



Education

1. Introduction

It is hardly surprising that education is at the forefront of the preoccupations of politicians, especially those seeking election or re-election. However convoluted their thinking, however inextricably their goals to better their country are enmeshed with self-interest, they cannot fail to recognize that the education of children is crucial for a nation's ascendancy; Aristotle is reputed to have asserted that the fate of empires depends on the education of youth. Gone are the days when the provision of cannon fodder drove policy. In today's highly sophisticated environment, individuals need to have mastery of a great deal of specialized information in order to contribute to their country's success, built upon a solid foundation that, ideally, includes such elements as critical thinking and making sense of the world. Emmanuel Macron, recently elected as President of France, appeals "pour une école qui garantisse la réussite de tous et l'excellence de chacun". The two main political parties in the UK devote a significant part of their manifestos to education. Labour endorses the "cradle-to-grave" concept, which was consequentially implemented in the USSR and its satellites, by creating a National Education Service; the emphasis on ensuring that all schools are democratically accountable differentiates the policy from that of the USSR. The Conservatives are less explicit but no less cognizant of education's importance; the measures they propose aim to even out the considerable disparities between the quality of state schooling in different parts of the country,¹ under the banner of making Britain the world's Great Meritocracy. Whatever the policy details, all parties desire to increase spending on education and expand provision. The opinion that "education keeps people off welfare, out of hospital and away from prison"² is widely held. In effect, the educational system aims to fulfil the economic needs of wider society. Hence, government sees its expenditure on education as a worthwhile investment, the return on which is manifested by leading to lower expenditure in other areas. Evidently (as inferred from the high degree of private expenditure on education), this opinion is shared by private households—see Table 1, which augments data given earlier for a selection of countries (in that work,³ expenditure on education was deliberately omitted, "because it is well known that education spending is poorly correlated with results"). The idea of education as an investment persists into the tertiary (university) sector, although J-value analysis clearly shows that indefinite growth in the number of graduates is not justified.⁴

Disappointingly, party manifestos rarely, if ever, go deeply into matters in order to enable policy to be placed on a firm foundation. Regarding education, a deeper look seems to be

¹ This aim recalls one of those of the NHS, to even out disparities between the quality of medical care in different parts of the country.

² K. Brewin, Education cuts are nothing but a false economy. *Manchester Guardian* (27 May 2017).

³ J.J. Ramsden, Maintaining national ascendancy. *Nanotechnol. Perceptions* **11** (2015) 75–87.

⁴ G.C. Holt, Higher education: a risk too far. *Nanotechnol. Perceptions* **8** (2012) 139–147.

Table 1. Educational expenditure and outcomes for selected countries.^a

Country	Public expenditure (%GDP) ^b	Private expenditure (%GDP) ^b	PISA score for mathematics ^d	PISA score for reading ^d
Brazil	16.1	5.2	391	410
China	14.9	?	?	?
Egypt	?	?	?	?
France	8.4	5.3	495	505
Germany	9.5	4.3	514	508
India	?	?	?	?
Japan	8.1	4.5	536	538
Russia	8.3 ^c	3.8 ^c	482	475
UK	12.1	6.7	494	499
USA	11.6	6.2	481	498

^a The same countries as in ref. 3 in order to facilitate comparisons.

^b Source: data.oecd.org/eduresource/public-spending-on-education.htm. Data for 2013 unless otherwise indicated.

^c Data for 2012.

^d 2012 results. Source: Programme for International Student Assessment (PISA), run by the OECD.

particularly called for because no major country has adopted anything that can clearly be perceived as best practice.⁵ We still do not know what best practice is overall. What we do perceive is that any society in which a substantial cohort grows up largely ignorant and with very limited reasoning ability has, in some fundamental way, failed. Only a degree of pseudoadaptation—manifested as social solidarity—prevents such a society from collapsing.

2. The Richard Koch Breakthrough Prize

The London-based Institute of Economic Affairs (IEA) recently organized a 2000–3000 word essay competition, in which entrants had to propose “a single policy initiative having a major impact on increasing economic prosperity or improving social outcomes or both for a substantial segment of the bottom third of the income distribution in the UK and other advanced economies, and increase the economic freedom of the population as a whole”.

