



**HOLES IN SOLEs: RE-EXAMINING THE ROLE OF EdTECH  
AND 'MINIMALLY INVASIVE EDUCATION'  
IN LANGUAGE LEARNING**

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**Abstract**

Over the past decade educational technology (EdTech) has made many inroads in language education. Yet the potential its proponents enthusiastically tout is usually at variance with the actual nuanced, complex and compounded social and pedagogical realities. This was potently obvious in the reaction that followed the plenary talk given at last year's annual conference of the International Associations of Teachers of English as a Foreign Language by Professor Sugata Mitra, advocate of 'Schools in the Cloud': 'self-organised learning environments' (SOLEs) where children in groups of 4-5 cluster around Internet-connected computers to find answers to cross-curricular questions, with the virtual support of volunteer grandmotherly mediators (mainly OAPs with experience in dealing with children and time on their hands). This paper addresses both the lessons that language pedagogy take away from the lecture and the approach in general, and the crucial reasons why educators, policymakers, and other stakeholders should be cautious in its adoption. While the concept of school learning may have to undergo another overhaul, EdTech and SOLEs are not a silver bullet or panacea for language teaching problems.

**Keywords:** educational technology, EdTech, self-organising learning environment, SOLE, minimally invasive education, hole-in-the-wall experiment, HiWEL, Schools in the Cloud, language learning

## 1. INTRODUCTION

Over the past decade educational technology (EdTech) has made many inroads in language education. Yet the potential its proponents enthusiastically tout is usually at variance with the actual nuanced, complex and compounded realities (for a critique of the value-laden rhetoric surrounding educational uses of digital technology see Selwyn, 2015). This was potently obvious in the reaction that followed the plenary talk given in Harrogate by Professor Sugata Mitra at last year's annual conference of the International Associations of Teachers of English as a Foreign Language (IATEFL). While some listeners gave him a standing ovation, a comparable number refused to budge from their seats (if they had not left halfway through the talk), and in the aftermath the blogosphere and social media exploded with impassioned and vehement commentary. The talk can be viewed at <https://youtu.be/Y3U15-MKHUQ>

Sugata Mitra is a professor of Educational Technology at Newcastle University. He gained fame for what became known as the 'Hole-in-the-Wall' (HiWEL, 'minimally invasive education'<sup>1</sup>) experiments. Finding that economically deprived areas suffered from a shortage of good teachers, in 1999 he fitted Internet-connected PC kiosks (much like DIY ATMs), all in English, in Delhi slums and primary school playgrounds in remote rural locations in India and Cambodia, and left them for computer-illiterate children with only a rudimentary understanding of English to play with unsupervised, to apparently remarkable results: soon after, the kids allegedly gained sufficient skills to be able to surf and play games, as well as—in a later experiment—to recite bits of an English text on molecular biology. A follow-up experiment purportedly showed that “groups of [nine year old] children given access to the Internet and left unsupervised will in the period of 9 months reach the same level of competence in computing literacy as the average office secretary in the west.”

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<sup>1</sup> On a side note, borrowing the term “minimally invasive” from surgery (Mitra & Rana, 2001; Mitra, 2003) is not very accurate, because in surgery a minimally invasive procedure means that the external symptoms are less visible—hence recovery to the previous state is shorter—and *do* involve intervention.

While we are at this terminological conundrum, a related nomenclatural problem is Mitra's statement that SOLEs emerge “as order emerges from chaos”: “at the edge of chaos, order emerges out of disorder.” Coming from a physicist, this is a perplexing oversimplification of what chaos and non-equilibrium systems are. In complex systems, emergent phenomena occur at a critical point following a phase transition, preceded by increase in noise and fluctuations, leading to a *measurably qualitatively different*, new state. Current reports of SOLEs do not seem to warrant such an analogy.



