



PERSPECTIVES

MANUFACTURING CREATIVITY AND MAINTAINING CONTROL

China's schools struggle to balance innovation and safeguard conformity

by Didi Kirsten Tatlow / MERICS Visiting Academic Fellow

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MAIN FINDINGS AND CONCLUSIONS

- **The Chinese state wants citizens to be more creative** in order to establish world class tech companies. However, state policy is utilitarian and focused on innovation, not creativity.
- **Overall, the push appears to be working.** According to the United Nations' Global Innovation Index, in 2018, China entered the top 20 most innovative world economies for the first time.
- **The state does not mandate specific creativity programs or budgets,** leaving teachers largely dependent on their own resources and energy, and local education authorities' interest.
- **There is a wide disparity in resources and interest for creativity education,** according to a survey of more than 80 teachers done by this author in Chengdu, Sichuan Province, and Yiyang, Hunan Province.
- **China's education gap between rich and poor also affects creativity efforts:** As the survey shows, schools in more wealthy regions are better equipped, featuring, for instance, maker spaces, escape game rooms and coding classes.
- **53 percent of the surveyed teachers held the opinion that it would take more than ten years,** even decades, for Chinese students to become more creative.
- **Despite the efforts to boost creativity in schools the Chinese state education system is still informally dubbed a "stuffing-the-duck education",** for the high-pressure nature of learning.
- **Pressure from both teachers and parents and long study hours result in quite a few children losing interest in learning at an early age;** whether this affects their later creativity is unclear and an unstudied area.
- **The survey shows that teachers must straddle a fine line between the needs of the children and the needs of the system.** Only the most highly-motivated teachers pursue creativity education for their students – for many others there is no incentive.

