

From environment to sustainable development: China's strategies for ESD in basic education

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Abstract This paper intends to provide an overview of the reorientation of education in China in the period 1998–2009 with regard to development issues. During this time, the focus has shifted gradually from the environment and health to education for sustainable development. The article centres on highlighting the main interventions and strategies adopted by China's schools to make this reorientation possible, including: the introduction of new visions of sustainable development and project planning; the establishment of organisational mechanisms and capacity-building measures for their implementation in the field; the integration of ESD into teaching and learning processes; the maintenance of an action-research mechanism for innovations; and the sharing of lessons with both the national and the international community in order to make the implementation of ESD more effective.

Keywords Education · Sustainable · Development · ESD · Environment · China · PRC · Basic education

Résumé De l'environnement au développement durable : stratégies d'éducation de base en Chine dans le contexte de l'éducation pour le développement durable (EDD) – Dans cet article, l'auteur présente une vue d'ensemble de la réorientation éducative en Chine entre 1998 et 2009 par rapport aux questions de développement. Au cours de cette période, l'accent est passé progressivement de l'environnement et de la santé à l'éducation pour le développement durable. L'auteur éclaire les principales actions et stratégies adoptées par les écoles chinoises pour réaliser cette réforme, à savoir : l'introduction de nouvelles visions du développement durable et la conception de projets afférents; l'instauration de mécanismes organisationnels et de mesures de renforcement des capacités pour leur application sur le terrain;

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l'intégration de l'EDD dans les processus d'enseignement et d'apprentissage; le maintien d'un mécanisme de recherche-action sur les innovations; et le partage des enseignements tirés avec la communauté tant nationale qu'internationale, en vue de rendre plus efficace la mise en oeuvre de l'EDD.

Zusammenfassung Von Umweltthemen zu nachhaltiger Entwicklung: Chinas Strategien für die Grundbildung im Kontext der ESD (Nachhaltigkeitsbildung) – Dieser Beitrag soll einen Überblick über die Neuorientierung Chinas im Bildungsbereich zwischen 1998 und 2009 unter dem Gesichtspunkt Entwicklung geben. In diesem Zeitraum hat sich der Fokus nach und nach von Umwelt- und Gesundheitsfragen auf das Thema Nachhaltigkeitsbildung verschoben. Im Mittelpunkt des Artikels stehen die wichtigsten Maßnahmen und Strategien chinesischer Schulen, um diese Neuorientierung zu bewerkstelligen, unter anderem: neue Leitvorstellungen für nachhaltige Entwicklung und Projektplanung, der Aufbau von Organisationsmechanismen und die Erweiterung der Kapazitäten, um diese vor Ort umzusetzen; Einbeziehung der ESD in schulisches und außerschulisches Lernen; ein dauerhafter Aktionsforschungs-Mechanismus für Innovationen sowie die landesweite und internationale Auswertung von Unterrichtseinheiten für eine wirksamere Umsetzung der ESD.

Resumen Del medio ambiente al desarrollo sostenible: estrategias de la RP de China para la educación básica en el contexto de la EDS – Con este trabajo, el autor se propone presentar una visión general de la reorientación educacional que ha tenido lugar en la RP de China durante el período de 1998 a 2009 en cuanto a temas de desarrollo. Durante esta época, el énfasis se ha ido desviando del medio ambiente y la educación hacia el desarrollo sostenible. En este artículo, el autor se concentra en realzar las principales intervenciones y estrategias adoptadas por las escuelas de la RP de China que han posibilitado esta reorientación, tales como: introducir nuevas miradas sobre el desarrollo sostenible y la planificación de proyectos; establecer mecanismos organizativos y medidas creadoras de capacidades para su implementación en esta área; integrar la EDS en procesos de enseñanza y aprendizaje; mantener un mecanismo investigación-acción para promover innovaciones; y compartir las lecciones aprendidas tanto con la comunidad nacional como con la comunidad internacional para que la implementación de la EDS sea más efectiva.

