DOI: 10.1111/ejed.12413

Check for updates

ORIGINAL ARTICLE

WILEY

Comparative research on shadow education: Achievements, challenges, and the agenda ahead

Wei Zhang[1] | Mark Bray[2,3]

[1]Institute of Curriculum and Instruction (ICI), Centre for International Research in Supplementary Tutoring (CIRIST), Faculty of Education, East China Normal University (ECNU), Shanghai, China

[2]Faculty of Education, Centre for International Research in Supplementary Tutoring (CIRIST), East China Normal University (ECNU), Shanghai, China

[3]Faculty of Education, UNESCO Chair in Comparative Education, The University of Hong Kong, China

Correspondence
Wei Zhang, Institute of Curriculum and Instruction (ICI), Centre for International Research in Supplementary Tutoring (CIRIST), East China Normal University (ECNU), 3663 North Zhongshan Road, Shanghai 200062, China.
Email: wzhang@ed.ecnu.edu.cn

Abstract

This paper reviews research on private supplementary tutoring, widely known as shadow education, during the initial decades of the present century. It takes as its starting point the first global study of the phenomenon, published in 1999, though notes some scattered national and subnational literature prior to that date. During the initial two decades, great expansion of the research on shadow education brought more depth and stronger awareness of commonalities and differences in different cultures. From initial mapping and identification of factors shaping demand came work on ecosystems with deeper sociological and economic analyses, together with greater attention to research methods. The agenda ahead will need to keep up with changing times, e.g., through the impact of technology, and develop stronger interdisciplinarity to explore additional domains. It will also need continued attention to definitions and methods.

1 | INTRODUCTION

Historians have shown that in some countries what is now widely called shadow education has distant origins. In Russia, for example, Mikhaylova (2019) identified advertisements by private supplementary tutors in the mid-19th century. In Greece, Tsiloglu (2005) documented the emergence of tutorial institutions known as *frontistiria* towards the end of the 19th century. In Japan, the parallel development of what are known as *jukus* since the beginning of the 20th century has been documented by Sato (2012); and in Mauritius, Foondun (2002, p. 488) quoted a 1901 comment about private supplementary tutoring by the head of what was then the only state secondary school for boys. However, only in the 1980s and 1990s did the theme begin to emerge as a specific topic in the

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.
© 2020 The Authors. European Journal of Education published by John Wiley & Sons Ltd

academic literature (see e.g., Hemachandra, 1982; Hussein, 1987; Rohlen, 1980; Stevenson & Baker, 1992). These papers focused only on single countries, and the first global comparative study of the phenomenon appeared only at the end of the 1990s. It was written by the second-named author of the present paper (Bray, 1999), and published by UNESCO's International Institute for Educational Planning (IIEP).

Since that time, both country-focused and internationally comparative research has much increased in volume.[1] A decade after the 1999 book, UNESCO's IIEP published a sequel (Bray, 2009) that reviewed work during the intervening period and pointed to further directions. The present paper, written another decade later, is a further update. Shadow education has expanded to reach almost all corners of the globe, and has become a part of daily life in an increasing number of households. At the same time, shadow education has diversified. Indeed, the features are linked: in Christensen's (2019, p. 27) phrase, "as it expands, it diversifies; as it diversifies, it expands".

With such matters in mind, this paper commences with matters of definition and scope. It then turns to strengths in subnational, national and international research on the theme, which sets the stage for commentary on gaps and the agenda ahead. This agenda must confront methodological and organisational practicalities. Priorities may to some extent vary in different parts of the world, but also have commonalities across world regions.

On a personal note to explain the authors' perspectives, Mark Bray has been a key figure in the literature since the publication of his 1999 book, and to some extent before,[2] and remains active in the field with partners in a wide range of countries. Wei Zhang's work in this domain commenced in 2008 when she embarked on initial explorations in Japan and then conducted empirical research in China and elsewhere including Cambodia, Japan, Denmark and the United States (see e.g., Yamato & Zhang, 2017; Zhang, 2014; Zhang, 2017). Separately and together, both authors have wide personal networks among researchers and practitioners in shadow education, enabling them to understand many contexts and evolutions in practice, alongside conceptualisations in the literature. Although the field has much expanded since the turn of the century, it remains sufficiently small to permit meaningful interaction and professional conversations through the internet, at conferences, and in other ways.

2 | DEFINITIONS AND SCOPE

The title of this paper, and of the special issue of the *European Journal of Education* of which it is part, refers to shadow education. That term has gained increasing currency in the research literature, though has ambiguities that should be confronted at the outset. Several related and overlapping terms are also widely used, though none has complete clarity in boundaries and scope. Accordingly, it is useful to commence with remarks about meanings of the term shadow education as used here and elsewhere, together with limitations in various vocabularies.

The 1999 UNESCO-IIEP book, which was first published in English and then in five other languages,[3] did much to popularise the term shadow education but did not invent it. The book noted three separate sources in which the metaphor had been used. The first was a Malaysian study sponsored by the Singapore office of Canada's International Development Research Centre (IDRC) (Marimuthu et al., 1991). Using the vocabulary of private tuition, which elsewhere would be called private tutoring, the report observed that:

> a considerable percentage of youths attended private tuition in order to prepare themselves for the selective national examinations. Experience [...] showed that the practice of private tuition was so prevalent that it could be considered as a "shadow educational system" (Marimuthu et al., 1991, p. vi).

The following year, Stevenson and Baker (1992) independently used the metaphor in an article about Japan; and in parallel the metaphor was used in Singapore by George (1992). These publications used the metaphor in slightly different ways. Marimuthu et al. (1991) did not provide an explicit definition of shadow educational systems but described the way that supplementary tutoring mimicked the mainstream, growing as the mainstream grew and changing shape as the mainstream changed shape. George (1992) had a similar conception, but Stevenson and Baker had a slightly

wider definition of shadow education (p. 1639) as "a set of educational activities that occur outside formal schooling and are designed to enhance the student's formal school career". Stevenson and Baker were concerned about two categories of activities, (a) during the period of secondary schooling in private cram schools, correspondence courses and individual tutorial sessions, and (b) immediately after secondary schooling in institutions known as *yobiko* which prepared students intensively to resit university-entrance examinations. The authors added (p. 1643) that their concept of shadow education comprised "activities that are firmly rooted within the private sector".

The 1999 UNESCO-IIEP book focused on tutoring for students who were still in school, at both primary and secondary levels, rather than for ones who attended *yobiko*-type institutions after having left school. The parameters of that book were defined (Bray, 1999, p. 20) by:

- *supplementation*: tutoring that addressed subjects already covered in school and excluding, for example, classes for minority children whose families were anxious that new generations should secure competence in languages not taught in mainstream schools;
- *privateness*: tutoring provided in exchange for a fee, in contrast both to unpaid tutoring provided by families or community members and to extra tutoring provided by teachers as part of their professional commitments and responsibilities; and
- *academic subjects*: particularly languages, mathematics and other examinable subjects, and excluding musical, artistic or sporting skills which are learned primarily for pleasure and/or for more rounded personal development.

This definition has been followed widely and is the main focus for the present paper, though the authors recognise some blurring of boundaries as structures for both shadow education and schooling have evolved.

Elaborating, as noted in the 1999 book and in later works (e.g., Bray, 2009; Bray, Kwo, & Jokić, 2015), vocabulary in this domain, especially for comparative studies, can be a major challenge even when operating solely in English. Thus, although the word *private* is widely interpreted to imply payment of fees, some people take it to mean tutoring privately, i.e., outside the public space, whether or not in exchange for a fee. The word *supplementary* may also be problematic. Shadow education is mainly concerned with mimicry, i.e., more of the same, but supplements may also elaborate on the content provided by schooling and/or provide completely different content. Even the word *tutoring* can create ambiguities, because for many people it implies one-to-one instruction or perhaps small groups, but much of the literature, including the present paper, includes large classes in lecture theatres. In India, as in Malaysia, it is more common to refer to private tuition than to private tutoring, but *coaching* is another common term especially for large classes taught by commercial companies. In Zimbabwe a common term is *extra lessons* with the implication that they are operated privately and for a fee; in Ireland such tutoring is called *grinds*; in the US the common term is *supplemental education*; and in The Gambia it is called *studies*. Other languages bring their own nuances. Some translators of the 1999 and 2009 UNESCO-IIEP books avoided the term shadow education because local parlance had more familiar terms.[4] However, these local terms had their own orientations, biases and limitations; and difficulties in translation across countries and cultures highlighted the challenges even of identifying common understanding of the phenomenon being studied.

Coupled with these observations should be awareness of labels that embrace overlapping themes. One is *after-school programmes*, a group that includes both fee-free and fee-charging activities operated by public bodies (see e.g., Bae & Kanefuji, 2018). Another is *extended education*, which may embrace both in-school and out-of-school activities (Stecher et al., 2013); and a third is *outside-school time* (OST), which is often taken to include not only academic courses but also religious education and informal learning through visits to museums, summer camps, etc. (see e.g., Bevan, Bell, Stevens, & Razfar, 2013; Suter, 2016). These overlaps, together with ambiguities in the meaning of shadow education, created complexities for analysis and understanding during the first two decades. They require continued care in definitions for each study during the third decade and beyond. In some respects, the blurring of boundaries between forms of education and between domains of public and private is making the task even more challenging—and, for scholars, also even more interesting.

3 | MAJOR FEATURES WITHIN THE EVOLVING RESEARCH AGENDA

Figure 1 presents perspectives on emphases during the first two decades of comparative research on shadow education, together with some ideas for the third decade. Variations of course must be recognised within specific regions, so the remarks necessarily have broad brushstrokes. Nevertheless, the figure helps to make some core observations.