Manufacturing creativity - a challenging task for China's teachers

Results of a survey in schools in Chengdu and Yiyang

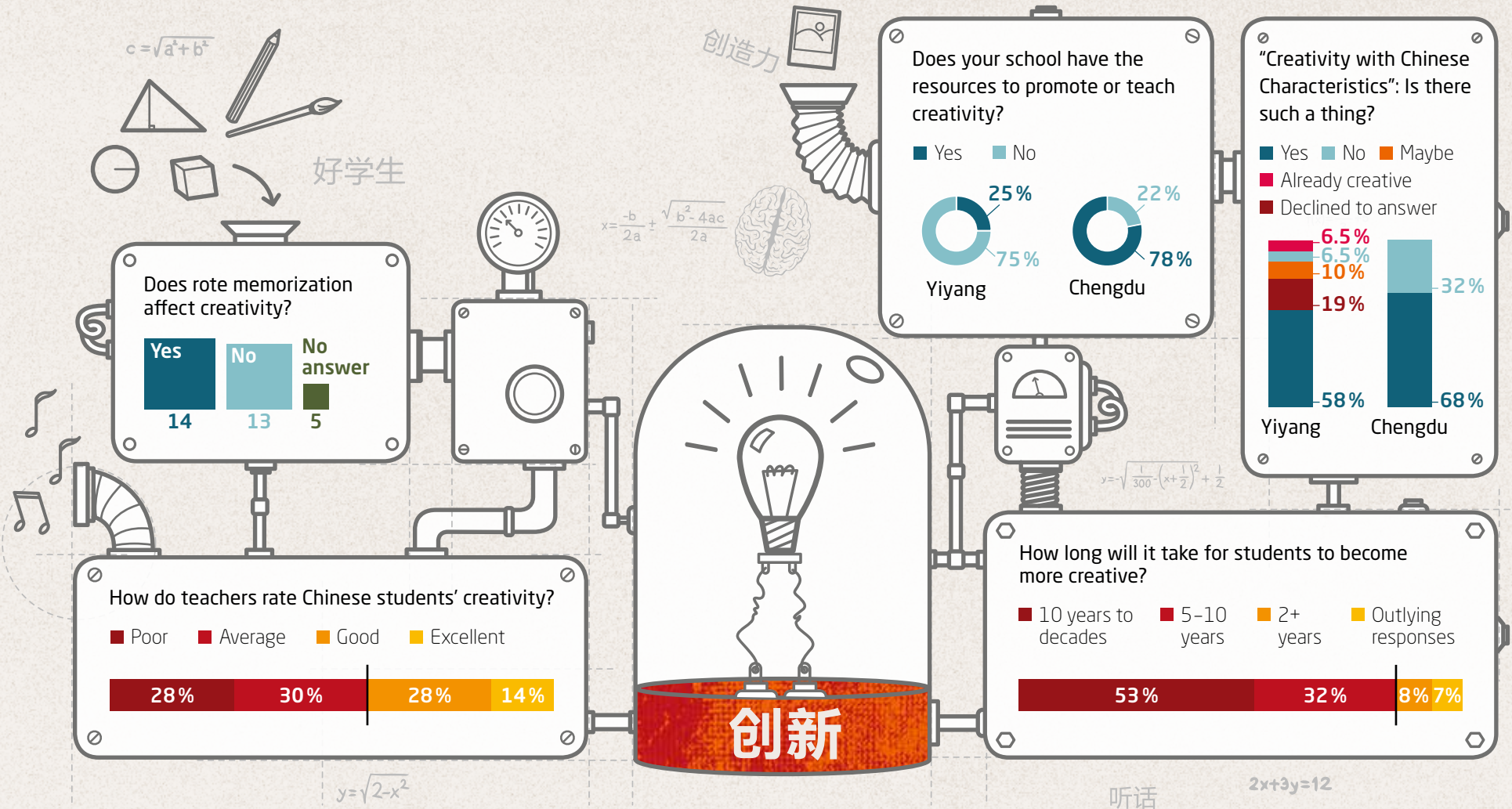


Figure 1
Source: Didi Kirsten Tatlow (survey conducted in a one-year period from May 2017 until June 2018)

1. China's government wants to boost "Double Creativity" in education

The Chinese state wants citizens to be more creative and establish world-leading companies.² The stakes are high: 40 years of low and medium-tech, fast economic growth is slowing. Officials hope innovation-based, high-tech growth will deliver "high-quality development,"³ more jobs for a large population with many university graduates,⁴ and position China to lead the world in and increasingly tech-driven 21st century.⁵

Innovation is state policy, demonstrated by the official slogan, "Mass Entrepreneurship and Innovation" (*Dazhong chuangye, wanzhong chuangxin* 大众创业万众创新). A catchier phrase derived from that, "Double Creativity" (*shuangchuang* 双创), permeates daily life and is seen on red banners, heard in state media and is an educational goal in schools. To achieve it, the state is also investing heavily in education,⁶ especially in the areas of science and technology.⁷