The idea of such an initiative is highly laudable, and one can only regret that it is a rarity. Although, as in many competitions, the choice of winner may seem somewhat arbitrary (the winning entry, by Mark Feldner and Matthew Bonnon, proposed a system of fiscal liberalization, in which regions would acquire tax powers and compete with one another, as is already the case in Switzerland, for example), many people (the competitors) will have been motivated to think carefully about innovative policies, and further new ideas are undoubtedly generated through reading the winning entries, which are made publicly accessible after the event.

Alongside the winner, three further essays were highly commended, two of which dealt with education. One of them (authored by Ben Clements), entitled “Every child counts”, proposed introducing a means-tested voucher system, with which poor families could purchase

⁵ Currently, cities and city-states show the best outcomes in PISA scores (from 2012): Shanghai (613, 517), Singapore (573, 542), Hong Kong (561, 545) and Taipei (560, 523) in mathematics and reading, respectively. Cf. Table 1.

additional educational support. South Korea was seen as an inspirational model. It has a private, after-school tutoring service providing a “shadow education system”. Clements remarks that “South Korea is effectively preparing its children for the competitive global economy”.⁶ The second highly commended essay dealing with education (authored by James Tooley) proposed creating a chain of low-cost (fees of £50 per week) private schools, inspired by the great success of such schools in many developing countries.⁷ The low cost (between one fifth and one tenth of usual private school fees) would be achieved by renting buildings, employing new teachers (paid much less than experienced ones) and eschewing all kinds of luxuries such as sports facilities. The schools would concentrate on achieving mastery of the basics: native language and mathematics.

The premiss behind the entry requirements for the Prize seems to have been that a nation cannot afford to waste latent talent by allowing it to languish in underachievement. In other words, there is no intrinsic distribution of *ability* that ineluctably condemns one third of the population to a low income. Some would argue that it is the general social and economic structure and organization of a country that lead to the existence of a poor segment of society (cf. the Prize essay by Feldner and Bonnon). Flaws in the structure and organization lead to inequality of opportunity. But, before proposing radical changes, it does indeed seem sensible to look at education (of children). Any inequality at that stage is likely to become fixed in the population, persisting throughout adult life.

3. The purpose of education

Children are born of parents, and it is fundamental that parents are responsible not only for providing food, shelter and security for their offspring, but also for ministering to their intellectual needs, preparing them to be autonomous adult members of society. The one thing that the nuclear family cannot, however, provide is socialization. In very early, primitive societies it is likely that families were sufficiently closely connected to provide a common upbringing for their children; the earliest known civilizations, such as the Sumerians in southern Mesopotamia, organized schools for children, hence providing an early example of division of labour.⁸ The point of having schools was to provide socialization and to facilitate the acquisition of specialized knowledge that, even if the parents possessed it themselves, they would not have had the time to teach, since knowledge worth imparting was presumably valuable and, hence, exercising it would likely have been the means of earning an income for the family.

⁶ Clements’ enthusiasm for South Korea’s educational achievements should have been tempered by knowledge of their considerable human cost, manifested in miserable children and a very low birth rate. See, e.g., various articles in *The Economist*—“The other arms race” (special report on education in South Korea), 26 October 2013; “The crème de la cram”, 19 September 2015.

⁷ E.g., *The Economist*—“Learning unleashed”, 1 August 2015.

⁸ Although often associated with Adam Smith and the modern economic system,⁹ in reality the division of labour was probably already in general existence in the earliest civilizations. In mediaeval times it was elaborately codified via the system of guilds. Simpson has presented arguments for widespread, ancient origins in the world of multicellular organisms.¹⁰

⁹ S. Rashid, Adam Smith and the division of labour: a historical view. *Scottish J. Political Econ.* **33** (1986) 292–297.

¹⁰ C. Simpson, The evolutionary history of division of labour. *Proc. R. Soc. B* **279** (2012) 116–121.

4. Who should provide education?

“Ideally parents should only have as many children as they can properly bring up, above all by devoting sufficient time to their education”.¹¹ This ideal implies both that the productivity of working for survival is high enough to yield sufficient leisure to allow that sufficient time to be thus devoted, and that the parents *qua* educators have sufficient knowledge to do so. The unremitting growth of machinery and other advances in technology have enormously increased the productivity of work, and schools have been well-nigh universal in the developed world for several generations, implying that nowadays parents should have both the time and the knowledge enabling them to provide a suitable education for their own children. That this is manifestly not the case implies either some systemic failure or some vested interest preventing the realization of this goal.