Резюме От экологии до устойчивого развития: стратегия Китая для базового образования в контексте образования для устойчивого развития – В данной статье предлагается обзор проблемы переориентации образования в Китае в отношении вопросов развития в период с 1998 по 2009 годы. В этот период акцент постепенно сместился с проблем экологии и здравоохранения на проблему образования для устойчивого развития. Данная статья сосредоточена на выявлении главных стратегий и мер, предпринятых в китайских школах для осуществления такой переориентации, а именно: введение нового

видения устойчивого развития и планирования проектов; создание организационных механизмов и эффективных мер для их реализации на местах; интеграция образования для устойчивого развития в процесс преподавания и обучения; поддержка механизма экспериментальных исследований для инноваций; обмен опытом как на национальном, так и на международном уровнях в целях более эффективной реализации программы образования для устойчивого развития.

Introduction

The notion of education for sustainable development (ESD) has resulted from increasing global awareness of the decisive potential roles that the education system could play in preparing citizens, and the younger generation in particular, for a sustainable future. Following the official request of China's State Council in 1978, environmental protection has been a selective subject in secondary education since the 1990s, and a teachers' guideline on teaching and learning for sustainable development was published 1996 by the People's Education Press, the most authoritative textbook publisher in China.

Promotion of the flagship education project "Environment, Population and Development" (EPD) was initiated in 1998 by the Beijing Academy of Education Sciences (BAES) under the leadership of the Chinese National Commission for UNESCO. From 1998 to 2002, tentative actions were advocated on such critical issues as environment, population, health and development in response to the Chinese national agenda for sustainable development. Initial areas of action included publicity for a new concept of ESD, and information about good practice in environmental education to advocate for school-based pedagogical action to address such issues across the curriculum. Beijing Municipality took the lead, introducing the project with 110 local schools involved in curriculum and pedagogical innovation. The overall EPD mission was to provide youth and children with common knowledge and basic skills about the environment, population and sustainable development, thus promoting their readiness to participate in sustainable development.

The major EPD thrusts were to integrate ESD elements into subjects across the curriculum; to develop local textbook series on environmental protection and sustainable development to be taken as a separate course; to build up relevant approaches and methodologies for effective ESD; and to develop relevant methodologies for teacher training programmes (Shi 2003; Qian 2003). Another nine provinces including Shanghai, Jiangsu, Shandong, Guangdong, Inner Mongolia, Hubei, Hebei and Zhejiang, soon became project partners. Up to 2003 more than 1,000 primary and secondary schools from 14 provinces, autonomous regions and municipalities in China were involved. In light of the UN Decade of Education for Sustainable Development, EPD was renamed ESD and became an innovative project of national significance (Zhang 2003).

Over the past 10 years, China's EPD/ESD endeavours have undergone two stages. During the first stage (1998–2003), the initial school-level intervention

focused on development issues such as environmental protection, health and population growth as well as issues of natural resources, with renewed curriculum content or cross-curriculum teaching and learning activities. Along with the international implementation of the United Nations Decade of Education for Sustainable Development (DESD), since 2003 there has been a rather pragmatic educational reorientation to react constructively to a series of fundamental issues in search for sustainable social and economic development. These include protection of the environment and natural resources, transport, lifestyle and consumer behaviour. More importantly has been the engagement of youths and children in applying ESD values to their daily lives, both on campus and in the community.

In the remaining 5 years of the DESD, the following actions are seen as necessary in China, and serve as starting points for this paper:

1. To conduct an overall evaluation of practice over the past 10 years and to document useful lessons and expertise for effective implementation throughout the education system;
2. To document and disseminate success stories and relevant strategies as part of a training curriculum for capacity-building purposes for professional learning and sharing among ESD actors;
3. To improve implementation performance, particularly at school level to provide leadership for more creative approaches;
4. To expand ESD to higher education, vocational and technical education and adult learning, as a critical component of lifelong learning;
5. To involve government agencies, NGOs and community organisations in a consortium for sustainable implementation of ESD; and,
6. To maintain intensive technical support by professional institutions in planning, staff training, monitoring and dissemination.

The remainder of this paper reviews China's approach to EPD and then ESD, which had the following strategies.

Operational planning and facilitation mechanism

Similar to other Member States, environmental issues were first included in China's school curriculum in 1970s due to recognition of the fact that national development and individual livelihood greatly depend upon the environment and natural resources. However, the introduction of EPD/ESD in China was strongly influenced by increasing international campaigns on environment and sustainable development, particularly with the impact of the UN Conference on Environment and Development in 1992. The Chinese Government also gave official commitment to adopt a long-term national strategy for sustainable development. In this context, the Chinese National Commission for UNESCO entrusted the Beijing Academy of Educational Sciences (BAES) to start a new pilot project for promoting children's awareness of environmental and population problems and engaging them in hands-on learning processes to acquire knowledge and skills for sustainable development.