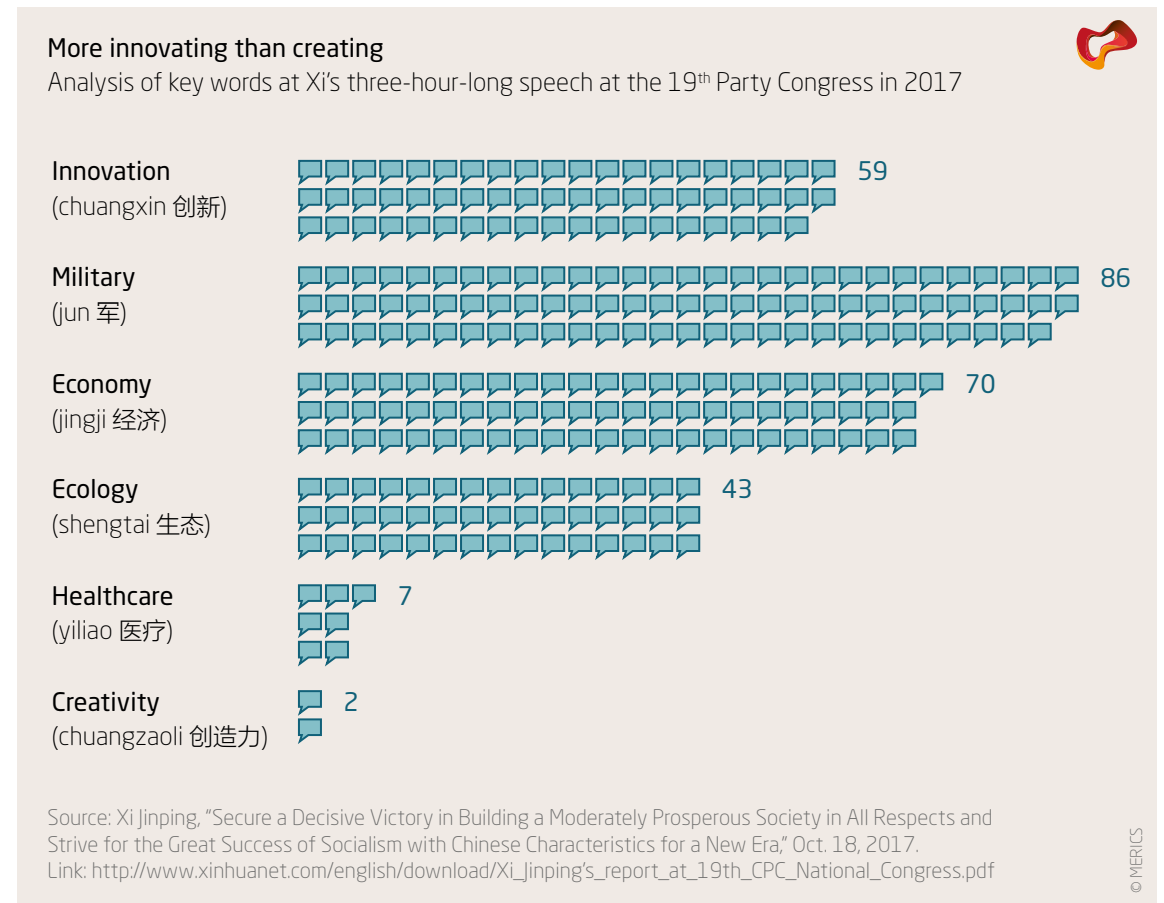
Overall, the push appears to be working.⁸ According to the United Nations' Global Innovation Index, in 2018, China entered the top 20 most innovative world economies for the first time, rising to 17th from 22nd place last year.⁹

Yet even viewing humans narrowly as "homo economicus," thereby ignoring the idea of human flourishing for its own sake, innovation is an outcome, not a starting point, of activity. Its precursors are imagination and creativity; its end product is entrepreneurship.¹⁰ Since no one believes that China's leaders want people to imagine their way out of the political and social status quo, state policy is decidedly utilitarian and focused on innovation, not creativity, as evidenced by official preference for the word "innovation" (*chuangxin* 创新) over "creativity" (*chuangzaoli* 创造力).

This throws up interesting questions around China's quest for more innovation. Can it shortcut the process, bypassing the messy, even chaotic nature of creativity? Does creativity per se challenge orthodoxy and therefore political power? What is, even, creativity? In most cultures, including in China, it's defined as something completely new or something that develops an older idea, taking it further.^{11, 12}

In China today, a balancing act is underway between subjective human empowerment and objective political and economic power. While innovation has certainly taken root and will continue to grow, there will also likely be significant waste of human, financial and institutional resources along the way, due to the political nature of the goal, which proffers resistance as well as opportunity. That goal is to take China's economy, 40 years after the official beginning of reform and opening in 1978, into a new phase of even greater prosperity and power.¹³

Figure 2



2. Creativity vs. conformity: teachers on the ground struggle to reconcile conflicting goals

In order to understand the situation on the ground and how teachers at the forefront of these conflicting demands experience them, this author surveyed 83 teachers at 34 state-run elementary, middle and high schools in two different parts of the country over a year-long period until mid-2018. Additionally, during a field trip to Sichuan province, the author visited three elementary schools to observe and interview students, teachers and principals. One of the schools visited was also one of the schools surveyed.