Much of the first decade was concerned with *global mapping*. This included identification of shadow education enrolment rates in different countries, where possible broken down to show variations by socio-economic status, gender, race, education level, urban/rural location, and other variables (e.g., Baker, Akiba, LeTendre, & Wiseman, 2001; Ireson & Rushforth, 2004; Silova, Būdienė, & Bray, 2006; Ventura, Costa, Neto-Mendes, & Azevedo, 2008). Much early research focused on the demand for shadow education (e.g., Aizstrauta, Leokena, & Dedze, 2004; Davies, 2014; Kim, 2004; Lee, 2007). Many researchers stressed the need for shadow education to appear on the agendas of policy makers at national and international levels. They had some success (e.g., Korea, 2009; Mauritius, 2008, pp. 60–69; UNESCO, 2008, p. 172; World Bank, 2005, p. 96), but only scattered and with limited prominence. The policy-oriented researchers were particularly concerned with issues of equity and exclusion, recognising that rich families could afford not only greater quantities of shadow education but also better qualities. In some settings low-income families were pulled to invest in shadow education that they could not really afford, and the lowest-income families beyond such pulling were simply left out of the picture with deleterious long-term consequences.

The concern with basic mapping that commenced during the first decade continued during the second. Data from iterations of the Trends in Mathematics and Science Study (TIMSS),[5] which had been explored by Baker et al. (2001), were followed up by such authors as Huang (2013). Even more popular were analyses of data from the Programme for International Student Assessment (PISA) operated by the Organisation for Economic Co-operation and Development (OECD) (e.g., Choi, Calero, & Escardíbul, 2012; Hof & Wolter, 2012; Runte-Geidel, 2014; Southgate, 2013). Some questions have been included on outside-school-time instruction in all PISA triennial iterations since the outset in 2000, with the most comprehensive set being in 2015.

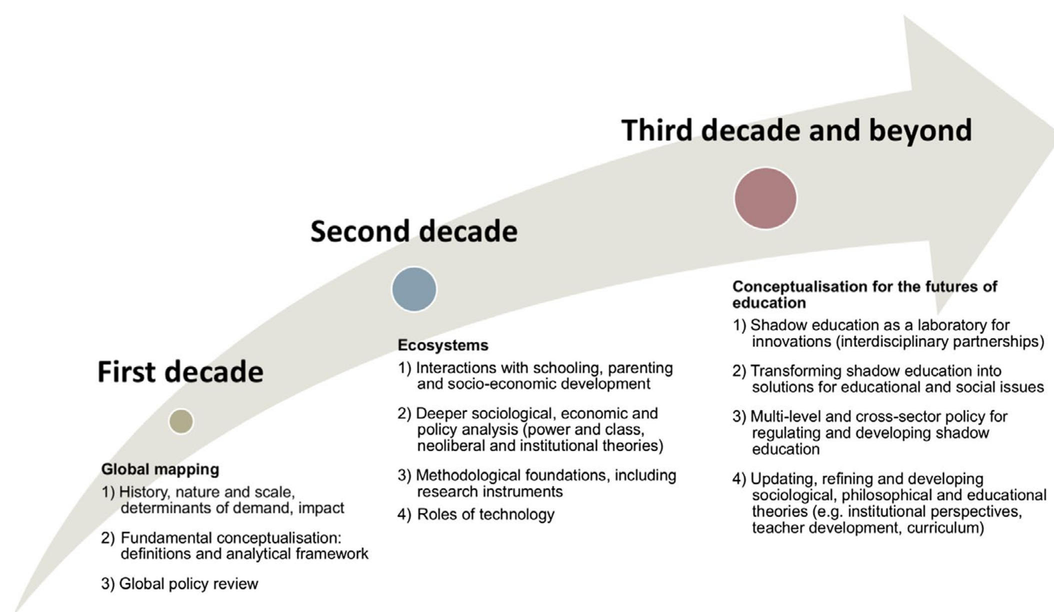

FIGURE 1 Emphases in comparative research on shadow education across the decades. *Source:* Authors [Colour figure can be viewed at wileyonlinelibrary.com]

However, for analysis of private supplementary tutoring the data are problematic, first because they did not clearly distinguish between fee-free and fee-charging support and second because ambiguities were further compromised in translations (Bray, Kobakhidze, & Suter, 2020). Because of these constraints, other cross-national analyses of shadow education in both the first and the second decades were created from compilations of national data (e.g., Bray, 2003, pp 22–24; Bray & Lykins, 2012, pp. 4–7; Zhang & Yamato, 2018, p. 324). These compilations did provide a portrait, but were based on different data sets of varying purposes, methods, qualities and dates.

Also during the second decade, much work either implicitly or explicitly employed an *ecological lens* (e.g., Jokić, 2013; Mischo, 2014; Paviot, 2015; Zhang & Bray, 2017; Zhang & Yamato, 2018). The decade brought more focus on the supply of tutoring (e.g., de Castro & de Guzman, 2013; Zambeta, 2014), as well as further work on demand (e.g., Długosz, 2012; Kim & Lee, 2010; Liu, 2017), and on both together (e.g., Melese & Abebe, 2017; Šťastný, 2016). Much of this work considered different categories of providers, contrasting in particular the activities of companies of different sizes, regular schoolteachers who offered supplementary support, and informal providers such as university students and retirees. Policy analysis included focus on marketisation of education within the deepening neoliberalism agendas (e.g., Brehm & Silova, 2014; Rao, 2017; Zhang & Bray, 2017), and also addressed matters of regulation (e.g., Bray & Kwo, 2014; Choi & Cho, 2016). Researchers explored interactions with schooling, parenting and socio-economic development, and they deepened various sociological and economic analyses on power and class (e.g., Aurini & Davies, 2013; Galinié & Heim, 2016; Napporn & Baba-Moussa, 2013; Park, Buchmann, Choi, & Merry, 2016).

The second decade also brought greater attention to research methods, not just as part of wider approaches within educational studies and the social sciences but also with specific reference to shadow education (e.g., Bray et al., 2015; Jokić, 2013; Šťastný, 2017). Manzon and Areepattamannil (2014, p. 392) highlighted the value of quantitative, qualitative and mixed-methods approaches while also rightly stressing the need for expanded disciplinary lenses.

Also noteworthy during the second decade was recognition of the role of technology in shadow education. In 2010, Ventura and Jang highlighted the possibilities of internet providers reaching rural and remote students as easily as urban ones, potential gains in efficiency when participants avoid travel time to classes, and the fact that tutors based in India could teach students in the US across time zones with tailored content and low prices (Ventura & Jang, 2010, pp. 60–65). Later work of greater specificity included analysis by Takashiro (2018) on what categories of Japanese students used what sorts of technology and with what impact on learning and on social inequalities.

As the second decade progressed, shadow education also became more visible in the policies of subnational and national governments (e.g., Bihar [India], 2010; China, 2018; Dubai, 2013; Kenya, 2013; Pakistan, 2019) and in statements from international agencies (e.g., Commonwealth Secretariat, 2015, pp. 10–15; UNESCO, 2017, pp. 108–110; United Nations, 2015, p. 17). Developments in China were especially significant, given the far-reaching nature of its regulations in the world's largest education system (Zhang, 2019a). However, shadow education remained under-recognised across the globe in comparison with its scale and significance for educational, economic and social development.

4 | SOME PRIORITIES FOR THE AGENDA AHEAD

Researchers are challenged by the speed with which the scale and nature of shadow education change, and have difficulty catching up. Nevertheless, they can accelerate and can be more sensitive to the many gaps in their current work. The following sections return to the theme of mapping and then focus specifically on curriculum, pedagogy and modes; technology, innovation and power; and regulation, governance and legitimacy.

4.1 | Continued mapping

Although basic mapping was a major feature of the first two decades, continued attention is needed for more detail on inadequately charted territories. During the second decade, overviews of patterns in Europe (Bray, 2011) and Asia (Bray & Lykins, 2012) extended the global sketches presented by Bray in 1999 and 2009. Despite their shortcomings PISA data to some extent mapped patterns in OECD countries and affiliates, and were complemented by TIMSS; but obvious gaps remained in Africa, the Arab states and Latin America. Thus, for example, a major World Bank review of education in Africa (Bashir, Lockheed, Ninan, & Tan, 2018) made only passing reference to shadow education, stating (p. 326) that “little is known” about the matter. With greater diligence the authors could have found some data from scattered studies (e.g., Napporn & Baba-Moussa, 2013; Paviot, 2015; Shigwedha, Nakashole, Auala, Amakutuwa, & Ailonga, 2015; Tarekegne & Kebede, 2016), but indeed the picture would have remained incomplete.

At the same time, continued mapping is needed of regions in which relatively strong pictures have been constructed. Thus Bray's 2020 update of his 2011 survey of patterns in Europe showed significant shifts. Shadow education had increased in intensity in most parts of Europe, and had emerged in the Nordic states where it had previously been absent (Bray, 2020, p. 4–7). Further, even Asia has significant ongoing shifts (see e.g., Joshi, 2019), as do North America and Australasia (see e.g., Choi, 2018; Dooley, Liu, & Yin, 2020; Sriprakash, Proctor, & Hu, 2016). Within this continued mapping, it will be important to track patterns of increasing externalisation of schooling and parenting with the expansion of education markets. Also predicted is further blurring of boundaries between the learning spaces of schooling, families and shadow education. Fault-lines were exposed by the COVID-19 pandemic that hit at the beginning of 2020, with many face-to-face tutoring enterprises closed alongside schools but ones employing technology for distance learning experiencing a sudden boom.