5. The role of the state

It is not clear whether the early schools were “private” or “state”. In the era of Greek city states, their type of democracy implies that there would have been little difference between the two. The history of English education over the past half millennium reveals a fascinating symbiosis between them.¹² It is only when the state became a distinct entity in itself that the two (i.e., state and private education) began to diverge. Humboldt contributed a valuable attempt to define the legitimate radius of action of the state.¹³ By the late 19th century, public administration had become an academic discipline and handbooks for its study were available.¹⁴ Humboldt made the very important point that the most valuable attribute of a society is its diversity. A nationwide system of state education inevitably imposes uniformity, to the detriment of diversity. In the UK, the 1988 Education Reform Act paved the way for the introduction of a National Curriculum, seen by some as the apotheosis of an imposed uniformity. Humboldt argued forcefully that the role of the state was merely to ensure the maintenance of appropriate external circumstances (*die Umstände*), whereas upbringing (education, *die Erziehung*) was a matter for the individual. Interestingly, notwithstanding his well-argued case, his own nation has one of the strongest biases in favour of state education (cf. Table 1).¹⁵ In England, the debate continues to this day; a notable innovation was the introduction of free schools by the coalition government following the 2010 general election; free schools can be set up by parents, teachers and others and benefit from state support, so that pupils do not have to pay fees, but in return they are merely subject to state inspections and are free to determine their own curriculum. They seem to represent an excellent compromise between the conventional state system embodied by the 1944 Education Act, which for the first time in England provided a free, common and universal system of education (up to age 18), and the low-cost private schools advocated by Tooley (§2).

¹¹ J.J. Ramsden, Nanotechnology and Gaia. *Nanotechnol. Perceptions* **10** (2014) 173–189.

¹² W.H.G. Armytage, *Four Hundred Years of English Education*. Cambridge: University Press (1964).

¹³ W. von Humboldt. *Ideen zu einem Versuch, die Gränzen der Wirksamkeit des Staats zu bestimmen*. Breslau: Eduard Trewendt (1851) (written in 1792).

¹⁴ L. Stein, *Handbuch der Verwaltungslehre*. Stuttgart: J.G. Cotta (1870).

¹⁵ Contradicting the dictum that the state will always work towards extending its powers (for, in the spirit of Darwinism, were it to do the opposite it would eventually disappear), Sir Francis Sandford,

Unfortunately the results of the 1944 Act have not been very successful. Is it a case of systemic failure? “Success” has, of course, to be carefully defined. We do not know what would have happened in the absence of the Act; we can only really compare with the private sector (i.e., the “public” schools); it is still too early to assess the fruits of the free schools. The continuing existence of the public schools is in itself an indicator of their success; were there no demand, hence no fee-paying parents, they would have to close. One problem with the state sector is its unevenness, which belies its claim to be universal. What makes a good school has often been studied; the most succinct generalization is probably Rutter’s conclusion that a good school resulted when the head ran a “tight ship”.¹⁷ Few would, perhaps, disagree; nevertheless the concept has certainly not been translated into universal best practice. Is there a deficiency of heads *capable* of running a tight ship? Typical of the problems faced by the state sector is the process whereby a good school generates strong competition for houses within its catchment area, driving up prices; a bad school does the opposite; a plutocratic element is thereby introduced into the selection of pupils for the school. One effect of this element may well be to amplify small differences in quality; many studies have found an association between parental income and children’s outcomes.

Nevertheless, it is time that parents spend with their children rather than parental income that seems to be important. The essence of a damning critique of Rutter’s study is that it grossly underestimated the influence of the confounding factor of home background.¹⁸ The key element of that home background, emphasized by Heath and Clifford, is parental interest and encouragement. Having outsourced the formal part of their children’s education to specialists to allow them time to devote to breadwinning, housekeeping, adult socializing and so forth, offering interest and encouragement is the least that parents can still do.¹⁹ The time that an adult is able to devote to his or her child may not be well correlated with income. In fact, they are often inversely correlated: a clear example is when both parents choose to accept paid employment outside the home. The fact that so much state policy has spent decades encouraging women to work (outside the home) suggests a vested interest of the state in diminishing home influence. The time pressures on single parents (which nowadays make up a substantial fraction, perhaps as much as a quarter, of families) are even more extreme.