The educators' responses are broadly representative of the experiences of China's millions of teachers in half a million schools,¹⁴ for the following reasons: interviewees were not self-selected but drawn from controlled groups; the schools were located on different points of the socioeconomic scale giving a mixed picture of education in widely varying socioeconomic contexts.

One of two school districts surveyed was Yiyang in central Hunan province,¹⁵ a non-elite, urban-rural, prefecture-level city. Due to the difficulty of conducting independent surveys in China the Yiyang teachers were interviewed while attending a training course at the School of Marxism at Tsinghua University in Beijing. The Yiyang survey (33 teachers from 33 schools) was drawn from a mix of elementary, middle, high and vocational schools.

The other school district surveyed was Qingyang in western Chengdu,¹⁶ a first-tier city in Sichuan province, which has both elite and migrant worker populations. Due to practical restrictions only one school of three visited in Chengdu was part of the survey there (of 50 elementary teachers). Site visits and interviews were conducted at the other two schools. Some answers have been aggregated and some disaggregated (see appendix on page 9 for more information on the surveyed schools; also see survey results on page 2).

3. The survey: Differing views on students' creativity and resources for creative learning

FINDING 1: RESOURCES AT THE POORER END OF THE SCALE ARE SPARSE

Most teachers at the Yiyang schools said they had few specific programs to boost creativity aside from self-organised science fairs. This is because the state does not mandate specific "creativity education" programs or budgets, though there are calls for this from educationists.¹⁷ Teachers are largely dependent on their own resources and energy, and local education authorities' interest.

Instead the Yiyang teachers said they tried to help students solve "real-life situations" by asking questions, observing, applying situational analysis and logic – low cost methods. Some said they gave students free time to explore and develop or encouraged them to "use their imagination." One respondent noted that her school had no specific creativity education but adopted "the collective special cultural features of local political officials," meaning, schools were dependent on the political and personal educational preferences of local education officials.

In contrast, the Chengdu school surveyed had Escape Rooms¹⁸ (a learning game where students must think up puzzles and solve them in order to leave a room. The idea was developed in Japan in 2007). They had Maker Spaces,¹⁹ Yale Online natural science courses, a project-based learning (PBL) app created by students called "Reading the City"²⁰ about children's favorite local foods and restaurants, a "Panda Culture Creativity" program (a panda bear sanctuary and breeding station are a major feature in Chengdu).²¹ The school also taught children the Python computer programming system.²²

Teachers are largely dependent on their own resources and energy

FINDING 2: THE EFFECT OF MEMORIZATION ON CREATIVITY IS CONTESTED

Chinese is known for being hard to learn. Thousands of characters must be memorized requiring thousands of hours of study. Forgetting and relearning is a life-long process, especially in a digital age when people write less by hand thereby losing motor memory. Does this slow and complex process of imprinting, so different from the short alphabet in western nations, somehow affect creativity (also see survey results on page 2)?

Since the issue of the Chinese language and its impact, if any, on learning processes, is controversial,²³ here's a breakout with some individual responses from teachers to help explain (also see survey results on page 2):

"Memorization adds to students' creativity, and language ability and expression." – **Elementary school teacher**

"Creativity will improve memory, and that will increase efficiency as well as making memorization more interesting to students."
– **Middle school teacher**

"Rigid learning and memorization, having to constantly correct and even reject their work due to mistakes in writing characters, that's a problem for creativity." – **Another middle school teacher**

FINDING 3: OSSIFIED THOUGHT STRUCTURES HAMPER TEACHING OF CREATIVITY

The 83 teachers had strong views on the challenges of China's education system.