4.2 | Curriculum, pedagogy and modes

In the field of curriculum studies, Kim, Gough, and Jung (2018) sought to remedy the lag in attention to shadow education and to catch up with counterparts in comparative education, educational policy, sociology of education, and education and economics.[6] They appropriately encouraged research (p. 10) on how students study in the shadow education environment; what curricular characteristics attract students and parents to shadow education; what forms it takes in different contexts, and how it affects children's development. Kim and Jung (2019, p. 145) then took matters further with a classification showing five forms of shadow education and noting implications for size of classes, major providers, distinctive features of instruction, level of individualisation and, for the Korean context which was the setting that they knew best, fees. This classification was certainly informative, though omitted some variations in modes of delivery and in the diversity of providers.

Figure 2 displays the present authors' more elaborated classification of modes of delivery. For example, it includes forms of dual tutoring that employ live tutors operating through the internet in conjunction with teaching assistants in classrooms many kilometres away, and also forms that employ Artificial Intelligence (AI) to replace live tutors in the central location. In his 1999 book, Bray (p. 21) had referred to tutoring through correspondence delivered by mail. Two decades later, that mode indeed seems archaic. Perhaps in two decades' time contemporary modes will look equally archaic.

Meanwhile, the diversity of modes in Figure 2 sends signals about methodological shortcomings in many studies that endeavour to indicate whether tutoring “works” by crunching large data sets, sometimes just making tutoring a yes/no variable (e.g., Byun, 2014; Kuan, 2011; Li, 2020; Liao & Huang, 2018). This domain of research is certainly important, but needs to take much stronger account of the types, durations and orientations of tutoring, the qualities and motivations of tutors, the corresponding qualities and motivations of students, and

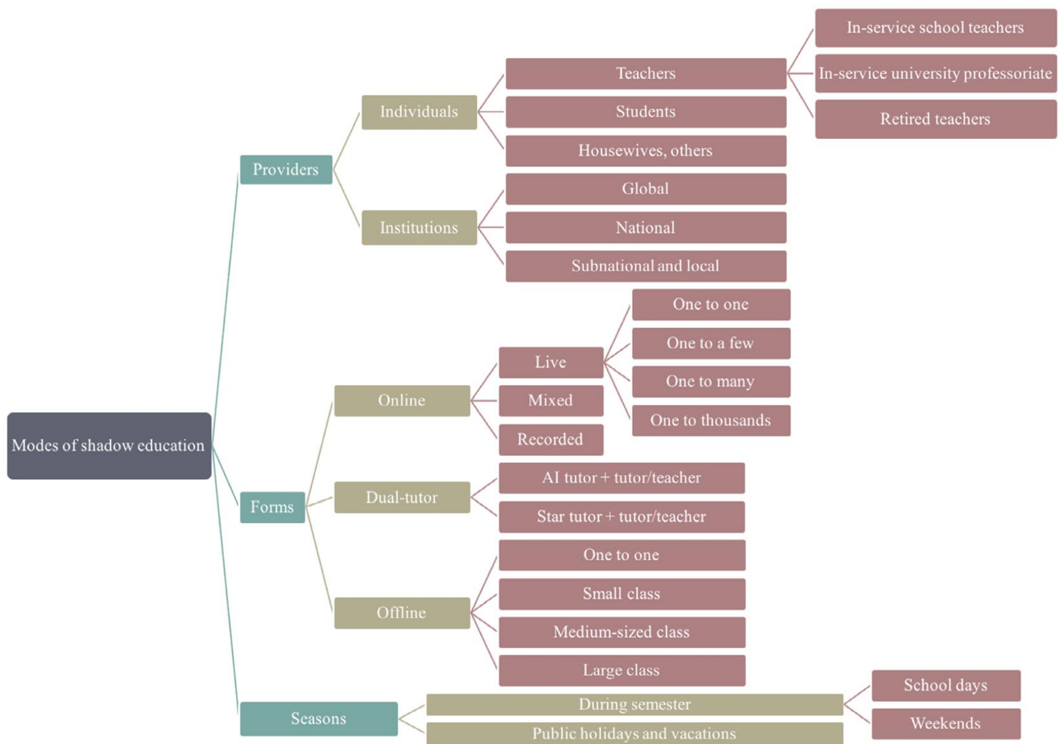

FIGURE 2 Diversity of modes of shadow education delivery. *Source*: Authors [Colour figure can be viewed at wileyonlinelibrary.com]

interrelationships with schooling and broader social domains. Insights on such matters can be generated through qualitative as well as quantitative studies, and are likely to be most helpful if they are not excessively generalised at a national or even a local level to cover all types of tutoring for whole populations.

Implicitly, Figure 2 also shows organisational relationships between shadow education and schooling. For example, some instructors in the shadow sector are regular teachers in the mainstream. And the seasons for tutoring are the reverse of those of schooling, i.e., the shadow sector is quiet when the schools are in session and is active when the schools are out of session. Experiential learning programs, intensive courses and test preparation are popular programmes during public holidays.

At the same time, standard assumptions about schooling may not be equally applicable to private tutoring. Class size for example may shape curriculum and instruction (and vice versa), and it is true that one-to-one and small-class tutoring is usually more interactive and personalised than large-class instruction. As such, much online live tutoring in which one tutor teaches hundreds or even thousands of students is a mass production of offline classes that involve little student-centred learning. However, some providers have developed e-mediated tools, deployed teaching assistants, and designed specific curricula to make mass live classes as interactive and personalised as some small classes. Large companies operating across regions and even internationally are more likely to design their own standardised comprehensive curricula and to minimise reliance on external resources, while individual tutors tend to focus more on specialised areas and to draw more on school and other curricular resources.

Other dimensions in the curriculum of tutoring also need continued exploration with critical lenses. For instance, while tutoring curriculum is shaped by what family consumers want, providers may be very successful in creating, shaping and exaggerating what families want through aggressive advertisement and technological tools. Thus, in addition to asking “what curricular characteristics attract students and parents to shadow education” (Kim

et al., 2018, p. 10), researchers may go further to ask "why" and "how", grounding micro-analysis of curriculum in understanding of the driving forces and power dynamics at meso- and macro-levels.

Further, an important question should be added about relationships between shadow and school curricula. Some tutoring programmes build on school curricula—repeating, enhancing, extending or complementing them. Others are self-contained—imitating yet independent of school curricula. Another dimension relates to focus and purpose: whether the tutoring curriculum reinforces what the school curriculum values and stresses, or values and focuses on what is neglected or missing in school curriculum. Research efforts to categorise shadow education curricula (e.g., Roesgaard, 2006) have assisted understanding of the emergence and initial development of private tutoring; but as the phenomenon becomes more professionalised, some components of its curricula become more specialised and standardised while the overall supply becomes more diversified and comprehensive in scale and coverage.

Additional questions relate to traditional categories and labels in curriculum studies, which may require reconceptualization to distinguish shadow education curricula from school curricula. Some forms of shadow education can hardly be regarded as containing a curriculum as commonly defined by curriculum specialists focussed on schooling. Taking just one example, in Nordic countries the dominant form of tutoring is "homework support" in which tutors provide one-to-one help according to ad hoc requests using materials of the tutees' choice, usually in the tutees' homes under parental surveillance. The main focus is on the schools' teaching materials and homework, and the tutoring is relatively unstructured. This type of tutoring, which results from negotiations between the tutors, the tutees and the parents, may fit with personalised needs but has little systematic planning.

Consideration of this mode highlights the importance of analysis across learning spaces (shadow education, schooling, and families). Similar remarks apply to tutoring in small groups, large groups, huge lecture theatres, and online modes. Thus, while these forms may not all be strongly present in Nordic countries, they coexist in many other settings. Much unpacking is needed to identify the diversity of available programmes even within a single suburb of a single city.

Related to these matters, the third decade should also bring much greater attention to pedagogies in the shadow sector. Evidence from diverse settings suggests that even teachers who provide extra private lessons for their existing students (i.e., same teachers for the same students, and sometimes even in the same classrooms) manage their instruction differently in the private lessons compared to their school classes. Observing classes in Cambodia, Brehm (2015) remarked that mainstream school lessons commenced with formal greetings chanted by the students to respect the teacher, but that the tutoring class opened in a low-key manner with the teacher chatting informally to different groups. Brehm observed (p. 124) that the teacher "seemed to have a friendly relationship with students in private tutoring unlike government school where rules, regulations, and formality defined the actions by student and teacher". Similar remarks have been made in other countries including Egypt (Hartmann, 2013) and India (Gupta, 2019).

4.3 | Technology, innovation and power

In comparison to standardised, closely monitored, and carefully managed schooling, diverse, flexible and market-driven tutoring with a stronger division of labour tends to be more open and adventurous. Shadow education has from its emergence been a space for tutors, managers and families to seek autonomy and alternative choices. Many tutoring practitioners, students and parents use shadow education to escape from state control. However, emancipation from one form of control is at the cost of subservience to market forces and, for some actors, technology. Tutoring institutions are commonly forced to change in order to survive, while schools have to prioritise stability to protect their status in what might be perceived as a volatile environment. For many tutoring companies, mistakes carry financial loss but are important sources for improvement of services and products. For schools, by contrast, mistakes usually have a higher reputational cost that damages public trust and can lead to

sanctions. Therefore, tutoring institutions are generally more adaptable to new opportunities and trends in education, while schools are more conservative.

In this regard, the tutoring marketplace can be viewed as a laboratory for education innovations in which continuous experiments (albeit imperfect and sometimes unprofessional) are conducted for educational innovation; yet great caution is needed because they are experimenting with their students' futures and to some extent introducing risk. While it is important to recognise, identify and take measures to tackle the negativities of tutoring, it is equally important to investigate innovative practices. Three reasons are: (a) to utilise desirable innovations to assist schooling; (b) to identify challenges and failures so that schools and teachers can be better prepared for what might be the future of schooling; and (c) to diagnose problems to minimise negative consequences.