The general objectives of the proposed pilot project were to develop children’s knowledge and encourage daily behaviour in line with sustainable development; to develop their sense of responsibility and readiness to act positively for the best interests of sustainable development; to reorient the school system to prepare youths and children to act consciously for sustainable development both as individuals and as members of the community. Along with such guidelines, a project framework was drafted. Along with the BAES working team, an operational network was formed with educational leaders at different levels and school clusters, with a cross-cutting coordinating mechanism to maintain implementation.

An efficient organisational structure and operational mechanism are key factors. At the initial stage, EPD was implemented as an independent action research project with voluntary participation among local schools. When more schools became involved from different parts of China, a national project committee was set up to plan and co-ordinate programme activities. Organisational mechanisms were also created through the consortium (Fig. 1).

For effective operation for programme implementation, the following principles were adhered to:

1. To make use of current administrative institutions and appropriate people to assume responsibility for programme execution;
2. To delegate responsibilities and resources among related stakeholders, thus ensuring programme implementation as a shared venture; and
3. To establish a mechanism that is conducive to joint effort in the best interests of schools.

For efficient project operation, the BAES project team has several methods to facilitate progress, including annual planning meetings and progress review meetings; intensive field supervision and monitoring; competitive selection of ESD resource schools; annual awards and incentives for outstanding performance and publicity; and dissemination of good practice via meetings, ESD publications and the internet.

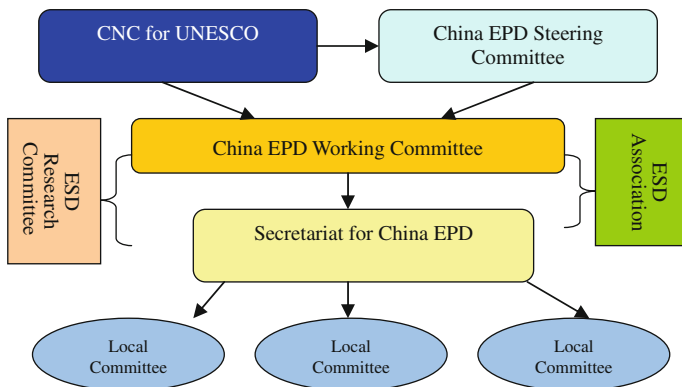


Fig. 1 Organisational structure of ESD in China

Encouraging schools to adapt ESD to on-going curriculum and learning practice

The project schools have been encouraged to relate their ESD efforts closely to the curriculum structure and learning processes, not merely with new content but also with alternative teaching and learning approaches to involve students in developing their approaches and practical skills through thematic enquiry and problem-solving procedures. Local schools found it stimulating to involve students to examining real development issues and lifestyles and their impact on sustainable development.

Beijing No 101 Secondary School was one of the first EPD schools, dating from 1999. The school took advantage of their location as a part of the ancient Yuan Ming Yuan Resort, and made a unique effort to develop a school-based ESD curriculum including environmental protection, international understanding and sustainable lifestyles. With the environmental component, students are encouraged to undertake a series of investigations and research projects on environmental problems and pose possible solutions. They are thus able to understand the interactions between environment and human beings, to develop respect for nature and a responsibility to protect the natural environment. The school encouraged students to understand different cultures and their unique traditions, and thus to develop respect and tolerance for others. The school started curriculum offerings on sustainable lifestyles so that students could make their own value judgments and personal choices. As pedagogical principles, the school has accumulated some relevant methods such as encouraging learners' active engagement in exploring information and experience; integrating ESD-related activities with various subjects across the curriculum; encouraging cooperative problem-solving and sharing learning benefits among peers; and stimulating creativity of both students and teachers (Guo 2009).

ESD in many schools has been implemented as a citizenship education programme. Bai Jia Zhuang Primary School in Beijing developed a curriculum package for citizenship education which presents themes in several modules. These are (1) personal health and safety; (2) basic family and citizen rights and obligations; (3) expected behaviour at home, in school, in the community and in social life; (4) cultural diversity and international understanding; (5) environmental protection and energy-saving behaviour (Zu 2009).

