discussed. The paper will conclude with the challenges and opportunities which arise from this experience as these have important implications for the future of rural education informatisation in China.

Significance of the study

This discussion on the rural educational experience during 停课不停学 is significant for two reasons. Firstly, the COVID-19 pandemic has had a more disruptive impact on education in China's rural communities than their urban counterparts (Rozelle, Rahimi, et al. 2020). While most schools in cities switched to online learning with relative ease, rural children grappled with inadequate access to devices and network connectivity, lower tech literacy, and insufficient family support (Caixing Global 2020). By various estimates, as many as 11% of rural students did not participate in any form of learning activities during the school closure period (DRC 2020). In an impact forecast of school closure and interrupted learning over period of multiple months, the World Bank predicts in school students significant long-term reduction in learning achievements, loss in earnings over lifetime, psychological complications, and possibility of dropping out from formal education (The World Bank 2020). Considering the fact that nearly three quarters of approximately 150 million primary and junior high school students in China are enrolled in rural schools (MoE 2019), the educational experiences and challenges of rural children during the school closure period demand immediate attention.

Secondly, a related aspect of rural China's educational experience during the school closure period is the *en masse* shift to online (and distance) learning platforms. China has been promoting informatisation as key to rural education development for nearly two decades now (Bajpai, Biberman and Ye 2019). While the MoE has claimed satisfactory results of initial stages of informatisation (Lei 2018), the emergency education response to COVID-19 has brought into sharp relief the problems and challenges associated with the task of rural education informatisation in China. COVID-19 has also shown that educational systems are susceptible to external shocks (The World Bank 2020), and it also highlights the importance of informatisation in mitigating future shocks.

China's emergency education response during covid-19: policy and pedagogical considerations

As a response to the outbreak of COVID-19, the Chinese government issued multiple emergency measures including social distancing, lockdown of cities, shutting down of schools among others (Liu, Yue and Tchounwou 2020). The expected duration of school closure could not be estimated at the time of announcement given the rapidly emergent nature of the situation (MoE 2020d). The Ministry of Education (MoE) was thus tasked with developing a pedagogically robust and flexible emergency education response to minimise students' learning losses. As a result, an emergency policy measure called 停课不停学, roughly translated as 'Suspending Classes

Without Stopping Learning' was introduced to switch 'normal' school activities into large-scale distance teaching while academic institutions were closed (MoE 2020b).The aim of this emergency response was to "integrate national and local school teaching resources, provide rich, diverse, selectable, high-quality online resources for all students across the country, and support teachers' online teaching and children's online learning" (MoE 2020b).

The crux of the 停课不停学 strategy were flexibility in content delivery, teaching methods, and assessment. In the 'Notice on Several Issues concerning Targeted Teacher Work during the Pandemic Prevention and Control' issued on 10 February 2020, the MoE instructed academic institutions to marshal teachers to carry out online teaching as per the existing local conditions. In a 28 February 2020 notice 'Notice on Coordinating the Prevention and Control of COVID-19 Pandemic in Education System and Education Reform and Development', the MoE declared the pandemic as a test of the education system to respond to a serious public health emergency and ICTs were tasked with major responsibility (MoE 2020e). However, the specifics regarding policy implementation and its downstream consequences remained vague. Several issues were heatedly debated, e.g., whether online education could replace traditional offline education, if pandemic education should be taught as one of the subjects, whether students' home environments were conducive for full-time education (Cheng 2020).

The MoE responded to these queries by declaring 停课不停学 as broad-based learning during the unprecedented period of school closure and home confinement, with online teaching as one of the many methods available (MoE 2020d). It was undertaken as an emergency crisis mitigation response; hence it was necessary that education during this period and post-reopening remain consistent and interconnected. The specifics of its implementation were left to local governments and school administrators to decide based on local conditions (MoE 2020d). So, while the government launched a national online cloud learning platform to be used in areas with high-speed internet connectivity, it simultaneously prepared to broadcast primary school classes for rural areas on China Education Television Channel 4. The cloud learning platform offered 169 lessons covering twelve subjects for junior and senior high school students in the first week (CGTN 2020). The Ministry of Industry and Information Technology also roped in telecom operators China Mobile, China Unicom, and China Telecom and large tech companies Baidu, Alibaba, and Huawei to support the e-learning platform with 7,000 servers and 90 terabytes of bandwidth (SCMP 2020). In rural schools, online education was largely carried out over mobile

phones and taped online resources due to limited physical infrastructure and teacher capability (China Daily 2020).

Apart from technical arrangements, the MoE took a holistic approach to students' education and overall wellness during the school closure period. It issued strict guidelines on maximum number of hours per day of online/distance learning classes, optimum design of online content, and pairing off-screen educational and recreational activities with on-screen activities (MoE 2020c, IITE 2020). It also issued advisories on ensuring physical fitness stressing on eye health, psychological well-being, and avoiding social isolation (Wang, et al. 2020).

Rural experience during 停课不停学: immediate issues and the wider context of education informatisation

As early as 2019, Ministry of Industry and Information Technology reported that 98 percent of China's villages had fibre optic and 4G network connectivity (Xinhua 2019). According to latest government statistics, there were 255 million rural internet users, making up 28.2% of the country's total internet users (CNNIC 2020). In April 2018, MoE proclaimed that the task of nation's education informatisation had entered the stage '2.0' after the National Education Informatisation Plan (2011-2020) completed its task of laying the infrastructural foundation of informatisation early in 2017 (Lei 2018), and the current and future task was modernising the nation's education with cutting-edge technology such as artificial intelligence, blockchain, and robotics (MoE 2018).