Shadow education has embraced technology much more rapidly than schooling, and at a much larger scale. This is among the processes through which shadow education has opened doors to innovation and explorations for future modes of teaching and learning, but has also made itself more vulnerable. In large marketplaces such as China, online tutoring has become a major activity, facilitated by venture investments as well as by technological advances.

During the COVID-19 pandemic that erupted at the beginning of 2020, schooling was suspended for an extended period. Many schools struggled to provide online teaching to students in home quarantine. By contrast, after years of development major online tutoring providers had obtained rich experience in teaching, service and management, accumulated abundant electronic resources, and prepared relatively mature teams of online teachers and teaching researchers. They had also created efficient technological tools such as virtual laboratory, virtual reality classrooms and big data assessment for teaching. During the crisis, these companies rose to the occasion to serve students with online tutoring of diverse forms. Some of the tutoring was offered free of charge as part of the companies' marketing strategies and corporate social responsibility (CSR). Other components were low-cost mass online tutoring to compete for customers and new markets including in less developed regions; and yet others were more expensive one-to-one or small classes for families valuing personalised experience. The relative readiness and fierce battle (for consumers) of online tutoring companies brought tutoring out of the shadow at this particular time of history when schools, at least during the initial period of the pandemic, seemed less capable of handling the crisis and serving families. Nevertheless, despite the contributions the quality of much online tutoring was questionable, partly because many online tutors were unqualified. Also, some popular programmes were just mass productions of offline tutoring, emphasising short cuts and test preparation. Further, companies colonising the market of less-tutored regions brought anxieties related to education consumerism and other market values that might damage the local ecosystems of education.

The new pedagogical forms also impact on the professional development of tutors and teachers. For example, the above-mentioned dual-tutor model has become very popular in China (Zhang, 2019b). The lead tutor is usually a popular “star tutor”, while a few companies also provide the option of an AI tutor. The teaching assistant is usually a novice tutor or a schoolteacher, depending on where the dual class takes place. The lead tutor conducts the class online, with the teaching assistant in the classroom to facilitate interactions and attend to individual needs. The model increases access to quality tutoring in less developed regions and compensates for typical online shortcomings such as lack of interaction, individual attention and human touch. It has been widely implemented in tutoring institutions and struggling schools with positive feedback, but creates inequalities for the classroom-based personnel and risks legitimising tutoring in public schools. It empowers the lead tutor, who can move upward in a career path, but downgrades the personnel on site from being independent teachers to becoming teaching assistants.

Similar patterns have been observed elsewhere. For example, Japanese *jukus* have introduced digital learning in some schools with their own tutoring courses and assessments, redefining the schoolteachers' professional identities. Rapid expansion of digital tutoring has also transformed teaching and learning in urban and suburban India during recent years. Many young people are being habituated to the consumption of digital learning platforms and “educational” games, providing further leverage for online tutors and their learning materials.

Accompanying the rise of domestic education technology (EdTech) companies has been the increasing role of multinational technology conglomerates. Cyberspace has added new dimensions and complexity to the global

expansion of the shadow education market, and more research is desirable on the relationships between shadow education and geopolitics. Fieldwork by the first author has shown that companies and non-governmental organisations in the US have circumvented regulations elsewhere on privacy and data protection through partnerships with tutoring providers in countries with flawed data-protection regimes. These companies thereby secure huge overseas markets and also big data resources to “train” artificial intelligence models. Some market practices are backed up by governmental foreign aid, exemplified by Japanese official support to *jukus* operating in Indonesia and Bangladesh (Zhang, 2019b). Reverse patterns are evident in the cases of Indian and Chinese tutoring companies that export their services to higher-income countries.

4.4 | Regulation, governance and legitimacy

In the school sector, government regulation has expanded and deepened over the centuries and has given schooling legitimacy as a pillar of society (Baker, 2014). For the shadow sector, government regulators (like researchers) have been slow to catch up with reality in expansion and diversification; but as they do catch up, to some extent they take the sector out of the shadows and confer legitimacy. And as the shadow education system develops and becomes institutionalised in a growing number of societies, it acquires more pragmatic and normative legitimacy, challenging that of schooling. These processes and their implications will need much comparative analysis during the third decade and beyond, drawing on perspectives from law, political science and other fields. Again, the work is likely to show increasingly blurred boundaries between public and private.

Elaborating, the review of regulations of the shadow education sector by Bray and Kwo (2014) showed much diversity just within Asia. Commercial regulations were commonly imposed on tutoring companies, requiring them to establish proper contracts, etc., but many governments went no further than this and in particular avoided educational matters such as curricula and the qualifications of tutors. On the question of public-sector teachers who provided private tutoring, some governments ignored the matter, others introduced codes of practice, and yet others prohibited the activity. Contrasts may be illustrated by the fact that whereas the Punjab authorities in Pakistan, like many others, have prohibited public school teachers from providing tutoring (Pakistan, 2019), their counterparts in the United Arab Emirates, like some others, have specifically approved it (United Arab Emirates, 2019).

Figure 3 presents in diagrammatic form a number of linkages that need to be considered in continued exploration of themes. In the centre are the laws and regulations themselves, and what they say about different types of shadow education activities in different jurisdictions at different points in time. Then is the question about how the laws and regulations are enforced, which includes consideration of deployment of personnel across government departments for education, commerce, fire safety, taxation, etc. A supporting component, which can achieve some government objectives while alleviating administrative loads, may come through educating consumers for informed choices and evaluation. The authorities can also partner with schools, teachers’ unions, other government branches, community bodies, and the media. And finally, the authorities can encourage self-regulation by the tutoring providers themselves and by associations of tutoring providers.

As mentioned above, developments in China following the strong directives issued towards the end of the second decade (China, 2018) are especially instructive. The regulations sought to protect the dominance of the schools and to keep tutoring subordinate. For example, the regulations prohibited tutorial companies from addressing curriculum content ahead of the schools, on the grounds that it increased inequalities in regular classes and pressurised other students to seek tutoring when they would not otherwise have done so. Tutors employed by companies were required to have the same sorts of qualifications as teachers in schools, and requirements on physical infrastructure specified not only the surface area per student but also that premises in tall buildings should occupy the lower floors. Then, having issued regulations on face-to-face tutoring in physical premises, the Chinese authorities moved to regulation of online tutoring (China, 2019). These concerned not only the qualifications of tutors but also the hours of operation, class durations, curricula and restrictions on pre-payment. China

FIGURE 3 Themes and linkages for comparative analysis of laws and regulations for shadow education. *Source:* Authors [Colour figure can be viewed at wileyonlinelibrary.com]

was arguably ahead of the rest of the globe in tackling regulations for online tutoring; but even then it was focused on domestic rather than cross-national provision which remains very difficult to regulate.

Also significant are partnerships between tutorial companies and international bodies such as UNESCO. An example is the UNESCO IITE's "Combat COVID-19: Keep learning - Together we are on the move!" initiative. It has partnered with tutoring companies in China, Russia, and Japan to provide free applications and digital resources for schools, teachers and students and has included tutoring in English and coding (TAL, 2020; UNESCO IITE, 2020). Similar partnerships can be observed at the national and subnational levels. For instance, an online tutoring company in the US emphasising grades and higher education admissions provides free tutoring to military families funded by the US Department of Defense and Coast Guard Mutual Assistance. Such an arrangement seems to be free for families, but involves hidden costs paid by the public budget. Most contractual public-private partnerships (PPPs) between shadow education and schooling take place in the name of "outsourcing". In Denmark and Sweden, it could mean cutting public spending that could otherwise be used to improve public schooling, thus perpetuating school insufficiencies and the necessity for tutoring by companies and non-profit organisations. Therefore, research in PPPs may look beyond public purchases of private services into how schooling and tutoring could learn from each other, so that educators in both systems can provide better education and collaborate in building sustainable ecosystems.

As noted above, Covid-19 has put schooling and shadow education in a natural experiment where shadow education has come in the sunlight to be compared with schooling in the virtual space. On the one hand, school closures have increased public awareness of the important roles that schooling plays in socialisation and family support; on the other hand, online tutoring's rapid response to the crisis has to some extent challenged the legitimacy of schooling by creating an impression that tutoring is more effective than schooling in digital learning and by supporting parents in home schooling. This has reinforced some parents' disappointment in schooling, and has contributed to public perceptions of school insufficiencies. These could be alarming signs insofar as tutoring serves mainly the private good and schooling the public good. However, schooling could learn from the shadow to turn threats into opportunities for development.

Also significant from an international perspective are companies that operate across national borders through franchises and direct operation. Among the most prominent is Kumon, which is headquartered in Japan and serves over four million students in 50 countries (Kumon, 2020). Comparable companies include Sylvan headquartered in the US, Kip McGrath (Australia), and Oxford Learning (United Kingdom). Research questions should include the modes of operation, pricing policies and socio-political values conveyed by these enterprises.

These initiatives may also be linked to moves by tutorial enterprises to support low-income families. Individual tutors, for example in Cambodia, commonly report that they charge differential fees and even provide free tutoring to some needy families (see e.g., Brehm, 2015, p. 20); and larger companies may have CSR programmes for outreach.