Reynolds et al., in their review of ref. 17,²¹ point out that ensuring the ideological and cultural hegemony of the state is one of the roles of the educational system. This confers a strong vested interest onto the state for expanding its role in education. Reynolds et al. also recall how manipulation of the formal organization of schooling was used in the 1960s in

appointed as permanent secretary of the Education Committee of the Privy Council in 1870, deprecated the extension of the power of the state over national education.¹⁶

¹⁶ Ref. 12, pp. 162–163. Armytage remarks that Sandford “possessed more administrative power over education than any other civil servant had ever done before or since in Great Britain”.

¹⁷ M. Rutter, B. Maughan, P. Mortimore and J. Ouston, with A. Smith, *Fifteen Thousand Hours: Secondary Schools and Their Effects on Children*. London: Open Books (1979).

¹⁸ A. Heath and P. Clifford, The seventy thousand hours that Rutter left out. *Oxford Rev. Educ.* **6** (1980) 3–19.

¹⁹ See Marjanovič-Umek et al.²⁰ for an example of a mechanism linking parental involvement with outcome.

²⁰ L. Marjanovič-Umek, U. Fekonja-Peklaj and A. Podlesek, The effect of parental involvement and encouragement on preschool children’s symbolic play. *Early Child Dev. Care* **184** (2014) 855–868.

²¹ D. Reynolds, A. Hargreaves and T. Blackstone. Review of [ref. 17] *Br. J. Sociol. Educ.* **1** (1980) 207–219.

Britain to achieve social changes desired by the government.²¹ Nevertheless, this vested interest cannot explain why systemic failure has been tolerated.^{22, 24}

6. Possible reasons for systemic failure

The study that resulted in ref. 17 was carried out against a background of general pessimism regarding the importance of schooling;²⁵ it was doubtless hoped, especially by its sponsor,²² that its positive findings would boost morale in the teaching profession. This pessimism does not, however, seem to have been shared in continental Europe. Furthermore, in most continental European countries the state schools have a long and honourable history and are considered to be superior to private ones.²⁶ In the schools of the USSR and its satellites, outstanding academic success was generally achieved, despite the burden of the intellectual baggage of Marxism–Leninism. Despite the observations of Humboldt,¹³ the possibility of state education producing obedient workers rather than critical thinkers does not seem to have been an issue. In 1839 Dr James Kay saw “no excuse for the ignorance, nay the barbarism of large numbers of Englishmen”.²⁶ The achievement of basic standards of literacy and numeracy surely transcends any ideological agendas within government. As Commander Maitland, the MP for Horncastle, remarked in the debate during the second reading of the NHS bill on 30 April 1946, “the greatest social security that any Government can confer on the people of this country is good health and a good education”. In the 70 years that have gone by since those words were spoken, the world of work has changed almost beyond recognition; to be sure, habits of regular work and study are perennially important,²⁷ but the “digital revolution” has made the concept of a throng of obedient workers as obsolete as that of cannon fodder.²⁹

If we accept the conclusions of the work of Rutter, despite its flaws, then we are saying, along with Dr Judge, “schools can make a difference if we know how to run them”.³⁰ If good schools could be provided in every neighbourhood, poor and prosperous alike, with well-

²² Ref. 17 emerged from a study sponsored by the Department of Education to determine the importance of (state) schooling.²³ As is so often the case, the effect of *prévenance*, even if unconscious, likely biased the study in favour of demonstrating importance rather than impotence

²³ Answer by Mr Forth to a written question by Mr Peter Bottomley. House of Commons *Hansard*, written answers to questions, col. 698 (25 November 1992).

²⁴ Acton’s paper²⁵ is also pertinent here.

²⁵ T.A. Acton, Educational criteria of success: some problems in the work of Rutter, Maughan, Mortimore and Ouston. *Educ. Res.* 22 (1980) 163–169.

²⁶ Armytage (ref. 12, p. 114) records the 3-month tour of Holland, France, Prussia and Switzerland, all of which had already established state systems of education, by Kay and Tufnell in 1839.