These claims rang hollow in the face of media coverage on education in rural China during the 停课不停学 period which exposed grim reality – students climbed to mountaintops for network coverage (Sina 2020), sat in sub-zero temperatures outside village committee offices for using internet (NYT 2020) or shared one mobile phone member with many family members also wanting to use the device for classes or entertainment (Yang 2020). Many households cannot afford to buy multiple devices, even though most of the world's cheapest smartphones as well as the fanciest ones are made in China (NYT, 2020). Schools in some areas with very poor connectivity used public announcement systems to broadcast daily lectures (ifeng 2020a). In more extreme cases, a 58-year-old teacher walked thirty kilometres every day to visit students at their homes to teach and collect homework (Xinhua 2020b). A teacher stuck in a village in Hubei at the peak of pandemic live streamed her classes from the roof of her home because the internet

connectivity was better there (ifeng 2020b). A 13-year-old student in Dengzhou attempted suicide because she could not attend live streamed lectures since her family had only one smartphone which was used by her sister to attend classes (Xinjingbao 2020). Two thousand students in a Western rural county could not attend classes because of lack of computers, smartphones, and internet (Xinhua 2020a).

Statistics echo this reality. According to a report in April by the government-linked Development Research Center (DRC) of the State Council, 11.5% of rural children did not participate in online learning activities regularly and on schedule as compared to only 1.41% of children in county-level cities which is the country's lowest urban category (DRC 2020). A Stanford Rural Education Action Programme study revealed that 1 out of 8 rural students (compared with 1 out of 20 urban students) did not receive any form of distance education at all, and 2 out of 10 rural students (compared with 1 out of 10 urban students) had no interaction with their teachers (Li, et al. 2020). Significant percentage of rural students lacked a table, an isolated room or a quiet study environment, and basic learning tools (Li, et al. 2020, 7).

A few issues recur in the qualitative and quantitative descriptions of the state of rural education during this period, which are:

1. **Lack of adequate and appropriate equipment.** It was observed that many households in rural China owned only one device (for guardians' use to make phone calls) and often without internet connection. The situation is further complicated in families where there is more than one school-going child. Rural parents also perceive purchasing computers and internet as investments with no returns (L. Zhang 2020). While several corporate enterprises offered their online learning apps and platforms for free to rural students, most teachers' and students' devices were not suited to run these and relied mostly on WeChat and QQ (Global Times 2020).

2. **Poor network coverage.** While government statistics indicate otherwise, many teachers and students faced multiple issues with network and internet connectivity leading to interrupted classes and inability to carry out synchronous, interactive sessions (Z. Xie 2020).

3. **Low participation.** Participation in online-based classes suffered because of poor technical know-how on the parts of parents and teachers who struggled with setup and

troubleshooting. Students who viewed the lectures pre-recorded in urban schools on television found them difficult to follow. Students who had to work at farms and at home also could not attend the classes (Z. Xie 2020).

4. **Low engagement.** Many parents (both urban and rural) reported that they thought their children were distracted while engaging in online (and distance) learning classes. In situations where classes were held in broadcast or asynchronous modes, students' learning suffered due to lack of interaction with teachers for remedial and extra help (Xia 2020).

5. **Teachers' lack of preparedness.** While it is understood that online and distance learning in 停课不停学 was an emergency measure, the teachers' lack of preparedness for teaching using digital media comes as surprising considering the fact that MoE has been conducting large-scale rural teacher training and professional development programmes with special focus on ICT capacity building for over a decade now (Bajpai, Biberman and Ye 2019). Rural teachers were found struggling with finding and/or creating suitable instructional material and handling equipment (H. Zhang 2020).

Short-term and long-term impact of school closure on rural education and society

Sudden school closure and shift to home-based distance education is expected to have several short-term and long-term impacts on rural education and society, such as:

1. **Short-term and long-term losses in learning**. A study conducted by the Stanford REAP points at several short-term effects of school closedown and subsequent distance education on rural children (Li, et al. 2020). One inevitable outcome is the students' learning loss due to uneven nature of home-based distance education. Teachers reported significant learning loss in students resulting from slower rate of covering the curriculum and falling behind in maths lessons. They were also reported to learn significantly less than the previous cohort of sixth standard students even after the schools reopened (Li, et al. 2020). Parents also reported that the quality of home-based education was unsatisfactory and that school closure due to COVID-19 negatively impacted their children's learning (Li, et al. 2020). These losses are particularly concerning as a study by the World Bank projects these could translate into a loss of 0.6 years of schooling adjusted for quality thus reducing the number of effective years of schooling (from 7.9 years to 7.3 years) an average child receives (The World Bank 2020, iii). This is expected

to lead to a loss of up to $872 in the lifetime earnings of this cohort of children (iii). Literature (non-COVID) indicates that strenuous external circumstances associated with loss of livelihoods and social disruption such as in times of pandemics, natural disasters, climate disasters have severe effects on school achievement and enrolment (Belot and Webbink 2010, Meyers and Thomasson 2017, Dercon and Porter 2014, Thamtanajit 2020). Adolescent girls and other marginalised groups such as ethnic and religious minorities and peoples in rural areas are among the most vulnerable groups, some of whom may be put to work and may never return to school (The World Bank 2020, 19).

2. **Adverse effect on children's mental health.** Another major concern stemming from extended home confinement during the period of school closure is the psychological well-being of the rural students, in particular the left-behind children. Preliminary literature indicates that prolonged home confinement, reduced or no interaction with peers, and lack of routine schedule has adverse effects on the mental health of children, adolescents, and adults (Xie, Xue and Zhou 2020, Loades, Chatburn and Higson-Sweeney 2020). MoE's directives lay special emphasis on children's mental health during this period by issuing guidelines for caregivers, reducing the burden of schoolwork for younger children, postponing major examinations, and establishing helplines (Liu, Zhang and Yang 2020, NHC 2020). While no study targeted at the mental health of rural children was conducted at the point of writing this article, other studies done on Chinese primary school children indicate increased stress, anxiety, and suicidal tendency (Zhang, Zhang and Fang 2020). It can be argued that similar effects will be noted among rural children, whose mental and psychological well-being was already demonstrated to be precarious in previous studies (Sun, et al. 2015, He, et al. 2012).