For children, these included:

- Having to be a "good student" who must "listen and obey" (*hao xuesheng* 好学生, *tinghua* 听话). This suppressed children's natural creative instincts
- Parents were too pushy and ambitious for their children
- Idolization of authority and ossified thought structures inhibited the creative process and experimentation

- A traditional attitude that "there is one right answer to every question" hampered independent, critical thinking

For teachers, the challenges included:

- Not enough interaction with teachers of other subjects as the school day is highly structured, reducing synergy and interdisciplinary activities
- On the job training (further training) lacking. What was available was not well planned and lacked continuity. Teachers often had to seek it out themselves
- Education budgets were growing overall but not in the specific area of "creativity," leaving teachers to fall back on their own inspiration, ingenuity and energy
- Teachers were overwhelmed with routine tasks and had little free time to think more productively about what they were doing
- Pressure from parents to focus on the core examination curriculum to ensure children did not fall behind

4. Stuffing the duck or thinking outside the box? China's education challenges remain huge

Officials, including Xi Jinping, have called for creativity to be based on Chinese tradition, saying in 2017, "Only by being good at carrying forward our inheritance can we be good at innovating."²⁴ On the ground this idea is represented by a slogan commonly seen on school grounds: "Be a Chinese person with roots" (*zuo yige yougen de zhong-guoren* 做一个有根的中国人).

Creativity is not a new issue in China; this debate has raged since about the 1880s, as the country tried to reform in order to counter the scientific and technological challenge from the west.²⁵ A major round of questioning about the place of creativity in Chinese education in the relatively open, late 1990s, means that the issue is familiar to educators and parents alike.

Today the education system is, officially, both ideological or "patriotic" (*ai-guo jiaoyu* 爱国教育) and "examination-oriented" (*yingshi jiaoyu* 应试教育).

Creativity is not a new issue in China; this debate has raged since about the 1880s

Twice-yearly examinations begin for children age six in first grade, the beginning of nine years of compulsory education that ends at the end of middle school aged 15. Three years of high school can follow, then university, though both of these are optional and both require testing in.

PEOPLE FEAR TO DEVIATE FROM THE NORM

Yet informally, the Chinese education system is still dubbed “stuffing-the-duck education” (*tianya jiaoyu* 填鸭教育) for the high-pressure nature of learning. In some ways, little has changed over the decades – even hundreds of years.

Creativity may also be deliberately crushed. In a real life example known to this author, a child who tried to add cats’ ears to the word “cat,” *mao* 猫 (children are naturally creative and spontaneously engage in imaginative activity,) was chastised by teachers. (The child felt little cats’ ears would work nicely as a symbol for a real life cat, instead of two plain vertical strokes on top!) At the root of the harsh response is the fear of deviation from the norm leading to loss of literacy and, ultimately, cultural deracination and an unstoppable influx of outside cultures, languages and values.

PRESSURE ON STUDENTS IS HIGH

Study hours are long. Many children have extra-school classes in the evenings and weekends. This is exhausting and also causes financial pressure on parents, who must pay for extra classes or fear their child will fall behind. A 2017 study found that 21 percent of Shanghai parents were spending 10,000 yuan or more on extramural education per child during the summer holidays; in less concentratedly wealthy parts of the country, such as Shandong province, just five percent of parents were spending that but most – 54 percent – were spending more than 3,000 yuan.²⁶

The government is well-aware of the problems in Chinese education.²⁷ Local authorities have attempted to control the number of extramural study centers for school-age children, known as “*buxiban*” (补习班) but with mixed results.²⁸ A key fear is that it will create inequality, with richer parents paying for extra tuition, thus sharpening an already large wealth divide.²⁹

The pressures result in quite a few children losing interest in learning at an early age. Whether this affects their later creativity is unclear and an unstudied area.

Pressure also leads to depression and even suicide, an issue on which a pri-

ivate education research center in Beijing is trying to shed light (there are no official statistics for the problem.)³⁰ In the “China Education Blue Book,”³¹ an annual report published by the 21st Century Education Research Institute, Yang Dongping and his team of researchers identified 267 suicides among students aged six to 15 during the school year starting September 2016, using what they said were incomplete figures gathered from media reports, and 392 suicides among children aged up to 18.