5 | BACK TO LABELS AND DEFINITIONS

At this point, it is useful to return to the matters of definition with which this paper commenced. Beginning with the content of shadow education, some forms do indeed mimic—as the curriculum changes in the mainstream, so it changes in the shadow; and as the size and shape of the mainstream change, so do the size and shape of the shadow. However, other forms supplement with alternative content and approaches. For these reasons, while shadow education is a convenient and evocative metaphor, it does need care. Ongoing diversity in operationalisation of definitions is to be expected, but may raise particular challenges in comparative studies because of diverse traditions and emerging models across cultures. Further, while academics may like the shadow education terminology, teachers and companies that provide the service tend to dislike it—chiefly because it could be allied with the shadow economy and other activities of doubtful legitimacy. This has implications for the ways that researchers liaise with practitioners, and may demand the use of alternative labels in some settings (Bray & Kwo, 2015, p. 266).

Concerning the notion of privateness, Bray (1999, p. 20) indicated that his 1999 book was “primarily concerned with tutoring provided by private entrepreneurs and individuals for profit-making purposes” (p. 20). Two decades later he generally adheres to this definition since the word “primarily” allows for some leeway., However, Baker et al. (2001, p. 1) avoided the question of payment in their description of shadow education as “structured, outside-school activities for improving students’ mathematics achievement”[7] and in their statement that “The term *shadow education* conveys the image of outside-school learning activities paralleling features of formal schooling used by students to increase their own educational opportunities” (p. 2). They based their paper on the 1995 iteration of TIMSS, which, for mathematics (and separately for science) had asked students “During this school year, how often have you had extra lessons or tutoring in mathematics that is not part of your regular class?”, again omitting the dimension of payment and potentially including public tutoring (i.e.,provided by teachers as part of their regular work) or free help from others. Differences in definitions used by Stevenson and Baker (1992) and by Baker et al. (2001) seem to have contributed to confusion experienced for example by Song, Park, and Sang (2013). The title of the paper by Song et al. referred only to private tutoring even though the TIMSS data could not distinguish between private and public tutoring, and they presented questionable analysis first of the complete set of 41 countries and jurisdictions and then of four that allegedly had “a high proportion of students participating in paid private tutoring”.[8] Other writers have also blurred boundaries by default, for example referring to PISA surveys as if they could clearly distinguish private from other sorts of tutoring (e.g., Li, 2020; Liao & Huang, 2018).

Also worth noting is the expanded definition of shadow education in the US context by Buchmann, Condron, and Roscigno (2010a) to include preparation for the SAT for university entry, i.e., to matters that could be considered beyond mimicry of school curricula.[9] Further, their analysis focused not only on expensive private courses and coaching but also on more moderately priced test preparation manuals and computer software programs, i.e., with items that could be used for private tutoring rather than with tutoring per se. Malik (2017, p. 17) cited this expansion of definitions approvingly, asserting that while Bray's 1999 definition might have been adequate

at the time, "now the field has grown substantially" to include "many paid and supplementary activities which are designed to improve the students' academic learning such as prerecorded lectures, online and paperback exercises, guide books and solved exercises [... which] are not tutoring, but in characteristics and nature [...] are part of shadow education system". However, Grodsky (2010, p. 475) had argued that the definition employed by Buchmann et al. was flawed. One reason was that some of the activities were "not shadowy at all; they are widely available free of charge to most students", and that "the only true forms of shadow education here are private test preparation courses and private tutors".

The response by Buchmann et al. to Grodsky's critique (2010b) included recognition that their conceptualisation had not distinguished between forms of test preparation. Their defence was that their central goal was to extend the utility of a general theoretical concept developed in other national contexts to the US, and to assert that their definition was context-specific: "it is grounded in a substantive knowledge of student and family experiences in the United States" (p. 484). They added that in any case the public versus private conceptual distinction advocated by Grodsky was overly simplistic because "the intermingling of the private and public dimensions of the education system has a long and complex history" (p. 484) and "the boundaries of public and private institutions and processes have become even more blurred over the past two decades with encroaching privatization".

Underlying these debates are ambiguities caused by blurring boundaries: between the public and private, between schooling and shadow education, and betweenoffline and online. Blurring boundaries in any one of the three pairs may accelerate blurring in the other pairs. For example, the development of e-learning has made a huge volume of teaching and learning resources available online. Some of these resources are produced and/or consumed by schoolteachers as well as tutoring providers alongside other actors. Among them, some are free but used for profit-making purposes in private tutoring or private schooling; and others require payment but are used by public schools. Similar remarks apply to items that Buchmann et al. (2010a) and Malik (2017) desired to include as shadow education. For example, computer software programmes produced by transnational corporations are used by all kinds of teachers and learners. If these are included in the definition of shadow education, they should also be included in the definition of schooling, and perhaps even parenting insofar as used in family learning spaces. Then the focus would not be shadow education research but research on education in all forms and locations.

Returning to Bray's initial definition, the above-mentioned items were not excluded insofar as they are produced or used by shadow education providers. Yet indeed more attention may usefully be given to the specialisation of the shadow education industry associated with increasing division of labour that has resulted in a complete production chain including content providers, tutor and manager trainers, education technology engineers, exercise collectors/creators/solvers, textbook producers, tutoring researchers, and assessment writers. Many of these actors were themselves products of shadow education and have spent their entire careers in the sector. Organisationally, some of the production lines are through free-standing institutions, while others are sub-sections or sub-institutions of tutoring companies. As the boundaries of schooling and shadow education blur, many have started to serve schools as well. Research based on Bray's definition over the two decades has captured the processes of "cell division" and embraced these actors. His definition remains useful for shadow education researchers to track the origins and destinations of these actors, and to understand more fully the expansion of tutoring companies and the impact of tutoring on schooling.

Indeed, it is because shadow education has developed so fast that the original definition remains valuable to discern and understand changes and continuation in its historical development. It makes the reconceptualization more meaningful and precise. The focus on the privateness of shadow education in its initial form enables researchers to examine the "publicisation" of shadow education, as for example in Sweden where private providers are paid by the government to offer homework support (Hallsén & Karlsson, 2019). The original definition of shadow education helps to identify the penetration of the private sector in the public frame, and to discern its origins, evolutions and implications.

At the same time, adaptation of definitions to fit specific contexts may indeed be appropriate—provided it is accompanied by clarity on how those definitions differ from those employed by other scholars, and how they have been adapted and why. Delineation of boundaries, or at least of original ones perhaps followed by new ones, is necessary in order to identify blurring. Without such definition, research on the theme suffers from too much ambiguity at the outset and then cannot clearly show the blurring that is indeed evident in many countries as shadow education expands and changes shape.

6 | CONCLUSIONS

Although research on shadow education has been slow to catch up with reality—and still lags, because reality is changing so fast—it is now established as a significant subfield of educational studies. Shadow education has been the focus not only of multiple books, articles and chapters, but also of several special journal issues in addition to the present one.[10] Scholars have also to some extent attracted the attention of policymakers and practitioners. However, much remains to be done with the collaboration of specialists in multiple domains. In this regard, Kim et al. (2018) observed that specialists in curriculum studies had lagged behind their counterparts in comparative education, educational policy, sociology of education, and education and economics. Attention is still much needed from other specialists, including for example in philosophy, administration, brain science, demography, marketing, and psychology. Indeed, insofar as shadow education mimics mainstream education, all the lenses applied to mainstream education with corresponding subfields of study should apply to shadow education.

Malik's review asserted (2017, p. 19) that the field "seems to be building more floors upwards before looking at the foundations and strengthening it". Certainly he had a pertinent point about the foundations, referring again to definitions; and at the same time closer attention is needed to the quality of the bricks that form the building and to the ways in which the bricks of different shapes can fit together. Further, researchers should consider the overall purposes and design of the building, i.e., not only "what is" but also "what ought to be". This includes consideration of how the nature and aims of shadow education fit with regular schooling and with the broader goals of social development, and what varying epistemological orientations of shadow education reveal about the nature of knowledge and knowing. Thus, research agendas should include fundamental philosophical questions as well as narrower matters of technicality.

At the same time, researchers in the domain of shadow education should pay much greater attention to the rigour of their work. As in other domains, readers can readily find on the internet multiple low-quality articles from a wide range of countries in the sorts of journals that will publish anything for a fee. It may validly be argued that such research is better than an empty space, but better still would be improved rigour in research methods to produce stronger and more credible findings. In China, a huge literature has blossomed as a result of the government's 2018 regulations and the expanded legitimacy to research the topic. Much of this literature lacks methodological rigour; and parts of it rely on poor translations from the English-language literature.[11]

As noted above, the question of translations also raises other challenges. In Chinese, shadow education can be translated in a straightforward way as 影子教育, but in other languages it is less simple. Thus when preparing his 1999 and 2009 books, Bray was told that in French the adjectives *ombragée* and *ombrageuse* could imply something shady not only in the sense of shade as from a tree but also somewhat dishonest and even ghostly which was not at all his intended meaning. Accordingly, the 2009 book *Confronting the shadow education system: What government policies for what private tutoring?* was translated into French as *L'ombre du système éducatif: quel soutien privé, quelles politiques publiques?*, of which the first part could be back-translated as *The shadow of the education system* rather than as shadow education per se.[12] Other translators avoided the metaphor altogether, but in Pakistan the Urdu translator of this book, seeking to be loyal to the original, decided to use the English word. Since Urdu has a completely different script, some readers found this a little odd.

These linguistic observations underline the complexity of work across cultures. Translations of metaphors often encounter challenges, and even phrases like private supplementary tutoring may not convey the same meaning in every language. In PISA surveys, "translation" has sometimes been necessary even between versions of English, with different phrasings of questions being used in the 2009 survey for the US, New Zealand, Ireland, and England. The Chinese versions also differed in Shanghai, Macao and Taiwan, with the Macao version being particularly problematic.