In 2013 Sugata Mitra won a \$1 million TED prize to develop his idea of 'Schools in the Cloud': 'self-organised learning environments' (SOLEs) where children in small groups cluster around Internet-connected computers to find answers to cross-curricular questions. They are also virtually 'visited' by volunteer 'grannies' (friendly grandmotherly figures, mainly OAPs with experience in dealing with children and time on their hands) who encourage and video chat with them.

(Language) teachers and decision-makers (ministerial and non-ministerial<sup>2</sup> departments, education funding agencies, testing agencies, review boards, examinations regulators and boards, advisory bodies, etc.) can certainly find much inspiration in the talk. Here is a subjective list, with points 1, 2, 4-9 and 11 being Mitra's original arguments and 1, 3, 5 and 10 (including) my subjective reading thereof:

## **2. LESSONS TO TAKE AWAY** (cf. Paradowski 2014, p. 8):

1. Give children credit and do not shy away from big questions; kids are often smarter than we make them out to be.<sup>3</sup> A lot of—if not most—learning happens outside the classroom, without pedagogical intervention and in the absence of a teacher.
2. Promote enquiry-based learning: instead of spoon-feeding pupils ready-made answers, pose engaging, provocative cross-curricular questions that they will want to answer themselves, and let them try to figure them out on their own first. In other words, let them produce, not passively consume (Jake West in a comment on Clark, 2013a). Be a facilitator, not a lecturer; kindle children's natural inquisitiveness and drive for discovery.
3. Allow them to work on and develop knowledge and competence (e.g. linguistic competence) in areas of their interest.
4. A skilful encouraging facilitator may aid her/his students in learning new facts in areas on which s/he is not an expert (but see the notes of caution later on in this text!).
5. Children will read and often comprehend much of materials normally intended for 'more serious' audiences (at least as long as they do not know

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<sup>2</sup> Similar to e.g. UK's Ofqual and Ofsted.

<sup>3</sup> It was not once that I heard of children being told by their—e.g. maths—teacher that they could not possibly have solved the exercise on their own because it was too difficult. If it was too difficult, why had the teacher assigned it in the first place?



- the intended readership). Doing so can boost their reading comprehension (indeed, many teaching materials oversimplify content and language).
6. Reward effort and offer positive reinforcement. A little admiration, encouragement and praise can go a long way; it empowers learners, builds confidence and leads to sustained engagement.
  7. School is a place for not only competition, but also collaborative learning (cf. Rysavy & Sales, 1991). Children like to share their findings and newly learnt knowledge.
  8. Teamwork can be implemented and classroom dynamics invigorated by giving one desktop to 4-5 children, assigning them a task, and asking to report the findings in front of the class.
  9. Make space for the Internet in the syllabus and pedagogy.
  10. Given the natural strategy of solving problems and answering questions using whatever resources are at our disposal rather than relying solely on what is in our heads, consider overhauling some exams to allow access to resources such as the Internet or dictionaries, if the aim of the assessment is to replicate real-life tasks. Taking into consideration the backwash/washback effect which examinations exert, this also means the focus of education should shift from test-taking ('test-teach-test') towards solving real-life (e.g. communicative) problems.<sup>4</sup>
  11. A nifty alternative to the language lab or software in self-assessment of pronunciation skills may be using speech-to-text software (at least if your goal is English<sup>5</sup> as a *foreign* language rather than English as a *lingua franca*).

Of course, most of this is little new or revolutionary. Learning by doing is the normal way for kids to go, and they have been working answers out for themselves out of necessity since the beginnings of humankind, long before anyone envisaged computers. Also, every parent knows that children can figure out how to use new hardware without reading the manual. Inductive, data-driven, discovery, experiential, task- (TBL) or project-based<sup>6</sup> and self-directed online learning, webquests, Dogme language teaching, and eTwinning have been around for some time, backed by the long tradition

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<sup>4</sup> Similar to the outcome-based education (OBTL) approach used in most education institutes in Hong Kong and Malaysia.

<sup>5</sup> In this paper English is merely used as an example foreign/second language.