3. **Financial cost to parents.** Rural parents bore significant costs in maintaining their children's home-based distance education during this period. School closure and lockdowns roughly coincided with the period of Spring Festival, which meant that many rural parents were "locked" in their villages (Z. Xie 2020). REAP survey data shows that 74% of rural students had to purchase an extra device to continue studies during the school closure period, of which most households purchased a new smartphone or TV (Li, et al. 2020, 8). Rural parents also bore the opportunity cost of helping their children with schoolwork as they spent on a daily average 38 minutes assisting children with their lessons and 11 minutes troubleshooting problems with the devices. This additional expense is a matter of concern, as another multi-provincial study conducted by Stanford

REAP researchers indicates while both rural and urban households reported decrease in household incomes during lockdowns enforced for pandemic control, rural households suffered in losses up to two months of annual income (Wang, et al. 2020). This loss is significant as latest statistics show that on average rural household income is 37% of the income of urban households (NBSC 2019). This reduction in income resulted in decreased spending on food, education, and health, which may have long-term effects on the academic performance of rural students (Rozelle, Rahimi, et al. 2020).

4. **Exacerbating the rural-urban educational divide.** The variation in quality of distance education between urban and rural areas and across rural areas, its perceived efficacy, and projected long-term impact may also exacerbate the existing educational divide across regions in China (Golley and Kong 2018). Excessive reliance on technology to facilitate education may not only create new economic and social pressures on poor households (Rozelle, Rahimi, et al. 2020, Xinjingbao 2020) but may also prove ineffective and decrease students' motivation for learning (Bettinger, et al. 2020).

One positive impact of the educational experience from the 停课不停学 period stands out—the potential shift in narrative on ICT4E from a 'good-to-have alternative' to a serious mission on guaranteeing steadiness of formal educational system (Ribeiro 2020). During school closure period, large share of responsibility of ensuring school continuity was tasked to ICTs. It can be expected to cause modification in the attitudes of school administrators, teachers, students, and families toward ICTs as serious media of learning. Policymakers will also be more inclined toward deploying ICTs for preventing public education against external shocks (United Nations 2020).

Whither rural education informatisation?

The experiences and issues encountered during the school closure due to the outbreak of COVID-19 must be placed within the larger context of rural education informatisation in China. Modernisation of rural education is a key agenda of the CCP's economic development and poverty alleviation programme (Zhang, Li and Xue 2015). The MoE has increasingly relied on modern ICTs to solve complex historical and structural issues facing rural education (Schulte 2015) undertaking large-scale rural education informatisation programmes in the last two decades starting in 2006 with the Modern Distance Education Project for the Rural Schools (MDEPRS), National Education Informatisation Plan (2011-2020) in 2011, and Education

Informatisation 2.0 Action Plan in 2018 (Bajpai, Biberman and Ye 2019). As rates of Gross Domestic Product continue to decline year after year, improving the quality of rural education is crucial for China's continued economic development (Rozelle and Hell 2020), and informatisation is key to development and modernisation of rural education (MoE 2010, Global Times 2014).

In a critical review of rural educational experience during 停课不停学 period, Yan (2020) calls the predicament of rural online learning not just as a contingent problem during the pandemic but as a shortcoming of the rural education informatisation project. Yan discusses how the most frequently faced issues by teachers and students in rural China during this period – poor network connectivity, inability to use hardware and educational software, inability to create local context-relevant digital educational materials – could be avoided had the previous informatisation efforts been carried out with sincerity and in full. This assertion is concerning, as MoE seems to have moved the agenda of education informatisation further in another direction with Informatisation 2.0 focusing on new frontier technologies to reconceptualise education, while the tasks of National Education Informatisation Plan (2011-2020) – laying down basic physical infrastructure and building teachers' capacity (MoE 2012) – clearly remain unfulfilled.

Yan's review emphasises that informatisation of rural education must be carried out keeping in mind particular conditions and needs of rural areas and accordingly puts forth some suggestions. These include focusing more on building 5G networks instead of broadband connectivity, avoiding indiscriminate borrowing of readymade online resources into rural classrooms, avoiding simple digitisation of existing educational resources to pass off for online learning materials, and empowering rural teachers to use ICTs for developing context-specific pedagogies and learning materials (57). Much research exists to support the claim that teachers are central to success of ICT4E programmes (Becker 2000, Mumtaz 2006, Sang, et al. 2009), and they can be encouraged to integrate ICTs in their teaching practice through communities of practice for in-service teachers (Qiao 2018) and through ICT-oriented programmes for preservice teachers (Wang, Tigelaar and Admiraal 2019).Yan's recommendations also emphasise the fact that ICTs are not readymade solutions for educational problems and should be deployed in conjunction with other educational inputs for best results (UNESCO 2020).

Challenges and opportunities

It is widely understood that 停课不停学 was undertaken as an emergency response to a health crisis hence its implementation and results cannot be assessed by standard yardsticks for regular distance and online education projects (MoE 2020d, Cheng 2020). However, it does bring to attention challenges and opportunities for the project of rural education modernisation and informatisation. These can also serve as important considerations for future educational planning and reform in China.