Because this paper is written in English, the majority of its references use that language. However, the authors have made an effort to cite some works in other languages not only to show that they exist but also to underline that many do not use the same sorts of vocabulary that have become common in English. It is worth adding that substantial literatures exist in some other languages of which researchers who do not read those languages may be completely unaware. Most obvious is Korean, since the authorities in the Republic of Korea have been actively concerned about shadow education since the 1950s, with major legal battles in the 1980s and after (Bray, 2009, p. 47–53; Lee, Lee, & Jang, 2010, pp. 100–101).

Finally, one of the great challenges—but also excitements—of this type of work is the speed with which the phenomenon changes. This is not just a matter of technologies, which have been grabbed and taken further by shadow education entrepreneurs in a way that leaves schools far behind. It is also a matter of changing market conditions arising from demographic and economic shifts, government policies and other factors. Again, it is useful to recall Christensen's (2019, p. 27) phrase, "as it expands, it diversifies; as it diversifies, it expands". Christensen was especially referring to Scandinavia in this observation, but it could equally be pertinent elsewhere. Comparative frameworks allow researchers to identify variations that in turn can deepen conceptualisation and theorisation.

ENDNOTES

[1] In the rest of this paper, the term "comparative" refers to international or cross-national research, though of course comparisons can also be conducted within individual countries.

[2] The 1999 book naturally emerged from earlier interests and research, particularly on household costs of basic education in East Asia.

[3] These languages were Azeri, Chinese, Farsi, French and Japanese.

[4] In addition to English, the 2009 book was published in Arabic, Armenian, Azeri, Bengali, Chinese, Farsi, French, Georgian, Hindi, Kannada, Korean, Mongolian, Nepali, Polish, Portuguese, Sinhala, Spanish, Thai, Urdu and Uzbek.

[5] This was the name for the iterations from 2003 onwards. In 1995 it was the Third International Mathematics and Science Study, and in 1999 the Third International Mathematics and Science Study-Repeat (TIMSS-R).

[6] They also had lifelong learning on their list. However, they only cited one publication under this heading (Ozaki, 2015), and since it is based on interviews of students aged 10–18 and explicitly called *A juku childhood*, it is questionable whether this work should be classified as lifelong learning.

[7] Baker et al. focused only on mathematics, though TIMSS also collected data on science.

[8] These four countries and jurisdictions were the Republic of Korea, Taiwan, Romania and the Philippines. Song et al. did not present convincing evidence that all four indeed had high proportions of students participating in paid private tutoring, and particular doubt might be expressed about Romania and the Philippines. For Romania, they cited UNESCO's (1994) estimates that 58% of urban Grade 12 pupils and 32% of rural counterparts received tutoring (p. 129); but later they cited a 2011 report that 27% of urban children and 7% of rural counterparts received tutoring (p. 137). For the Philippines, they just reported (p. 129) that "a number of Filipino students are known to enroll in review centers or to hire private tutors to assist them in preparing for examinations and to ensure their admission into prestigious schools in keeping with the growth of structured, outside-school activities such as review centers".

[9] As Buchmann et al. explained (2010, p. 457), in 1993 the College Board which operated the SAT changed the name from Scholastic Aptitude Test to SAT I: Reasoning Test. At the same time, the former Achievement Tests were renamed the SAT II: Subject Tests. In 2004, the numerals "I" and "II" were dropped and the tests were then named the SAT Reasoning Test (or just SAT) and SAT Subject Tests. In parallel the ACT, formerly known as the American College Testing Program Assessment, is a standardised multiple-choice test designed to predict first-year college grades. It is less common than the SAT, and Buchmann et al. referred to both tests under the general term SAT. In 2016 (i.e. six years after the publication of the paper by Buchmann et al.) the SAT authorities made adjustments to align the SAT more closely with official high school curricula.

[10] Previous special issues of journals have included the *Asia Pacific Education Review*, *11*(1), 2010; *Journal for Educational Research Online*, *6*(1), 2014; *Asia Pacific Journal of Education*, *34*(4), 2014; *ECNU Review of Education*, *2*(1), 2019; *Orbis Scholae*, *14*, 2020. Two issues are planned for the *Hungarian Educational Research Journal*, *10*, 2021 and *ECNU Review of Education*, *4*(3), 2021.

[11] The authors could give many examples, but they do not do so here because they do not wish to advertise poor-quality and misleading work.

[12] The 1999 book *The Shadow Education System: Private Tutoring and its Implications for Planners* had been similarly, albeit slightly differently, translated as *Á l'ombre du système éducative—Le développement des cours particuliers: conséquences pour la planification de l'éducation*, of which the first part could be back-translated as *In the shadow of the education system*.

REFERENCES

Aizstrauta, D., Leokena, E., & Dedze, I. (2004). *Privātskolotāju pakalpojumu lietojums vidussskolēnu vidū [*Tutor service use among high school students*]*. Valmiera, Latvia: Department of Political Science, Vidzeme University.

Aurini, J., & Davies, S. (2013). Supplementary education in a changing organizational field: The Canadian case. In J. Aurini, S. Davies, & J. Dierkes (Eds.), *Out of the shadows: The global intensification of supplementary education* (pp. 155–170). Bingley, England: Emerald.

Baker, D. P. (2014). *The schooled society: The educational transformation of global culture*. Stanford, CA: Stanford University Press.

Baker, D. P., Akiba, M., LeTendre, G., & Wiseman, A. W. (2001). Worldwide shadow education: Outside-school learning, institutional quality of schooling, and cross-national mathematics achievement. *Educational Evaluation and Policy Analysis*, *23*(1), 1–17. https://doi.org/10.3102/01623737023001001

Bashir, S., Lockheed, M., Ninan, E., & Tan, J.-P. (2018). *Facing forward: Schooling for learning in Africa*. Washington DC: The World Bank.

Bevan, B., Bell, P., Stevens, R., & Razfar, A. (Eds.). (2013). *LOST opportunities: Learning in out-of-school time*. Dordrecht, the Netherlands: Springer.

Bray, M. (1999). *The shadow education system: Private tutoring and its implications for planners*. Fundamentals of Educational Planning 61. Paris, France: UNESCO International Institute for Educational Planning (IIEP).

Bray, M. (2003). *Adverse effects of private supplementary tutoring: Dimensions, implications and government responses*. Series: Ethics and Corruption in Education. Paris, France: UNESCO International Institute for Educational Planning (IIEP).

Bray, M. (2009). *Confronting the shadow education system: What government policies for what private tutoring?* Paris, France: UNESCO International Institute for Educational Planning (IIEP).

Bray, M. (2011). *The challenge of shadow education: Private tutoring and its implications for policy makers in the European Union*. Brussels, Belgium: European Commission.

Bray, M. (2020). Shadow education in Europe: Growing prevalence, underlying forces, and policy implications. *ECNU Review of Education*, *4*. [East China Normal University]. https://doi.org/10.1177/2096531119890142

Bray, M., Kobakhidze, M. N., & Suter, L. E. (2020). The challenges of measuring outside-school-time educational activities: Experiences and lessons from the Programme for International Student Assessment (PISA). *Comparative Education Review*, *64*(1), 87–106. https://doi.org/10.1086/706776

Bray, M., & Kwo, O. (2014). *Regulating private tutoring for public good: Policy options for supplementary education in Asia*. Hong Kong, China: Comparative Education Research Centre, The University of Hong Kong and Bangkok, Thailand: UNESCO.

Bray, M., & Kwo, O. (2015). Organisational and cross-cultural issues: Learning from research approaches. In M. Bray, O. Kwo, & B. Jokić (Eds.), *Researching private supplementary tutoring: Methodological lessons from diverse cultures* (pp. 261–288). Hong Kong, China: Comparative Education Research Centre, The University of Hong Kong and Dordrecht, the Netherlands: Springer.

Bray, M., Kwo, O., & Jokić, B. (2015). Introduction. In M. Bray, O. Kwo, & B. Jokić (Eds.), *Researching private supplementary tutoring: Methodological lessons from diverse cultures* (pp. 3–19). Hong Kong, China: Comparative Education Research Centre, The University of Hong Kong and Dordrecht, the Netherlands: Springer.

Bray, M., & Lykins, C. (2012). *Shadow education: Private tutoring and its implications for policy makers in Asia*. Mandaluyong City, Philippines: Asian Development Bank and Hong Kong, China: Comparative Education Research Centre, The University of Hong Kong.

Brehm, W. (2015). *Enacting educational spaces: A landscape portrait of privatization in Cambodia* (PhD thesis). The University of Hong Kong, China.

Brehm, W., & Silova, I. (2014). Hidden privatization of public education in Cambodia: Equity implications of private tutoring. *Journal for Educational Research Online*, *6*(1), 94–116.

Buchmann, C., Condron, D. J., & Roscigno, V. J. (2010a). Shadow education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, *89*(2), 435–462. https://doi.org/10.1353/sof.2010.0105

Buchmann, C., Condron, D. J., & Roscigno, V. J. (2010b). Shadow education: Theory, analysis and future directions—A rejoinder. *Social Forces*, *89*(2), 483–490. https://doi.org/10.1353/sof.2010.0105

Byun, S.-Y. (2014). Shadow education and academic success in South Korea. In H. Park & K.-K. Kim (Eds.), *Korean education in changing economic and demographic contexts* (pp. 39–58). Dordrecht, the Netherlands: Springer.