²⁷ The unpreparedness of the native on the edge of the primeval forest for regular work, although he could be industrious and able when he chose, was rather irksome to Albert Schweitzer in Lambaréné.²⁸

²⁸ A. Schweitzer, Social problems in the forest. In: *On the Edge of the Primeval Forest*, ch. 7. London: A. & C. Black (1924).

²⁹ “Digital revolution” may be somewhat misleading inasmuch as while digitizing information enables its acquisition, manipulation and storage on an unprecedentedly vast scale, almost inevitably it leads to some loss of information when nuance capable of infinitesimal gradation is converted into a finite number of numerical categories.

³⁰ Quoted by Acton.²⁵

motivated staff and with adequate buildings and materials,³¹ would not the goal of achieving excellence for everyone begin to look attainable?

To answer this question more carefully one needs to differentiate between different kinds of schools. Table 2 compares expenditure on them for the UK. From this data it is very clear that the overwhelming predominance of expenditure is on secondary education, which only occupies about 5000 hours of a pupil's school life.³³ It is easy to see why this is generally perceived as unexceptionable: secondary education deals with vast amounts of knowledge ostensibly requiring highly qualified teachers to impart it and laboratories, sports facilities and workshops are deemed to be necessary to complement classroom teaching. But we should recall that a child's character is essentially formed by age 3, with some plasticity remaining until about age 6.³⁴ It was already pointed out in ref. 11 that if the state indeed wishes to mould the population, it ought to take children into its care almost immediately after birth. The awful reality of today is that many parents do not seem to be up to the job. Parenting classes have been proposed,³⁵ but who should run them? Apparently, the state,³⁵ but *quis custodiet ipsos custodes?*

Table 2. UK expenditure on different levels of education.

	Preprimary	Primary	Secondary	Tertiary	Total
2015 expenditure/£M ^a	99	736	27,700	6656	85,800 ^b
Cohort size (2012) ^c		4.2 million	3.2 million		

^a Source: C. Chantrill, www.ukpublicspending.co.uk.

^b Total central government spending on education is £39,700 M; it includes smaller sums "not elsewhere classified" (n.e.c) as well as £46,600 M, not definable by level, incurred by local authorities. The total amounts to 11.3% of spending, or 4.7% of GDP (£1,838,600 M). This figure is somewhat lower than the percentage given in Table 1, for reasons unknown. The population was 64.3 million.

^c In state-funded schools. There were almost 580,000 pupils in independent schools.

7. A possible solution

The solution to the parenting problem should aim to solve it such that after one generation parents will themselves be able to nurture their children for the best outcomes, without external help. A generous allowance of parental leave should then be all that is necessary,³⁶ which would take care of the first 3 years. Concomitantly, unless there is a massive shift away from both

³¹ Albeit that factors dependent on finance make little difference.³²

³² T.W. Nagel, Do schools affect delinquency? (review of ref. 17). *Univ. Chicago Law Rev.* **49** (1982) 1118–1136.

³³ Ref. 17 only deals with secondary schools, hence its title is somewhat misleading, unless it is intended to imply that the outcomes depend on preparation in the primary schools as well as on the secondary schools themselves.

³⁴ M. Montessori, *The Absorbent Mind*. Madras: Theosophical Society (1949).

³⁵ E.g., by Prof. John Ashton, President of the UK Faculty of Public Health (*Daily Telegraph*, 17 January 2015) and by Prime Minister David Cameron (*Daily Telegraph*, 10 January 2016).

³⁶ Hungary allows 3 years to mothers, as did Austria until recently (now reduced to 2 years). Given the general trend for productivity to increase, there seems to be no justification for reducing maternity leave; 3 years accords well with Montessori's view of character formation.³⁴ At the time of writing, Hungary seems to offer the longest interval of leave in the developed world. For the modern family, it may be appropriate to grant 3 years of parental leave shared between mother and father as they wish.

parents being in employment (including self-employment),³⁷ preprimary school provision (ages 3 to 5 or 6) should be enormously expanded, although parents benefiting from the extended parental leave, especially if the leave associated with successive children overlaps, may not need to send their children to preprimary school. Compulsory schooling will begin with the primary level (four years, from ages 5 or 6 to 9 or 10), which should enjoy resources greater than those presently allocated to secondary schools. These resources will mainly be used for staff. Underperforming children should, essentially, be given one-to-one tuition, such that indeed “every child counts”; with such lavish provision one may come close to achieving Macron’s guarantee.