Apart from the most pressing challenge of inadequacy of physical infrastructure, a few challenges for the course of informatisation of rural education emerge from these issues, which are as follows:

1. **Ineffective teacher training.** It is apparent that despite MoE's claims of training approximately ten million primary and secondary school teachers and 100,000 school principals in ICT use and application until 2018 (Lei 2018), rural educators were unprepared for using ICTs and digital learning materials to carry out teaching activities. This raises questions about the quality of teacher training programmes which MoE conducts for building teachers' ICT capacities. Through a large-scale randomised evaluation of teacher professional development programme in China, Loyalka (2019) finds that training and other interventions failed to improve teacher and student outcomes after one year, mostly because teachers found the content of training programme overly theoretical and removed from the reality of their practice. Alternate approaches to teacher persuasion toward integrating ICTs in practice have been found effective, such as developing communities of practice and ICT-oriented curriculum for trainee teachers (Qiao 2018, Wang, Tigelaar and Admiraal 2019). Future efforts of rural education informatisation should consider adopting these approaches.

2. **Developing suitable pedagogies and educational material.** Effective distance education with a significant online learning component is "rooted in adequate planning and instruction design with several theories and models" (UNESCO 2020). Its goal is to remove conventional barriers of access, availability, and time to ensure learning opportunities for all (Gaskell 2015, Selwyn 2016). Self-directed learners create their learning environments to suit their learning needs with properly developed curriculum material and instructor guidance (Liyanagunawardena, Adams and Williams 2013). Therefore, mere digitisation of existing educational resources without accounting for specifics requirements of instructional and curricular design for online-based distance

learning (or online learning in general) cannot pass for effective education (UNESCO 2020), and future efforts at developing ICT-based pedagogies and educational materials must be theoretically informed.

3. **Inculcating self-regulation in students.** Self-regulation as a part of students' autonomous learning has been an important issue in China's recent curricular reforms (Zhou and Li 2020). Autonomous learners are expected to be able to "set learning goals, determine learning content and progress, choose learning techniques, monitor self-learning processes, and perform self-assessment" (Holec 1981). Effective autonomous learning also requires support of optimum learning conditions and strategies. While many scholars have proposed various teaching strategies for promoting autonomous learning in students, Zhou and Li argue that "due to differences in national and educational conditions, the common autonomous learning modes abroad are not entirely suitable for China" (Zhou and Li 2020) These "national and educational conditions" are characterised by exam-centredness, rote learning, micro-managed learning input, and a nationwide, unified curriculum under tight ideological control (Schulte 2018). For China's learner-centric educational reforms to succeed, it may have consider reforming its university examination system (Schulte 2018, 31).

4. **Building technical competence.** Technical competence is an important prerequisite for effective ICT-based teaching, learning, and management. It refers to "the set of knowledge, skills, attitudes, abilities, strategies and awareness that is required when using ICT and digital media to perform tasks; solve problems; communicate; manage information" (Ferrari, Punie and Redecker 2012). Clearly, it is a specialised set of skills required to work effectively with ICTs and it is more than know-how of operating devices and software. As previously discussed, during this period, rural Chinese students, their guardians, and schoolteachers struggled with technology handling and operation. This is a matter of concern, as students and instructors with low technical competence are more likely to fall behind in an online learning based educational programme (Adedoyin and Soykan 2020).

In response to the immediate issues faced by rural teachers and students, local governments and corporate enterprises came forth with solutions and assistance. In some places, local governments purchased and distributed digital equipment among the extremely needy, relaxed the requirements for assessment, and provided remedial support to students after school reopening

(Ning and Corcoran 2020, Zhang, et al. 2020). Tech corporations offered free access to their learning platforms and resources and built new infrastructure in places with poor connectivity (Ma 2020). Some opportunities which arise from this experience are listed as follows,

1. Media coverage and academic literature on the subject have brought wide attention to the state of rural education in China exposing shortcomings in previous efforts of educational reform and informatisation. Practical and policy recommendations have come in, which MoE can consider and incorporate in future efforts.
2. There is scope for greater participation of enterprises in national informatisation efforts. While tech enterprises have been official stakeholders in informatisation projects previously, the State can create incentive mechanisms to involve them in infrastructure development in rural areas and research as part of corporate social responsibility.
3. The need for context-specific and customisable ICT-based educational solutions has been highlighted which can be taken up for development by research institutes and teacher colleges.

Conclusion

The MoE planned and implemented 停课不停学 ("Suspending Classes Without Stopping Learning") as crisis mitigation emergency response to ensure continuation of educational activities during the school closure period. It was conceptualised as a broad-based learning programme with a heavy emphasis on ICTs to prevent children's educational loss while they were supposed to stay at home indefinitely. Considering the wide variation in infrastructure endowment across the nation, MoE also made alternative provisions such as preparing content for delivery through low-tech platforms (WeChat, QQ) and satellite television-based lectures.

While China proclaimed to complete the task of basic infrastructure building and teacher capacity building in 2017, the educational experiences in rural areas during this period exposed various shortcomings in previous informatisation efforts. The deficient educational experience of rural children is expected to have serious short-term and long-term impact on their educational attainment and nation's human capital development. This experience also has given rise to a set of challenges and opportunities which have serious implications for the future of China's rural education modernisation and informatisation endeavour.

References

Adedoyin, Olasile, and Emrah Soykan. 2020. "Covid-19 pandemic and online learning: the challenges and opportunities." *Interactive Learning Environments.*

Bajpai, Nirupam, John Biberman, and Yip Yingxin Ye. 2019. "ICT for Education: Lessons from China." *Centre for Sustainable Development.* https://csd.columbia.edu/research-projects/towards-new-indian-model-ict-led-growth-and-development.

Becker, Henry. 2000. "Findings from the Teaching, Learning, and Computing Survey." *EPAA/AAPE*. doi:10.14507/epaa.v8n51.2000.