China, Ministry of Education, Cyberspace Administration of China, Ministry of Industry and Information Technology, Ministry of Public Security, the State Administration of Press, Publication, Radio, Film and Television (SAPPRFT), National Office Against Pornographic and Illegal Publications. (2019). 关于规范校外线上培训的实施意见 [Implementation opinions on regulating out-of-school online tutoring]. Beijing, China. Retrieved from http://www.moe.gov.cn/srcsite/A06/s3325/201907/t20190715_390502.html

China, Ministry of Education, Ministry of Civil Affairs, Ministry of Human Resources & Social Security, & State Administration for Industry & Commerce. (2018). 关于切实减轻中小学生课外负担开展校外培训机构专项治理行动的通知 [Notice on a special campaign to rectify out-of-school training institutions in order to reduce extracurricular study burden on primary and secondary students]. Beijing, China. Retrieved from http://www.moe.gov.cn/srcsite/A06/s3321/201802/t20180226_327752.html

Choi, Á., Calero, J., & Escardíbul, J.-O. (2012). Private tutoring and academic achievement in Korea: An approach through PISA-2006. *KEDI Journal of Educational Policy*, *9*(2), 299–322.

Choi, J., & Cho, R. M. (2016). Evaluating the effects of governmental regulations on South Korean private cram schools. *Asia Pacific Journal of Education*, *36*(4), 599–621. https://doi.org/10.1080/02188791.2015.1064356

Choi, Y. (2018). The heterogeneous effects of shadow education on SAT scores. *Development and Society*, *47*(3), 451–476.

Christensen, S. (2019). *Shadow education and Scandinavian educational culture: Some preliminary observations*. Powerpoint for lecture at Jawaharlal Nehru University, New Delhi, 14 March.

Commonwealth Secretariat. (2015). *Education in the Commonwealth: Quality education for equitable development*. London, UK: Commonwealth Secretariat.

Davies, S. (2014). School choice by default? Understanding the demand for private tutoring in Canada. *American Journal of Education*, *110*(3), 233–255. https://doi.org/10.1086/383073

de Castro, B. V., & de Guzman, A. B. (2013). Proliferation of shadow education institutions (SEIs) in the Philippines: A time series analysis. *Asia-Pacific Education Researcher*, *22*(3), 341–345. https://doi.org/10.1007/s40299-013-0069-x

Długosz, P. (2012). Korepetycje maturzystów pogranicza w latach 2008–2011 [Private lessons of school-leavers in the years 2008–2011]. *Kultura I Edukacja*, *2*, 87–106.

Dooley, K., Liu, L. L., & Yin, Y. M. (2020). Supplying private tuition: Edu-business and Asian migration in Australia. *Discourse*, *41*(1), 98–109. https://doi.org/10.1080/01596306.2018.1461063

Dubai, Knowledge & Human Development Authority. (2013). *Order No.(1) of 2013 for classification and description of training activities that are allowed to be conducted by the training institutes in the Emirate of Dubai*. Dubai, UAE: KHDA. Retreived from https://www.khda.gov.ae/CMS/WebParts/TextEditor/Documents/31OrderNo.1TrainingActivites-EN.pdf

Foondun, A. R. (2002). The issue of private tuition: An analysis of the practice in Mauritius and selected South-East Asian countries. *International Review of Education*, *48*(6), 485–515. https://doi.org/10.1023/A:1021374811658

Galinié, A., & Heim, A. (2016). *Inégalités scolaires: Quels rôles jouent les cours privés? [Schooling inequalities: What roles are played by private courses?]*. Paris, France: Conseil National d'Évaluation du Système Scolaire.

George, C. (1992). Time to come out of the shadows. *Straits Times*, 4 April, p. 28.

Government of Bihar. (2010). *Bihar coaching institute (control and regulation) act 2010*. Patna, Bihar: Government of Bihar, India.

Government of Kenya. (2013). *The basic education act*, *No.14 of 2013*. Nairobi, Kenya: Government Printer.

Grodsky, E. (2010). Learning in the shadows and in the light of day: *A commentary* on Shadow education, education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, *89*(2), 475–481. https://doi.org/10.1353/sof.2010.0063

Gupta, A. (2019). Teacher-entrepreneurialism: A case of teacher identity formation in neoliberalizing education space in contemporary India. *Critical Studies in Education*. https://doi.org/10.1080/17508487.2019.1708765

Hallsén, S., & Karlsson, M. (2019). Teacher or friend?—Consumer narratives on private supplementary tutoring in Sweden as policy enactment. *Journal of Education Policy*, *34*(5), 631–646. https://doi.org/10.1080/02680939.2018.1458995

Hartmann, S. (2013). Education "home delivery" in Egypt: Private tutoring and social stratification. In M. Bray, A. E. Mazawi, & R. G. Sultana (Eds.), *Private tutoring across the Mediterranean: Power dynamics, and implications for learning and equity* (pp. 57–75). Rotterdam, the Netherlands: Sense.

Hemachandra, H. L. (1982). The growing phenomena of tuition classes: The perceived reasons and some latent social factors. *Sri Lanka Journal of Social Sciences*, *5*(2), 39–69.

Hof, S., & Wolter, S. C. (2012). *Nachhilfe: Bezahlte ausserschulische Lernunterstützung in der Schweiz* [Private tutoring: Paid extracurricular learning support in Switzerland]. Staff Paper 8. Aarau, Switzerland: Schweizerische Koordinationsstelle für Bildungsforschung.

Huang, M.-H. (2013). After-school tutoring and the distribution of student performance. *Comparative Education Review*, *57*(4), 689–710. https://doi.org/10.1086/671346

Hussein, M. G. A. (1987). Private tutoring: A hidden educational problem. *Educational Studies in Mathematics*, *18*(1), 91–96. https://doi.org/10.1007/BF00367916

Ireson, J., & Rushforth, K. (2004). Mapping the nature and extent of private tutoring at transition points in education. *Paper presented at the conference of the British Educational Research Association*, Manchester, 16–18 September. Retreived from https://pdfs.semanticscholar.org/b344/20b11b130e10f7dd5c5be6035c84ffba6737.pdf

Jokić, B. (Ed.). (2013). *Emerging from the shadow: A comparative qualitative exploration of private tutoring in Eurasia*. Zagreb, Croatia: Network of Education Policy Centers (NEPC).

Joshi, P. (2019). Private schooling and tutoring at scale in South Asia. In P. M. Sarangapani & R. Pappu (Eds.), *Handbook of education systems in South Asia* (pp. 1–20). Singapore: Springer.

Kim, S., & Lee, J.-H. (2010). Private tutoring and demand for education in South Korea. *Economic Development and Cultural Change*, *58*(2), 259–296. https://doi.org/10.1086/648186

Kim, T. (2004). *Shadow education: School quality and demand for private tutoring in Korea*. Working paper. Seoul, South Korea: KDI Institute of Public Policy and Management.

Kim, Y. C., Gough, N., & Jung, J.-H. (2018). Shadow education as an emerging focus in worldwide curriculum studies. *Curriculum Matters*, *14*, 8–30. https://doi.org/10.18296/cm.0027

Kim, Y. C., & Jung, J.-H. (2019). Conceptualizing shadow curriculum: Definition, features and the changing landscapes of learning cultures. *Journal of Curriculum Studies*, *51*(2), 141–161. https://doi.org/10.1080/00220272.2019.1568583

Korea, Ministry of Education, Science & Technology. (2009). 공교육 경쟁력 향상을 통한: 사 교 육 비 경 감 대 책 *[Scheme to curb private education expenditure by improving competitiveness in public education]*. Seoul, South Korea: Ministry of Education, Science & Technology.

Kuan, P.-Y. (2011). Effects of cram schooling on mathematics performance: Evidence from junior high students in Taiwan. *Comparative Education Review*, *55*(3), 342–368. https://doi.org/10.1086/659142

Kumon. (2020). *History of Kumon*. Retrieved from https://www.kumon.org/our-history

Lee, C. J., Lee, H., & Jang, H.-M. (2010). The history of policy responses to shadow education in South Korea: Implications for the next cycle of policy responses. *Asia Pacific Education Review*, *11*(1), 97–108. https://doi.org/10.1007/s12564-009-9064-6

Lee, J. (2007). Two worlds of private tutoring: The prevalence and causes of after-school mathematics tutoring in Korea and the United States. *Teachers College Record*, *109*(5), 1207–1234.

Li, J. (2020). Substitution or complementation: The relationship between school education and shadow education. *Best Evidence of Chinese Education*, *4*(1), 411–424. https://doi.org/10.2139/ssrn.3534829

Liao, X., & Huang, X. (2018). Who is more likely to participate in private tutoring and does it work? Evidence from PISA (2015). *ECNU Review of Education*, *1*(3), 69–95. https://doi.org/10.30926/ecnuroe2018010304

Liu, J. (2017). *Parents as consumers in a marketised educational environment: The demand for private supplementary tutoring at primary and lower secondary levels in China* (PhD thesis). The University of Hong Kong, China.

Ljusberg, A.-L., Jeon, S. B., Han, S. L., Bray, M., & Zhang, W. (2018). A comparison of the afterschool programs of Korea and Japan: From the institutional and ecological perspectives. *International Journal for Research on Extended Education*, *6*(1), 27–48. https://doi.org/10.3224/ijree.v6i1.04

Malik, M. A. (2017). Shadow education: Evolution, flaws and further development of the term. *Social Sciences and Education Research Review*, *4*(1), 6–29.

Manzon, M., & Areepattamannil, S. (2014). Shadow educations: Mapping the global discourse. *Asia Pacific Journal of Education*, *34*(4), 389–402. https://doi.org/10.1080/02188791.2014.969194

Marimuthu, T., Singh, J. S., Ahmad, K., Lim, H. K., Mukherjee, H., Osman, S., … Jamaluddin, W. (1991). *Extra-school instruction, social equity and education quality* [in Malaysia]. Singapore: International Development Research Centre.

Mauritius, Ministry of Education, Culture and Human Resources. (2008). *Education and human resources strategy plan 2008–2020*. Port Louis, Mauritius: Author.