It is a corollary of the above that primary school teachers should become the most important and valuable members of their profession. Alongside that, pedagogy as a research discipline should be elevated in importance; while its status has improved in recent decades, there still seems to be enormous potential for progress in understanding how to achieve the result of having drawn out the best in every child.

In order to avoid any overall increase in the already large education budget, there must be a concomitant significant decrease in the resources allocated to secondary schools. Habits of sociability and diligence having been inculcated in the primary schools, the work of the secondary schools should become much easier, requiring substantially less formal teaching.³⁹ The enormous and freely available resources of the Internet should be exploited far more, and far more critically, than is generally done at present. Secondary “schools” should resemble something along the lines of the learning webs, peer-matching systems and skill exchanges advocated by Illich.^{40,41}

These arrangements would render both the shadow education system (constituted mainly by tutors and crammers) advocated by Clements (§2) and the low-cost private schools advocated by Tooley (§2) superfluous. Besides, although South Korea is lauded as a successful example of the creation of a shadow education system, it comes with a terrible cost to the children,⁶ who are subjected to a relentless study programme with barely any time for play. (The creation of low-cost private schools implies that the state sector could be massively downsized, but no thought appears to have been given to how this might be accomplished.)

Initially, some transient arrangements would have to interposed and maintained for long enough to produce parents capable of properly assuming their responsibilities (finding out how to do so seems like a great challenge; at present many parents seem not to be very interested in their children in the early years and happily pay for childcare if they can afford it). Thereafter, the educational system should become self-sustaining.

³⁷ It would be highly desirable to carry out a proper assessment of the social as well as the economic value of both parents being engaged in external or self-employment, properly taking into account the loss of parental guidance for the child. The assessment could be done using the concept of the judgment (J)-value.³⁸

³⁸ P.J. Thomas, Does health spending need to outpace GDP per head? *Nanotechnol. Perceptions* 13 (2017) 17–30.

³⁹ It has been inferred that the *ethos* of the secondary school (rather than family background or the outcome from primary schooling) is important for the promotion or prevention of delinquency.³²

⁴⁰ I. Illich, *Deschooling Society*. New York: Harper & Row (1971).

⁴¹ Cf. Kerala Sastra Sahithya Parishad, in which schools are adjuncts to libraries.

8. Other suggestions

Illich's learning webs have already been mentioned. His overall thesis is much more radical: that there is no real evidence that learning is the result of teaching.⁴⁰ The primary purposes of schools therefore become teaching the need to be taught and providing employment for teachers. Discerning parents of school-age children will probably agree that most things are learnt from peers, other adults and miscellaneous other sources and often despite, rather than because of, the efforts of teachers in the classroom, at least as far as brighter children are concerned. Teachers themselves are likely to agree that an overemphasis on achieving grades and getting certification is deleterious to true education, and are often resentful of state imposition of those aspects. Illich's proposal to forbid discrimination in employment on the basis of prior schooling is humane and deserves consideration regarding how it could be implemented.⁴² On the other hand Illich fails to consider that there is plenty of empirical evidence from individual life-histories that an inspiring teacher can change the course of someone's life (and, conversely, an uninspiring one can permanently put someone off a subject). He sees the social aspect of school almost exclusively in terms of preparing pupils to fit into existing society. It could, in fact, hardly be otherwise but it is deprecated by Illich because he disapproves of many aspects of modern society, such as the dominance of the industrial mode of production and all its implications. The arguments for his disapproval, which are elaborated upon in other books of his, have some merit but there is not space to discuss them here. The antipathy of Illich, a Roman Catholic priest, towards schools perhaps stems from the fact that state schools are undoubtedly instruments for consolidating state hegemony and are, therefore, often opposed to the interests of the church.

Provided schools cultivate a robust faculty for critical thinking, as some undoubtedly do, there is no reason why their alumni should not be at the forefront of pushing for beneficial changes to society. One of the few people to investigate whether modern technologies such as television, video games and the Internet contribute to a decline in critical thinking is Patricia Greenfield.^{43,44} The answer is not clear-cut; not least, perhaps, because innovative developments such as massive online open courses (MOOCs) rely on the Internet for their delivery.