Belot, M., and D. Webbink. 2010. "Do Teacher Strikes Harm Educational Attainment of Students?" *LABOUR* 391-406.

Bettinger, Eric, Robert Fairlie, Anastasia Kapuza, Elena Kardanova, Prashant Loyalka, and Andrey Zakharov. 2020. "Does EdTech Substitute for Traditional Learning? Experimental Estimates of the Educational Production Function." *National Bureau of Economic Research.* http://www.nber.org/papers/w26967.

Caixing Global. 2020. "How Coronavirus Could Deepen China's Gap Between Urban and Rural Education." *Caixing Global.* June 3. https://www.caixinglobal.com/2020-06-03/class-struggles-how-the-coronavirus-deepened-chinas-education-gap-101562590.html.

CGTN. 2020. *China launches national cloud learning platform as teaching goes online amid epidemic.* February 21. https://news.cgtn.com/news/2020-02-19/China-launches-national-cloud-learning-platform-for-online-education-Ods9XruOR2/index.html.

Cheng, Xiaoqiao. 2020. "Challenges of "School's Out, But Class's On" to School Education: Practical Exploration of Chinese Schools during the COVID-19 Pandemic." *Sci Insigt Edu Front* 501-516.

China Daily. 2020. *How to bridge the digital divide in online education?* May 8. https://covid-19.chinadaily.com.cn/a/202005/08/WS5eb5049ca310a8b241154449.html.

—. 2020. "Why did China close all schools?" *China Daily.* April 7. https://covid-19.chinadaily.com.cn/a/202004/07/WS5e8c1e64a310aeaeeed507e6.html.

CNNIC. 2020. "CNNIC 发布第 45 次《中国互联网络发展状况统计报告》." *中国互联网络信息中心*. April 28. http://www.cnnic.cn/gywm/xwzx/rdxw/20172017_7057/202004/t20200427_70973.htm.

Cuban, Larry. 2013. "No End to Magical Thinking When It Comes to High-Tech Schooling." *Larry Cuban on School Reform and Classroom Practice.* March 18. https://larrycuban.wordpress.com/2013/03/18/no-end-to-magical-thinking-when-it-comes-to-high-tech-schooling/.

Dercon, S., and C. Porter. 2014. "Live Aid Revisited: Long-Term Impacts of the 1984 Ethiopian Famine on Children." *Journal of the European Economic Association* 927-948.

DRC. 2020. "新冠肺炎疫情期间欠发达地区学生信息化学习情况调查." *国务院发展研究中心*. April 7. https://www.chinathinktanks.org.cn/content/detail/id/vdue1m37.

FAO. 2020. *Digital technology applications in COVID-19 response plans.* Accessed January 15, 2021. http://www.fao.org/land-water/overview/covid19/digital/en/.

Ferrari, Anusca, Yves Punie, and Christine Redecker. 2012. "Understanding Digital Competence in the 21st Century: An Analysis of Current Frameworks." *EC-TEL 2012.* Heidelberg: Springer-Verlag Berlin. 79-92.

Gaskell, Anne. 2015. "Open Distance Learning." In *Encyclopedia of Educational Philosophy and Theory*, 1-6.

Global Times. 2020. "DingTalk receives mixed response to online lessons during epidemic." *Global Times.* February 5. https://www.globaltimes.cn/content/1178646.shtml.

—. 2014. "Xi heads Internet security group." *Global Times.* February 27. https://www.globaltimes.cn/content/845238.shtml.

Golley, Jane, and Sherry Kong. 2018. "Inequality of Opportunity in China's Educational Outcomes." *China Economic Review* 116-128.

He, Bingyan, Jingyi Fan, Huijuan Li, Yanjun Wang, Joshua Williams, and Kaishing Wong. 2012. "Depression risk of 'left-behind children' in rural China." *Psychiatry Research* 306-312.

Holec, Henri. 1981. "Autonomy and Foreign Language Learning." *Autonomy and Self-Directed Learning: present fields of application.* Strasbourg: Council of Europe.

ifeng. 2020a. "大喇叭开始广播啦！这个山村小学的“空中课堂”有点不一样！." *中国经济网.* February 26. https://baijiahao.baidu.com/s?id=1659602788681128683&wfr=spider&for=pc.

—. 2020b. "爬屋顶开直播！广东一教师滞留湖北农村，每天穿越火线上网课." *ifeng.* March 4. http://finance.ifeng.com/c/7uXeIjo3xIi.

IITE. 2020. "Guidance on Active Learning at Home during Educational Disruption: Promoting student’s self-regulation skills in COVID-19 outbreak." *UNESCO Institute for Information Technologies in Education* . March 21. Accessed January 15, 2021. https://iite.unesco.org/publications/guidance-on-active-learning-at-home-during-educational-disruption/.

ITU. 2020. "ITU News Magazine - Tech v COVID-19: Managing the crisis." *International Telecommunication Union.* Accessed January 15, 2021. https://www.itu.int/en/myitu/Publications/2020/09/09/13/13/ITU-News-Magazine-No3-2020.

Kanthor, Rebecca. 2020. "After stressful transition to online learning, many in China are 'begging' to go back to school." *The World from PRX*. March 24. https://www.pri.org/stories/2020-03-24/after-stressful-transition-online-learning-many-china-are-begging-go-back-school.

Kologrivaya, Ekaterina, and Emma Shleifer. 2020. "Quarantined: China’s Online Education in the Pandemic." *The Diplomat.* March 26. https://thediplomat.com/2020/03/quarantined-chinas-online-education-in-the-pandemic/.