Promoting students' awareness and behaviour to save resources has been a general practice in many schools. Guangzhou Xiehe Secondary School in Guangdong Province became involved in ESD in 2004. The school decided to establish an eco-friendly culture by creating an energy-saving campus. To this end, the school adopted the following interventions:

- promoting energy-saving values and good deeds through school broadcast, bulletin board and school newspaper;
- formulating management regulations and assessment standards for saving electricity and paper;
- applying new technologies to make the most efficient use of school facilities, electricity, paper and water; and
- evaluating performance and publicising the results (Zou et al. 2009).

The use of natural, cultural and intangible cultural heritage as curriculum resources for ESD has also been tried out in many schools. Beijing No 65 Secondary School is located next to the Forbidden City, the world-renowned Royal Palace, the Royal Palace Resort Park as well as numerous ancient trees. With the leadership of the Principal, such resources have been integrated with history, geography, biology, fine arts, and enquiry-based learning programmes. The school also celebrates World Heritage Day every year to understand the value of heritage and arouse a sense of mission to protect it. Based on students' work, multi-media learning materials have been developed for special school heritage curriculum modules (Li 2009).

Apart from school-based curriculum changes, a systematic presentation of sustainable development was compiled and introduced as an officially-approved local textbook in Beijing at primary, lower secondary and upper secondary levels from 2004. It focuses on guiding students' understanding of the notion of sustainable development through investigation of the relationship between people, society and nature, thus fostering values, behaviour and lifestyle in line with sustainable development. The ESD textbook covers the following themes: society, culture, environment and economy. The society theme is made up of topics on life and security, civic rights and duties and harmony in society. Chinese culture and cultural diversity are elements of the culture section. The environment topic includes environmental protection and prevention of pollution and natural disaster. The economy section covers re-cycling and green consumption, rural development and sustainable urbanisation (Shi and Wang 2006).

Capacity-building for effective implementation

Introducing ESD means not only publicising a new vision for development but also advocating alternative thinking for unconventional teaching and learning. As an innovative pilot programme, there was no first-hand experience and most of the literature was not available in Chinese. Orientation training and capacity-building arrangements became highly critical throughout the project cycle.

The EPD/ESD project leaders started a series of training, or rather learning, from the beginning of the project from 1999. The training was provided in several ways. First of all, there has been a well-attended ESD national workshop each year since 1999, with 200–300 project coordinators, principals or resource teachers from the project provinces. Themes have included an introduction to the international background of ESD, its progress in China, successful practice at school level and innovation in ESD teaching and learning. Thus far, ten national workshops have been conducted as an expertise-sharing platform for pragmatic implementation, particularly in teaching and learning practices. Over 2,000 ESD practitioners have attended the workshops.

The second approach has been thematic training programmes at grassroots levels on special subjects. The training has followed the themes outlined in the ESD textbook mentioned earlier.

In order to prepare school principals and teachers for successful ESD activities, special training programmes have been organised. Successful principals and teachers as well as field facilitators can serve as trainers with their project expertise. Since 2007, ESD has become an accredited training programme among Beijing in-service teachers. There have been five ESD staff members who have had access to international training programmes provided by Swedish professional institutions. It has been proved that well-designed and continued training has played a critical role in sharing best practice and fostering new directions. With the training the local ESD practitioners are now well informed and enabled to engage themselves and their schools in a most beneficial manner.

BAES has been organising an ESD series of professional readings, based on case studies and special research monographs. A special ESD in China quarterly journal and a specialised website also give much wider coverage. All these serve practitioners well as non-formal professional reading materials.

Extensive collaboration and involvement

ESD has been implemented as a general cooperative struggle for the common good. Children and youths have been encouraged to participate in ESD in various forms. Apart from their personal engagement in curriculum activities, they participate in an annual speaking contest on certain ESD topics at school level. Successful speakers are recommended to compete at municipal level. They receive awards and their written speeches published.

Students tend to act voluntarily to participate in many community ESD programmes as a way of learning how to shoulder social responsibilities. The National Youth Initiative for Energy-saving and Exhaustion Reduction was a project jointly sponsored by TOYATO, the Chinese Youth League and implemented by BAES. This project started in early 2007 with the participation of 100 schools with voluntary action and massive social publicity for energy-saving and exhaust reduction. 500,000 students joined the project to act on energy-saving principles in their daily lives and set examples for their families and community.