Illich rightly perceives that many educational reform movements, such as free schools in the USA, a movement that began in the 1960s, may introduce unconventional ideas and new technologies, but fundamentally they remain firmly in the conventional mould of universal compulsory schooling. The same criticism applies to the newest trend in the USA, called blending, meaning an intimate anastomosis of conventional classroom teaching and innovative digital technologies.⁴⁵

⁴² Before they joined UCCA (now UCAS), the colleges of the Universities of Oxford and Cambridge occasionally admitted undergraduates who turned up a couple of weeks before the start of the academic year and were interviewed. If the college was favourably impressed, the student could be admitted without further formality. In terms of subsequent academic and other achievement, these students were indistinguishable from those admitted via the conventional channels.

⁴³ P.M. Greenfield, Technology and informal education: what is taught, what is learned. *Science* **323** (2009) 69–71.

⁴⁴ P.M. Greenfield, Linking social change and developmental change: shifting pathways of human development. *Developmental Psychol.* **45** (2009) 401–418.

⁴⁵ M.B. Horn and H. Staker, *Blended: Using Disruptive Innovation to Improve Schools*. San Francisco: Jossey-Bass (2015). This book is written with an unusually low density of information, it is extravagantly trumpeted as being in the vanguard of innovation, and it fails to acknowledge predecessors such as Illich.

It is also widely acknowledged, by ibn Khaldun, Buckle and Durkheim among others, that education is above all a *social enterprise*. Fundamentally, social life is too complex to be transmitted from generation to generation by heredity.⁴⁶ School is an efficient way of achieving socialization, which seems to be the aspect of school that children themselves value the most.

9. Conclusions

The fundamental idea put forward here is that the overwhelming amount of effort put into public education should be focused on the earliest years of compulsory schooling—from age 5 or 6 to age 9 or 10. Sound habits inculcated during that interval should enable the child to largely educate himself or herself in his or her teen years, with the help of abundant Internet resources and guidance from parents and teachers. One corollary of this approach is that the child should emerge from secondary education with a clear view in his or her own mind what he or she wishes to do subsequently.

The effective working of this approach presupposes that parents have well formed the child's character, which is generally fixed in the first 3 to 6 years of life. Some parents may need guidance, and there is certainly a great deal about this phase of life about which we know very little, and which should become a topic of intense research.

Regarding “public” (i.e., taxpayer-funded) versus “private”, the ideal would seem to be a middle way between subsistence and vernacular as advocated by Illich, and the imposed uniformity of the centralized state. Such a middle way could be achieved by a taxpayer-funded system with far greater local accountability. Even school inspections would become superfluous because localities should naturally compete with each other to organize the best education. The closest approximation to this situation is presently to be found in Switzerland, where responsibility for schooling belongs to the cantons and their subdivisions, as does raising taxes. Nevertheless, there is a constant trend towards centralization (i.e., the federal authorities), and it is worth noting that in the Renaissance the authorities mistrusted the introduction of schooling for the general population, because they feared it would undermine their monopoly of power.

One of the most valuable outcomes of a diversity of school systems is that good, or even best practice should quickly become apparent. The systems should be flexible enough to allow rapid adaptation, discarding features found not to work and adopting those seen elsewhere to be successful. It is assumed that after the transient arrangements (§7) are ended, parents will anyway have the ability to take primary responsibility for all aspects of education, which will limit the negative outcomes of unsuccessful experiments—which will anyway be locally circumscribed. One of the motivations for centralized supervision is the promotion of mobility of the population, but there is plenty of evidence from the careers of children who had to attend different schools in different countries, changing them every couple of years because their parents had to move, that such diversity enhances, rather than detracts from, education.

Regardless of any specific knowledge imparted during the interval of formal schooling, or in the course of an informal education, one should keep in mind that throughout the progression from preprimary through primary to secondary and beyond, the inculcation of suitable values commensurate with a sustainable civilization is the most important gift that one can impart to successive generations.

J.J. RAMSDEN

⁴⁶ G.M. Barnes, Emile Durkheim's contribution to the sociology of education. *J. Edu. Thought* **11** (1977) 213–223.