Lei, Chaozi. 2018. "教育信息化:从 1.0 走向 2.0——新时代我国教育信息化发展的走向与思路." *华东师范大学学报* 98-103. doi:10.16382/j.cnki.1000-5560.2018.01.012.

Li, Guirong, Xinwu Zhang, Delei Liu, Xue Hao, Derek Hu, Oliver Lee, Chris Rilling, et al. 2020. "Education and EdTech during COVID-19: Evidence from a Large-Scale Survey during School Closures in China." *Stanford REAP.* August.

Liu, Coco. 2020. "Online learning widens China's education gap, study warns." *Nikkei Asia.* April 22. https://asia.nikkei.com/Business/Education/Online-learning-widens-China-s-education-gap-study-warns.

Liu, S., L. Zhang, and C. Yang. 2020. "Online mental health services in China during the COVID-19 outbreak." *Lancet Psychiatry.*

Liu, Wei, Xiao Guang Yue, and Paul Tchounwou. 2020. "Response to the COVID-19 Epidemic: The ChineseExperience and Implications for Other Countries." *Int. J. Environ. Res. Public Health.*

Liyanagunawardena, Tharindu, Andrew Adams, and Shirley Williams. 2013. "MOOCs: A Systematic Study of the Published Literature 2008-2012." *IRRODL* 203-227.

Loades, ME, E Chatburn, and N Higson-Sweeney. 2020. "Rapid systematic review: the impact of social isolation and loneliness on the mental health of children and adolescents in the context of COVID-19." *J Am Acad Child Adolesc Psychiatry.*

Loyalka, Prashant, Anna Popova, Guirong Li, and Zhaolei Shi. 2019. "Does Teacher Training Actually Work? Evidence from a Large-Scale Randomized Evaluation of a National Teacher Training Program." *American Economic Journal: Applied Economics* 128-154.

Ma, Si. 2020. *China Mobile launches new plan to help rural schools.* October 22. http://global.chinadaily.com.cn/a/202010/22/WS5f9140cba31024ad0ba80580.html.

Meyers, Keith, and Melissa Thomasson. 2017. "Paralyzed by Panic: Measuring the Effect of School Closures during the 1916 Polio Pandemic on Educational Attainment." *NBER Working Paper.* https://www.nber.org/papers/w23890.pdf.

MoE. 2010. "China: National Plan for Medium- and Long-Term Education Reform and Development: 2020, issued in 2010." *UNESCO Institute for Lifelong Learning.* July. Accessed January 15, 2021. https://uil.unesco.org/document/china-national-plan-medium-and-long-term-education-reform-and-development-2020-issued-2010.

—. 2020d. *Notice on 'School's Out, But Class's On' Work Arrangements during the Postponed Period.* February 12. www.moe.gov.cn.

—. 2020e. *Notice on Coordinating the Prevention and Control of COVID-19 Pandemic in Education System and Education Reform and Development.* February 28. www.moe.gov.cn.

—. 2020c. *Notice on Several Issues concerning Targeted Teacher Work during the Pandemic Prevention and Control.* February 10. www.moe.gov.cn.

—. 2019. "Overview of educational achievements in China in 2018." *Ministry of Education.* October 22. http://en.moe.gov.cn/documents/reports/201910/t20191022_404775.html.

—. 2012. "教育信息化十年发展规划 (2011-2020 年)." *中华人民共和国教育部.* March 30. http://old.moe.gov.cn//publicfiles/business/htmlfiles/moe/s3342/201203/xxgk_133322.html.

—. 2020a. "教育部：利用网络平台，“停课不停学”." *中国政府网.* January 30. http://www.gov.cn/xinwen/2020-01/30/content_5473048.htm.

—. 2018. "教育部关于印发《教育信息化 2.0 行动计划》的通知." *中华人民共和国教育部.* April 18. http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html.

—. 2012. "教育部关于印发《教育信息化十年发展规划（2011-2020 年）》的通知." *中华人民共和国教育部.* March 13. http://old.moe.gov.cn//publicfiles/business/htmlfiles/moe/s3342/201203/xxgk_133322.html.

—. 2020b. "教育部应对新型冠状病毒感染肺炎疫情工作领导小组办公室关于在疫情防控期间做好普通高等学校在线教学组织与管理工作的指导意见." *中华人民共和国教育部.* February 4. http://www.moe.gov.cn/srcsite/A08/s7056/202002/t20200205_418138.html.

—. 2020c. *教育部提醒：各地原计划正式开学前不要提前开始新学期课程网上教学.* February 4. Accessed January 15, 2021. http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202002/t20200204_417734.html.

Mumtaz, Shazia. 2006. "Factors affecting teachers' use of information and communications technology: a review of the literature." *Journal of Information Technology for Teacher Education* 319-342.

NBSC. 2019. "National Statistics Yearbook 2019." *National Bureau of Statistics of the People’s Republic of China.* www.stats.gov.cn/tjsj/ndsj/2019.

NHC. 2020. "National Health Commission of the People's Republic of China Guideline for psychological crisis intervention during 2019-nCoV." *National Health Commission.* January 26. http://www.nhc.gov.cn/jkj/s3577/202001/6adc08b966594253b2b791be5c3b9467.shtml.

Ning, Annie, and Betsy Corcoran. 2020. *How China's Schools Are Getting Through COVID-19.* April 20. https://www.edsurge.com/news/2020-04-20-how-china-s-schools-are-getting-through-covid-19.

NYT. 2020. "In Coronavirus Fight, China's Vulnerable Fall Through the Cracks." *The New York Times.* March 9. https://www.nytimes.com/2020/03/09/business/china-coronavirus-disabilities-wealth-gap.html.