With cooperative sponsorship by the Beijing Municipal Education Commission, the Beijing Environment Protection Foundation and the Beijing Water-saving Office, Coca Cola and BAES launched a special public campaign, "Save a Barrel of Water", which has taken place on World Water Day, 22 March, each year since 2005. Every child who participates is expected to collect a barrel of rainwater or save one barrel from their daily water consumption. In addition, they are expected to work with their parents to work out the best ways to save water. By the end of 2009, the project involved 22 cities in China and over 1,000,000 schoolchildren and their parents.

Research-driven innovative approach

As an innovative pilot project, BAES has been maintaining a facilitative research mechanism to stimulate well-designed interventions at all levels. A useful exercise

has been a collective effort to involve practitioners in action research. The National ESD Working Committee publicises annual guidelines for ESD research. The following lists research topics for ESD in China during 2006–2010.

ESD basic theories

- ESD concepts and characteristics
- SD values
- Relationship between education and SD
- The basic spirit of UNDESD
- Development of ESD.

ESD special action areas

- Strengthening youngsters' awareness and capacity
- Education for peace and human security
- Gender education
- Education of SD behaviour and learning way
- Education for health and lifestyle
- Education for AIDS prevention
- Education against drug and smoking
- Building an energy-saving school campus
- Developing school-based or community-based ESD resources
- Training teachers for effective ESD implementation
- Special ESD programmes for disadvantaged groups.

The selection of the research topics, in a way, gives direction for further investigation, renewed interventions or is an implied request to synthesise the available field experience and draw necessary lessons. Potential applicants often come from the field, including principals and teachers. In practice, such research has served effectively to foster interventions in the field, leading to documentation of empirical studies as a resourceful which can then be disseminated as publications or webpages and shared by practitioners. Over the last 10 years continued EPD/ESD research endeavours have brought about thousands of reports, case studies and hundreds of books, which can be a most enriching literature source to examine China's ESD experiences.

International ESD forum operation

DESD has been agreed among the Member States of the United Nations as an international commitment. China has been very keen to learn from the insights and expertise of international counterparts. With the support of the Chinese National Commission for UNESCO and the Beijing Municipal Education Commission, BAES conducted the first International Forum, *Education for Sustainable Development: Towards the UN Decade on Education for Sustainable Development*, in November 2003. Over 300 delegates from 30 countries or international organisations attended this historic convention. The plenary was addressed by a group of leading scholars. The sessions were well attended with different perspectives on

ESD, including policy and concepts, curriculum and pedagogy, environment and health, information technology, school change, professional development, capacity-building and international cooperation, and the role of youths and children in ESD. Some 400 papers were submitted (BAES 2003). In addition to the sharing of information and expertise, there was a special ESD session conducted independently by the students themselves. Moreover, participants also had the chance to be exposed to local schools and to observe how ESD was implemented at grassroots level. It was indeed a success. There was a general request from participants that such a model should be maintained as a platform for sharing insights and expertise on a regular basis.

Since then, BAES has been holding a biennial international forum. Themes have included “Bridging International Visions with National Actions” (2005); “Innovative Practices for Promoting ESD” (2007); and “Preparing for the Next Half of the ESD Decade” (2009). Benefiting from this constant exchange, China’s ESD become an integral part of the global DESD movement.

During the 2006–2008 period, BAES, sponsored by the Japanese Funds-in-Trust, conducted a special project for promoting ESD in 30 rural schools in Beijing, Inner Mongolia and Hubei Province in cooperation with the Asia and Pacific Centre of Culture for UNESCO (ACCU).

Government decision to integrate ESD into the school curriculum

In light of the DESD framework, and with reference to the previous EPD/ESD expertise accumulated since 1998, the Beijing Municipal Education Commission published *Guidelines for Integrating ESD in Teaching and Learning in Primary and Secondary Schools* in Beijing in December 2007, the first official document on the subject in China. The document reaffirms the nature of ESD as values-based education for intergenerational development, cultural diversity, environment and natural resources, with the aim to enable learners to acquire knowledge, values, behaviour and lifestyles necessary for active participation in sustainable social, cultural, economic and environmental development. Such ESD notions are to be integrated into the teaching and learning processes to prepare youths and children effectively with values and ability for sustainable development.

Students are led to understand the interdependence between man and nature, man and society, men and themselves, and to develop value systems, behaviours and lifestyles conducive to sustainable development.