Four in ten of the suicides were due to excessive study pressure or conflict with teachers, while a further one-third to unspecified conflict with parents: “Reducing study pressure on children is the key path to increasing their happiness,” the authors wrote.³² Whether a lessening of pressure and freer, more creative education would enable children to develop more fully and be happier, is a question not just of innovation but of mental health. This, too, is understudied in China.

THE SOCIAL CREDIT SYSTEM MIGHT INHIBIT TEACHERS’ PROFESSIONAL JUDGEMENT

Parental pressure on teachers is also an important factor. Under the state’s developing Social Credit System for all citizens, teachers and teaching are defined as a “key population and occupation.” Their social credit score, which may affect many life outcomes, is built from a plethora of interlinking details, including qualifications, professional record and how their students perform. Teachers who alienate parents may be subject to demerits since the Social Credit System requires them to “consciously accept the supervision of students, parents and all walks of life.”³³

ALTERNATIVES TO STATE EDUCATION ARE INCREASINGLY POPULAR

Some Chinese parents, however, despair at the educational “rat race” and are looking for more nurturing alternatives. Today, educational approaches such as Steiner, Montessori, Confucian and Christian are increasingly popular, as is homeschooling. These schools are mostly private; many are illegal, or at best semi-legal. Students who graduate from them may find their path into Chinese university barred as they lack the qualifications to take the state college entrance examination, the “*gaokao*” (高考). Yang, the education researcher, estimates there are about 6,000 homeschooled children around the country, and that the sector is growing at about 30 percent a year.³⁴

Some Chinese parents, however, despair at the educational “rat race”



5. Conclusion: Something is happening in the creativity-control continuum in China

The survey shows that teachers must straddle a fine line between the needs of the children and the needs of the system. Only the most highly-motivated pursue a creative education style for their students on top of the regular syllabus – for many there is no incentive, as this work is not tied to extra pay and increases their burden. This was the case at elite as well as non-elite schools. Overall, non-elite schools offered less in terms of formal creativity education, but if teachers were motivated, they could also achieve a lot (see annex of field trips to three schools.) The high level of commitment in some schools, especially in Chengdu, where conditions were better than in Yiyang, is a testament to the dedication, vision and resilience of many teachers.

Despite the objective challenges, something is budding in the creativity-control continuum in China. Given the scale and sophistication of its industrial production chain this is likely to impact China and the world. Change is already visible in frontier tech industries targeted for growth by the state: In the third quarter of 2018, China's IT sector expanded at a very fast 32.8 percent over the third quarter of 2017, despite economic growth throughout the country being the lowest since 2009.³⁵ Much of this new economic activity is centered on the southern city of Shenzhen, a hub of the new, digitally creative, high-tech industries.³⁶

Yet increasingly, questions are being asked about how real the boom is; China's economic and political model arguably leads to boom and bust cycles in individual industries as the state or private capital aggressively invests then is confronted with a lack of organic or well-run development.³⁷ The government recently shut down some of the thousands of maker spaces it funds due to poor quality.³⁸

This raises an interesting question: Could a problem be too much ambition, and too little true creativity?³⁹

Yang Dongping says China is in a "Stage 1" of education: "We're still in an old-style, mass learning stage. But we're starting on Stage 2, which is to promote individual students' abilities. Stage 3 is to really develop children's emotional, cultural and international abilities. It's unrealistic to expect schools suddenly to become creative. But they can start."⁴⁰

RECOMMENDATIONS FOR THOSE WONDERING WHAT IT ALL MEANS FOR OTHER COUNTRIES

- Don't try to "out-China" China. The values of post-Enlightenment humanism – freethinking, tolerance, logic, critical thinking, free speech, experimentation and empathy – remain critical. Some of these are underdeveloped or missing in China and are exactly what it wants to gain, without permitting the open conflict of interests that characterizes a free society.
- Develop new ways to communicate that "It's cool to be smart!" In China, the smart kids are often heroes. That's something the West can learn from.
- Recognize that humanism and achievement are not mutually exclusive. Help all children to aim high in ways that are appropriate to who they are.