Melese, W., & Abebe, M. (2017). Demand and supply of supplementary private tutoring in upper primary schools of Ethiopia. *International Online Journal of Educational Sciences*, *9*(3), 629–640. https://doi.org/10.15345/iojes.2017.03.004

Mikhaylova, T. (2019). Shadow education—Russian edition. Presentation to the First Meeting of Asian Scandinavian Network on Shadow Education, Danish School of Education, Aarhus University, Copenhagen.

Mischo, C. (2014). Private tutoring from Bronfenbrenner's perspective. *Journal for Educational Research Online*, *6*(1), 117–123.

Napporn, C., & Baba-Moussa, A. R. (2013). Accompagnement et soutien scolaires: L'expérience béninois. [Accompaniment and school support: The Benin experience]. *Revue Internationale d'éducation de Sèvres*, *62*, 79–88. https://doi.org/10.4000/ries.3120

Ozaki, M. (2015). *A juku childhood: Children's experiences in juku attendance and its relation to their well-being in Japan* (PhD thesis). University of Bath, England.

Pakistan. (2019). Govt bars public school teachers from private tutoring. *Pakistan Today*. Retrieved from https://www.pakistantoday.com.pk/2019/02/20/govt-bars-public-school-teachers-from-private-tutoring/

Park, H., Buchmann, C., Choi, J., & Merry, J. J. (2016). Learning beyond the school walls: Trends and implications. *Annual Review of Sociology*, *42*, 231–252. https://doi.org/10.1146/annurev-soc-081715-074341

Paviot, L. C. (2015). *Private tuition in Kenya and Mauritius: Policies, practices and parents' perceptions examined from an ecological systems perspective* (Doctor of Education thesis). Institute of Education, University College London, London, England.

Rao, S. (2017). Production of an "educational city": Shadow education economy and restructuring of Kota in India. In W. T. Pink & G. W. Noblit (Eds.), *Second international handbook of urban education* (pp. 417–443). Dordrecht, the Netherlands: Springer.

Roesgaard, M. H. (2006). *Japanese education and the cram school business: Functions, challenges and perspectives of the juku*. Copenhagen, Denmark: Nordic Institute of Asian Studies Press.

Rohlen, T. P. (1980). The *juku* phenomenon: An exploratory essay. *Journal of Japanese Studies*, *6*(2), 207–242. https://doi.org/10.2307/132321

Runte-Geidel, A. (2014). Clases particulares en España: Implicaciones en las desigualdades educativas [Private Tuition in Spain: Its Implications for Educational Inequalities]. *Revista Ibero-americana Da Educação*, *64*(2), 1–15. https://doi.org/10.35362/rie642367

Sato, Y. (Ed.). (2012). 学習塾百年の歴史・塾団体五十年史 *[One hundred years of juku and fifty years of juku associations]*. Tokyo, Japan: Federation of Private Tutoring Associations.

Shigwedha, A. N., Nakashole, L., Auala, H., Amakutuwa, H., & Ailonga, I. (2015). *A study of the conditions of schooling and the quality of primary education in Namibia*. SACMEQ IV Project. Windhoek, Namibia: Ministry of Education, Arts & Culture.

Silova, I., Būdienė, V., & Bray, M. (Eds.). (2006). *Education in a hidden marketplace: Monitoring of private tutoring*. New York, NY: Open Society Institute.

Song, K.-O., Park, H.-J., & Sang, K.-A. (2013). A cross-national analysis of the student- and school-level factors affecting the demand for private tutoring. *Asia Pacific Education Review*, *14*(2), 125–139. https://doi.org/10.1007/s12564-012-9236-7

Southgate, D. E. (2013). Family capital: A determinant of supplementary education in 17 nations. In J. Aurini, S. Davies, & J. Dierkes (Eds.), *Out of the shadows: The global intensification of supplementary education* (pp. 245–258). Bingley, England: Emerald.

Sriprakash, A., Proctor, H., & Hu, B. (2016). Visible pedagogic work: Parenting, private tutoring and educational advantage in Australia. *Discourse: Studies in the Cultural Politics of Education*, *37*(3), 426–441. https://doi.org/10.1080/01596306.2015.1061976

Šťastný, V. (2016). *Fenomén soukromého doučování jako stínový vzdělávací systém v České republice [Private supplementary tutoring phenomenon as a shadow education system in the Czech Republic]* (PhD thesis). Prague, Czech Republic: Charles University.

Šťastný, V. (2017). Challenges, pitfalls and opportunities of researching shadow education through the internet. *E-Methodology*, *4*, 95–112.

Stecher, L., Maschke, S., Klieme, E., Fischer, N., Dyson, A., … Bae, S. H. (2013). Editorial. *International Journal for Research on Extended Education*, *1*(1), 3–4.

Stevenson, D. L., & Baker, D. P. (1992). Shadow education and allocation in formal schooling: Transition to university in Japan. *American Journal of Sociology*, *97*(6), 1639–1657. https://doi.org/10.1086/229942

Suter, L. E. (2016). Outside school time: An examination of science achievement and non-cognitive characteristics of 15-year olds in several countries. *International Journal of Science Education*, *38*(4), 663–687. https://doi.org/10.1080/09500693.2016.1147661

Takashiro, N. (2018). Technology use and middle school students' participation in shadow education in Japan. *International Psychology Bulletin*, *22*(4), 14–21.

Tarekegne, W. M., & Kebede, M. A. (2016). Exploration of characteristics of supplementary private tutoring in elementary schools of Ethiopia. *Journal of Elementary Education*, *26*(2), 63–81.

Tomorrow Advancing Life (TAL) (2020). *Combat COVID-19*. Retrieved from http://freeresource.100tal.com/

Tsiloglu, L. (2005). *Τα φροντιστήρια στην Ελλάδα: Η ιστορία και οι άνθρωποι. [Frontistiria in Greece: History and people]*. Athens, Greece: Kedros.

UNESCO. (2008). *Overcoming inequality: Why governance matters*. EFA Global Monitoring Report 2009. Paris, France: Author.

UNESCO. (2017). *Accountability and education: Meeting our commitments*. Global Education Monitoring Report 2017/18. Paris, France: Author.

UNESCO IITE (Institute for Information Technologies in Education). (2020). *Combat COVID-19: Keep learning. Together we are on the move!*. Retrieved from https://iite.unesco.org/combating-covid-19-together-we-are-on-the-move/

United Arab Emirates. (2019). UAE to legalise private tutoring in order to improve standards in schools. *The National*. 26 April. Retrieved from https://www.thenational.ae/uae/education/uae-to-legalise-private-tutoring-to-improve-standards-in-schools-1.853516

United Nations. (2015). *Report of the special rapporteur on the right to education*. New York, NY: Human Rights Council, United Nations. Retreived from https://www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/UNSR_Report_HRC_Commercialisation_Education_2015.pdf

Ventura, A., Costa, J. A., Neto-Mendes, A., & Azevedo, S. (2008). Dimensão e características da frequência de explicações no 12º ano: Do local ao nacional [Dimensions and characteristics of tutoring attendance in Year 12: From local to national]. In J. A. Costa, A. Neto-Mendes, & A. Ventura (Eds.), *Xplika: Investigação sobre o Mercado das Explicações* (pp. 119–145). Aveiro, Portugal: Universidade de Aveiro.

Ventura, A., & Jang, S. (2010). Private tutoring through the internet: Globalization and offshoring. *Asia Pacific Education Review*, *11*(1), 59–68. https://doi.org/10.1007/s12564-009-9065-5

World Bank. (2005). *Expanding opportunities and building competencies for young people: A new agenda for secondary education*. Washington, DC: Author.

Yamato, Y., & Zhang, W. (2017). Changing schooling, changing shadow: Shapes and functions of *juku* in Japan. *Asia Pacific Journal of Education*, *37*(3), 329–343. https://doi.org/10.1080/02188791.2017.1345719

Zambeta, E. (2014). Education and social solidarity in times of crisis: The case of voluntary shadow education in Greece. *Education Enquiry*, *5*(1), 69–88. https://doi.org/10.3402/edui.v5.24058

Zhang, W. (2014). The demand for shadow education in China: Mainstream teachers and power relations. *Asia Pacific Journal of Education*, *34*(4), 436–454. https://doi.org/10.1080/02188791.2014.960798

Zhang, W. (2017). 世界規模で広がる「影の教育(学校外私教育)」:進化する形態と東アジア地域からの献策。*[Shadow education as a global phenomenon: Evolving patterns and lessons from East Asia]* (pp. 6–9). Chiba, Japan: Chiba Juku Association 30th Anniversary Magazine.

Zhang, W. (2019a). Regulating private tutoring in China: Uniform policies, diverse responses. *ECNU Review of Education*, *2*(1), 25–43. https://doi.org/10.1177/2096531119840868

Zhang, W. (2019b). Regulating supplementary education in East Asia: Lessons from shifting paradigms. *Paper presented at the 63rd Annual Conference of the Comparative & International Education Society (CIES)*, San Francisco, USA.

Zhang, W., & Bray, M. (2017). Micro-neoliberalism in China: Public-private interactions at the confluence of mainstream and shadow education. *Journal of Education Policy*, *32*(1), 63–81. https://doi.org/10.1080/02680939.2016.1219769

Zhang, W., & Yamato, Y. (2018). Shadow education in East Asia: Entrenched but evolving private supplementary tutoring. In K. Kennedy & J. C. K. Lee (Eds.), *Routledge international handbook on schools and schooling in Asia* (pp. 323–332). London, UK: Routledge.

How to cite this article: Zhang W, Bray M. Comparative research on shadow education: Achievements, challenges, and the agenda ahead. *Eur J Educ*. 2020;55:322–341. https://doi.org/10.1111/ejed.12413