ESD objectives should be achieved throughout the whole curriculum and all aspects of children’s lives both inside and outside school, including subject teaching and learning, practical work, local curriculum and school-based curriculum, out-of-school programmes, children’s self-directed activities and school cultural activities. Furthermore, heritage education should be organised by using the national, world and intangible cultural heritages to promote Chinese traditional cultural heritage and international understanding.

The Beijing Municipal Education Commission also sets concrete measures for the smooth operation of ESD, which relate to making well-defined plans and

regulations for implementation, undertaking school capacity for ESD intervention, undertaking theoretical enquiries and supervision for field practice, developing resource centres and encouraging extensive cooperation, maintaining accountable quality evaluation and disseminating good practice. Teachers can consult an additional document on the concrete content in each subject in relation to ESD (Beijing Municipal Education Commission 2007). This document has laid down a framework for the integration of ESD across school education. Since its release the document has become an key guideline for ESD implementation in Beijing.

Lessons

Over the last 10 years, education for sustainable development has been widely implemented under the leadership of the Chinese National Commission for UNESCO, with extensive participation of local schools. It has now become a unique education innovation with increasing recognition. The project has also been well recognised by the national leaders.

China's Premier, Wen Jiabao, in his response to recommendations proposed by EPD school principals, made the remark that it is critical to introduce population and environment education programmes in the primary and secondary schools curricula and recommended that such practices should become a part of the on-going school system.

In his meeting with Mr Zhou Ji, Education Minister in 2003, Mr Matsuura, Director-General of UNESCO, highly praised China's EDP as "Flagship Project". Mme Chen Xiaoya, Vice Education Minister, commented on three lessons from ESD in China. First, in linking ESD initiatives with the new Scientific Outlook for Development advocated by the Chinese Central Government (human-centered, well-balanced as well as sustainable development), ESD proves responsive to school conditions. Second, ESD facilitates the current national struggle for quality education. Third, ESD interventions have enhanced the capacity-building of principals and teachers for school improvement and professional development (Chen 2009).

In his review, Du Yue, Deputy Secretary General of the Chinese National Commission for UNESCO, remarked that progress in the Decade of Education for Sustainable Development in China has accomplished three major shifts: from an international to a Chinese concept; from intervention and action research to public policy-making; and from school-based innovation to school-community partnership-building. ESD has become a fine example of successful international cooperation (Du 2008).

In this brief overview of ESD in China over the last 10 years, we have drawn the following lessons:

- ESD represents a future-oriented vision for the sustainable development of the education system itself. Sustainable development is a new development vision for the future that requests the participation of all and that benefits all citizens. The fundamental contribution of education, school education in particular, lies

in its potential to prepare learners for citizenship, that is, awareness and readiness to shoulder responsibility for sustainability. To achieve this vision of a new citizenship, the current education system—in terms of objectives, curriculum, instructional materials, learning processes, academic assessment, teacher competencies and school management—needs to be reoriented. This is how the current education system can contribute to the preparation of a new citizenship for sustainable development.

- ESD calls for innovative and pragmatic action. DESD presents to the education community worldwide not merely a vision, but more a guideline for the systematic promotion of new citizenship. Education for such a new citizenship demands innovative action with a constructive critique of current practice in planning, implementation and, over the long run, improving the operation of the education system. Innovative intervention in different contexts has proved, with ESD practice in China, to be worthwhile efforts to respond to the trend to sustainable development. With the accumulation of successes and failures, the education system may benefit.
- Faced with an economic crisis which has affected all Member States, ESD interventions can help learners, teachers and community members at large to understand sustainable development and modify daily behaviour and lifestyle for sustainable human development. ESD is not a process of learning to know but a process of learning to do, to do now and by all.
- ESD goals cannot be achieved by a single school or even country. It is extremely important to share experience and lessons. Extensive partnership and networking, as well as information-sharing at different levels, in various forms and across cultures are necessary.

With such positive lessons, the author feels necessary to remark that China's practice has been limited by its language barrier. Consequently international insights and expertise is often not captured, and Chinese practitioners still rely very much upon interpretation or translation. The majority of schools, particularly those in disadvantaged contexts, remain unaffected. Another area for improvement lies in the lack of expertise to synthesise available experience and to represent it in a more professional manner to inform practitioners and partners.

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