—. 2020. "上不了网课的孩子：疫情暴露中国教育的数字鸿沟." *纽约时报中文网.* March 18. https://cn.nytimes.com/technology/20200318/china-schools-coronavirus/.

Qiao, Xuefeng. 2018. "“Internet Plus” Integration in Rural Education in China." In *Digital Transformation and Innovation in Chinese Education*, edited by Hiller Spires, 289-306. IGI Global. doi:10.4018/978-1-5225-2924-8.ch016.

Ribeiro, Ricky. 2020. "How university faculty embraced the remote learning shift." *EdTech Magazine.* April 14. https://edtechmagazine.com/higher/article/2020/04/how-university-faculty-embraced-remote-learning-shift.

Rozelle, Scott, and Natalie Hell. 2020. *Invisible China: How the Urban-Rural Divide Threatens China's Rise.* Chicago: The University of Chicago Press.

Rozelle, Scott, Heather Rahimi, Huan Wang, and Eve Dill. 2020. "Lockdowns are protecting China's rural families from COVID-19, but the economic burden is heavy." In *COVID-19 and global food security*, edited by Johan Swinnen and John McDermott. International Food Policy Research Institute (IFPRI). https://www.ifpri.org/publication/lockdowns-are-protecting-chinas-rural-families-covid-19-economic-burden-heavy.

Sang, Guoyuan, Martin Valcke, Johan Van Braak, and Jo Tondeur. 2009. "Factors support or prevent teachers from integrating ICT into classroom teaching: A Chinese perspective." *Proceedings of the 17th International Conference on Computers in Education.* Hong Kong: Asia-Pacific Society for Computers in Education. 808-815.

Schulte, Barbara. 2015. "(Dis)Empowering Technologies: ICT for Education (ICT4E) in China, Past and Present." *Chinese Journal of Communication* 59-77.

Schulte, Barbara. 2018. "Digital technologies for education in China: National ambitions meet local realities." In *Serve the people. Innovation and IT in China's development agenda*, edited by Stepan Matthias and Jane Duckett, 31-38. Mercator Institute for China Studies.

SCMP. 2020. *With schools remaining closed during coronavirus outbreak, China launches national remote learning platforms* . February 17. https://www.scmp.com/tech/policy/article/3050940/schools-remaining-closed-during-coronavirus-outbreak-china-launches.

Selwyn, Neil. 2016. *Is Technology Good for Education?* Polity.

Sina. 2020. "学生爬山找信号上网课续:基站建成不用再上山了." *Sina.* March 19. http://baby.sina.com.cn/edu/2020-03-19/doc-iimxyqwa1756009.shtml.

Sun, Xiaojun, Yuan Tian, Yongxin Zhang, Xiaochun Xie, Melissa Heath, and Zongkui Zhou. 2015. "Psychological development and educational problems of left-behind children in rural China." *School Psychology International* 227-252.

Thamtanajit, K. 2020. "The Impacts Of Natural Disaster On Student Achievement: Evidence From Severe Floods in Thailand." *The Journal of Developing Areas.*

The World Bank. 2020. "Simulating the Potential Impacts of the COVID-19 School Closures on Schooling and Learning Outcomes: A set of Global Estimates." *The World Bank.* June 18. https://www.worldbank.org/en/topic/education/publication/simulating-potential-impacts-of-covid-19-school-closures-learning-outcomes-a-set-of-global-estimates.

UNESCO. 2020. "Education for the most marginalised post-COVID-19: Guidance for governments on the use of digital technologies in education ACT ONE (OF THREE): EXECUTIVE SUMMARY." *EdTech Hub.* November. Accessed January 15, 2021. file:///C:/Users/tiwar/AppData/Local/Temp/Education-for-the-most-marginalised-UNESCO.pdf#Education-for-the-most-marginalised-Report-Act-1-v7.indd%3A%3A0.

United Nations. 2020. "Policy Brief: Education during COVID-19 and beyond." *United Nations Sustainable Development Group.* August. Accessed January 15, 2021. https://unsdg.un.org/resources/policy-brief-education-during-covid-19-and-beyond.

Wang, Guanghai, Yunting Zhang, Jin Zhao, Jun Zhang, and Jiang Fan. 2020. "Mitigate the effects of home confinement on children during the COVID-19 outbreak." *Correspondence* 945-947.

Wang, Huan, Sarah-Eve Dill, Huan Zhou, Yue Ma, Hao Xue, Prashant Loyalka, Sean Sylvia, Matthew Boswell, Jason Lin, and Scott Rozelle. 2020. "Off the Epicenter: COVID-19 Quarantine Controls and Employment, Education, and Health Impacts in Rural Communities." *Stanford REAP*. October. https://fsi.stanford.edu/publication/epicenter-covid-19-quarantine-controls-and-employment-education-and-health-impacts-rural.

Wang, Jingxian, Dineke Tigelaar, and Wilfried Admiraal. 2019. "Connecting rural schools to quality education: Rural teachers' use of digital educational resources." *Computers in Human Behavior* 68-76.

WHO. 2020. *Digital technology for COVID-19 response.* April 3. Accessed January 15, 2021. https://www.who.int/news/item/03-04-2020-digital-technology-for-covid-19-response.

Xi, Jinping. 2016. "习近平：“看不见的手”和“看得见的手”都要用好." *人民网.* July 26. http://theory.people.com.cn/n1/2017/0608/c40531-29327538.html.

Xia, Lanhua. 2020. "且教且思话网课." *中小学教育.*

Xie, X., Q. Xue, and Y. Zhou. 2020. "Mental health status among children in home confinement during the coronavirus disease 2019 outbreak in Hubei Province, China." *JAMA Pediatr*.

Xie, Zhaoyi. 2020. "“疫情”下农村网课的缺陷." *教学与研究.* https://www.qikanchina.net/thesis/view/4714683.