Teachers must straddle a fine line between the needs of the children and the needs of the system

6. Annex: Case Studies of three schools in Qingyang district of Chengdu

A NON-ELITE SCHOOL FOR MIGRANT CHILDREN

At this school on the outskirts of Chengdu the principal, students and educators had built a richly curated museum to the local art of paper-cutting (*jianzhi* 剪纸).⁴¹

The school, located down a narrow lane in an area of scraggly farmland and ramshackle shops, off a main road, was relatively poor. The headmaster and teachers reported that many families were struggling economically and tension at home was common as a result. Each child at this school was learning paper cutting, a local tradition, in hopes of spurring their skills and providing an artistic focus in life.

It appeared to be working: a spirit of creativity, culture and even humor was everywhere; dozens of images of family festivities, self-portraits by the children,

images from the natural world such as real or exoticized, carefully cut birds or animals, hung on the walls alongside illustrated histories of the craft and written comparisons of Chinese and overseas paper cutting. The school principal believed strongly China must follow its own traditions to build its own creativity and a sign, “be a Chinese person with roots” hung prominently on a wall.

The relationship between the students and their teachers appeared warm. However, discipline was evident; students aged 6–12 were trained to take visitors around the museum, hands folded in front, and recite its teachings flawlessly, in a way that highlighted the apparent contradiction between expressiveness and control.

A MIXED ABILITIES SCHOOL IN A MORE URBAN LOCATION

Unusual for China, at this school special needs children were integrated into the main student body. The ratio of special needs children was about 1:10, including physically and mentally challenged children. Known as *ronghexing jiaoyu* (融合性教育), or “convergence education”, such schools are rare as Chinese parents may protest the presence of special needs children in their school believing these will hold back their own non-special needs children.

Here, the atmosphere was outright joyful. A centerpiece was a giant pottery room where children crafted objects that echoed local traditions of expression, some dating back thousands of years to the nearby Sanxingdui culture.⁴² The result was richly imaginative with a preponderance of monster-like, scary faces, as well as pots and more conventional objects. A multitude of other projects included a student-run café, a garden where children grew mushrooms from tree logs and tended other plants including chili, and several “maker spaces.”

AN ELITE ELEMENTARY SCHOOL IN DOWNTOWN CHENGDU

Attended by the offspring of the city’s richest and most powerful, the atmosphere here was less lively than in the other two schools. The children were visibly lethargic and had to be pushed to work on a project to design an escape room for which they had just a few days to prepare – a highly ambitious timeframe that was stressing out both teachers and children. The teachers, however, were highly motivated.

During the visit, the project had to be reworked by a visiting Canadian educationist, Jiang Xueqin, affiliated to Harvard University, in a way that illustrated the challenges to creativity in China; Teachers had divided the 20 children into two teams, one under the banner of the schools’ design department and the other its business department. This outbreak of bureaucracy threatened to ruin the project as it created an overly structured “groupthink” in what was supposed to be highly fluid, unstructured and creative task. Jiang canceled the designated sponsorship, thereby releasing the children from official institutional structures, leaving them freer and more able to represent only themselves. He remixed the two groups randomly into four smaller groups to create more variety and flexibility.

In an on-site interview, Jiang, who travels the country extensively advising on creativity and related issues, said he spends much time trying to get teachers to focus on fundamental ideas such as play, how to play simply (for example with Lego) and fun, rather than learning. Traditionally, play in China has been regarded as a waste of time; in contrast educators trained in western academies regard it as a primary method of early learning. “It’s hard for teachers to understand how simplicity can lead to creativity”, he said. When they build escape rooms and other games, teachers and children create too-complex puzzles, “and the kids can’t get out.”⁴³