Xinhua. 2019. "Broadband coverage reaches 98 pct of rural Chinese villages." *Xinhua Net.* August 2. http://www.xinhuanet.com/english/2019-08/02/c_138278435.htm.

—. 2020a. "http://www.xinhuanet.com/comments/2020-03/03/c_1125655518.htm." *Xinhua.* March 3. http://www.xinhuanet.com/comments/2020-03/03/c_1125655518.htm.

—. 2020b. "疫期上网课，这位乡村教师每天步行三十里收送作业." *新华每日电讯.* April 24. http://www.xinhuanet.com//mrdx/2020-04/24/c_139004337.htm.

Xinjingbao. 2020. "河南女孩喝农药自杀经救治已无危险，当地村民发起捐款." *BJ News.* March 3. http://www.bjnews.com.cn/news/2020/03/02/697650.html.

Yan, Luo. 2020. "农村网课窘境待解." *民生周刊* 56-57. https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFD&filename=MSZK2020Z1022.

Yang, Tingting. 2020. "Education Denied." *The World of Chinese.* May 3. https://www.theworldofchinese.com/2020/03/education-denied/.

Zhang, Dandan, Xin Li, and Jinjun Xue. 2015. "Education Inequality between Rural and Urban Areas of the People's Republic of China, Migrants' Children Education, and Some Implications." *Asian Development Review* 196-224. doi:10.1162/ADEV_a_00042.

Zhang, Hong. 2020. "浅谈疫情期间农村学生居家学习." *Sohu.* June 12. https://www.sohu.com/a/401552240_660637.

Zhang, Lei, Dandan Zhang, and Jiao Fang. 2020. "Assessment of Mental Health of Chinese Primary School Students Before and After School Closing and Opening During the COVID-19 Pandemic." *JAMA Network.* September 11. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2770489.

Zhang, Li. 2020. "新冠之殇，网课之痛." *中小学教育.* https://www.qikanchina.net/thesis/view/4803795.

Zhang, Wunong, Yuxin Wang, Lili Yang, and Chuanyi Wang. 2020. "Suspending Classes Without Stopping Learning: China's Education Emergency Management Policy inthe COVID-19 Outbreak." *Journal of Risk and Financial Management* 1-6.

Zhong, Raymond. 2020. "The Coronavirus Exposes Education's Digital Divide." *The New York Times.* March 17. https://www.nytimes.com/2020/03/17/technology/china-schools-coronavirus.html.

Zhou, Longjun, and Chungang Li. 2020. "Can Student Self-Directed Learning Improve Their Academic Performance? Experimental Evidence from the Instruction of Protocol-Guided Learning in China's Elementary and Middle Schools." *SIEF.*

中华人民共和国教育部. 2018. "教育部关于印发《教育信息化 2.0 行动计划》的通知." *中华人民共和国教育部*. April 18. http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html.

ICS OCCASIONAL PAPER *Back Issues*

ICS Occasional Papers showcase ongoing research of ICS faculty and associates on aspects of Chinese and East Asian politics, international relations, economy, society, history and culture.

Issue No/Month	Title	Author
No. 74|June 2021	The 8th Congress of Workers' Party of Korea, Kim Jong-un's Thoughts and Future of North Korea	Kuri Sravan Kumar
No.73| June 2021	An Empirical Analysis of Trade Performance between China and the BRICS	Radha Raghuramapatruni
No.72|May 2021	Trade Irritants and Non-Tariff Measures between China and India	Malini L Tantri, C Nalin Kumar and Varadurga Bhat
No.71|May 2021	Urban Agriculture, Food Security and Sustainable Urban Food Systems in China	Sriram Natrajan
No.70|Apr 2021	Political Mobilization of Women by the CCP	Shruti Jargad

PRINCIPAL SUPPORTERS TO ICS RESEARCH FUND

TATA TRUSTS

MINISTRY OF EXTERNAL AFFAIRS
GOVERNMENT OF INDIA

INDIAN COUNCIL OF
SOCIAL SCIENCE RESEARCH

GARGI AND VIDYA
PRAKASH DUTT FOUNDATION

JAMNALAL BAJAJ
FOUNDATION

PIROJSHA GODREJ FOUNDATION

ICS PUBLICATIONS

ICS ANALYSIS
A short brief on a topic of contemporary interest with policy-related inputs

ICS OCCASIONAL PAPER
Platform for ongoing research of the ICS faculty and associates

ICS MONOGRAPH
Authored by the faculty, also emerging from research projects and international conferences

ICS WORKING PAPER
Draft paper of ongoing research

ICS JOURNAL

In its 57th year, *China Report* is a refereed journal in the field of social sciences and international relations. It welcomes and offers a platform for original research from a multi-disciplinary perspective, in new and emerging areas, by scholars and research students. It seeks to promote analysis and vigorous debate on all aspects of Sino-Indian relations, India-China comparative studies and multilateral and bilateral initiatives and collaborations across Asia.

China Report is brought out by Sage Publications Ltd, New Delhi.

Editor	Sreemati Chakrabarti
Associate Editor	G. Balachandirane
Assistant Editor	Rityusha Mani Tiwari
Book Review Editor	Vijay K Nambiar

INSTITUTE OF CHINESE STUDIES
B-371 (3rd floor), Chittaranjan Park,
Kalkaji, New Delhi - 110 019
Landline Telephone: +91-11-4056 4823

http://www.icsin.org/
info@icsin.org

twitter.com/ics_delhi
facebook.com/icsin.delhi
In.linkedin.com/Icsdelhi
soundcloud.com.ICSIN
youtube.com/ICSWEB
instagram.com/icsdelhi