ADDITIONAL NOTES ON THE SURVEY SITES

Yiyang is a riverine prefecture in northern Hunan province near Dongting Lake with a population of more than 4 million. Its education system has been the focus of citizen protests in recent years over inequality of opportunity.⁴⁴ Education expenditure in 2017 was about 1.1 billion yuan, according to the city’s latest published figures.⁴⁵

Qingyang district of Chengdu is home to about 700,000 people. The capital of Sichuan province lies far to the southwest of Beijing and has a reputation for being relatively independent-minded and experimental. The education budget in 2016, according to the latest official figures from the National Bureau of Statistics, was 930 million yuan.⁴⁶

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- 31 | Blue Book of Education – Annual Report of China's Education (2018): <http://www.21cedu.org/?b/id/237.html>
- 32 | See 29, 30 above.
- 33 | Social Credit System plan, State Council: 2014-2020. [http://www.gov.cn/zhengce/content_8913.htm](http://www.gov.cn/zhengce/content/2014-06/27/content_8913.htm)
- 34 | Yang Dongping, Interview with author, Beijing July 2017
- 35 | Bloomberg News, "China's problems Keep Piling Up with Trump, Economy and Markets", Oct. 19, 2018: <https://www.bloomberg.com/news/articles/2018-10-19/china-s-problems-keep-piling-up-with-trump-economy-and-markets>
- 36 | Especially in terms of manufacturing. See Bloomberg, "Shenzhen is the Unofficial Tech Capital of the World", Nov. 21, 2018: " <https://www.bloomberg.com/news/videos/2018-11-21/shenzhen-is-the-unofficial-tech-capital-of-the-world-video>
- 37 | China Securities Times (part of the People's Daily group): "24 'Maker Spaces' Delisted", Oct. 31 2018: <http://news.stcn.com/2018/1031/14628665.shtml>
- 38 | Sixth Tone "Made in China, the Boom and Bust of Maker Spaces", Nov. 8 2018: <https://www.sixthtone.com/news/1003171/made-in-china-the-boom-and-bust-of-makerspaces>

- 39 | Hyperbole like the following, from Premier Li Keqiang, 2015, World Economic Forum, Davos, is common in Chinese politics: "Just imagine how big a force it could be when the 800 or 900 million laborers among the 1.3 billion population are engaged in entrepreneurship, innovation and creation"
- 40 | Yang Dongping, intv. with author. Also: Blue Book on Education (above)
- 41 | For the Sichuan paper cutting tradition, see e.g. Long Ding, "Sichuan Fold Custom Paper-Cut," 2000. Link: <https://www.amazon.com/Sichuan-Paper-Cut-paper-cut-cultural-heritage/dp/B00B5HOSHI>
- 42 | Sanxingdui Museum, Sichuan province: Link: <http://sxd.cn/en/>. See also Bowers Museum, "China's Lost Civilization: the Mystery of Sanxingdui," an exhibition, 2014-2015. Link: <https://www.bowers.org/index.php/exhibitions/upcoming-exhibitions/190-china-s-lost-civilization-the-mystery-of-sanxingdui>
- 43 | Jiang Xueqin, interviews with author in Chengdu and Beijing, 2017–2018
- 44 | Radio Free Asia report on Yiyang education protests, Jan. 2016: <https://www.rfa.org/cantonese/news/parents-01072016064445.html>
- 45 | Yiyang People's Government Education Department figures: http://www.yiyang.gov.cn/yiyang/2/165/167/176/content_365440.html
- 46 | Qingyang district, Chengdu People's Government Education Department figures: http://www.cdqingyang.gov.cn/qyq/czzj/2018-03/01/content_9fee6f414a2a42b1a-117b2a2f5230cf9.shtml

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YOUR CONTACT FOR THIS ISSUE OF CHINA MONITOR PERSPECTIVES:

Claudia Wessling
Head of Publications, MERICS
claudia.wessling@merics.de

EDITOR

Claudia Wessling

PUBLISHER

MERICS | Mercator Institute for China Studies
Klosterstraße 64
10179 Berlin
Tel.: +49 30 3440 999 0
Mail: kommunikation@merics.de
www.merics.org

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