<sup>6</sup> Where students search for answers and present their findings, with the teacher as a facilitator.



going back to Socrates, Rousseau, Jacotot<sup>7</sup>, Vygotsky and Feuerstein. Mitra merely goes further in minimising adult intervention, plugging in the Internet, and focussing on work in small groups.

Sugata Mitra is a masterful public speaker, unassuming, witty, able to establish rapport and recurrently evoke laughter and applause, spinning his well-scripted vivid narrative in a soft avuncular tone with an endearing slight Indian accent. All this gives power to his message, but some of the bold assertions seem utopian or superficial and may ring alarm bells (while to be fair at the same time some of the following arguments can at once be levelled at the way current organised school education is being conducted).

### **3. REASONS TO BE CAUTIOUS**

Many flaws were pointed out in the original HiWEL research setup, starting with a lack of a baseline and control groups (as Michael Butler observes in a comment on Chong, 2014, it is easy to measure against a failing norm) with material and time held constant and control for other influencing factors. The information on the benchmarks and measurement of the reported incremental increase—in particular of the incidental acquisition of English<sup>8</sup> (Petrie, 2014)—or whether all the slum kids acquired the skills to the same extent, was scarce as well. Given the symbol grounding problem<sup>9</sup> (Harnad 1990), it is implausible that the children neither knew no word of the language beforehand nor were offered any external scaffolding or bootstrapping – and indeed, the kids in Delhi had actually found someone with a knowledge of English and IT to show them how to operate the computer (Mitra & Rana, 2001, p. 228), while those in the remaining locations had “a rudimentary understanding” of English (Mitra *et al.*, 2005).

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<sup>7</sup> Jean Joseph Jacotot was the creator of the panecastic method of “intellectual emancipation”. He ascertained that he did not need to teach his Flemish students French, as provided with the right conditions they could learn on their own, as well as that teachers could teach things they themselves did not know (*cf.* Rancière 1987).

<sup>8</sup> We know that computer literacy was measured with a Windows icon recognition test (Mitra *et al.*, 2005), but it is difficult to imagine an analogous measure of assessing linguistic progress.

<sup>9</sup> The symbol grounding problem, formulated by Harnad (1990), refers to the way expressions get their meaning. If cognition were just a form of computation—symbolic manipulation—the question would immediately arise how these symbols (words) are connected to their referents. Harnad exemplified this conundrum (earlier taken on by Searle in his famous (1980) Chinese room thought experiment) by illustrating the unfeasibility of looking up the meanings of foreign words in a monolingual dictionary of a language one does not understand. (Solving this challenge becomes particularly crucial in embodied cognition, where symbols used by autonomous sensorimotor systems have to be grounded in order to allow interaction with the external objects they refer to; Paradowski 2012.)



Moreover, as Arora (2010b) points out, while the results achieved by the village children were indeed impressive, they had 75 days to engage with the (pre-downloaded) material on just one subject area with no time restrictions, while simultaneously continuing to be taught at school. Even a total amateur can learn a lot in a narrow period of time (as demonstrated in the reality show *Faking it*). It is unlikely that the comparison group at the private school, claimed to have failed to visibly outperform the village kids, spent anything close to that, but within the same timeframe they probably learnt a lot of other material which the village children did not. One also wonders how children's motivation in one narrow topic can be sustained over such a long period of time.<sup>10</sup> The scores of the 'minimally invasive education' group was still lower than that of regular school and IT professional course student group after both 2 and 4 months (Mitra *et al.*, 2005). Mitra also fails to account for the fact that the experimental groups achieved comparable end results with the frequent users group (43.07% vs. 43.73%; *op. cit.*, p. 78). Moreover, throughout at all locations there were observed high standard deviations in the experimental groups (p. 79).

More crucially, so far none of the experiments seem to have provided data on the *long-term* impact of the intervention. A danger and problem with interpreting much experimental classroom research (not just the HiWEL or SOLEs) is that the results are not necessarily a reflection of the effectiveness of the method or actual improvement in learning, but simply of the novelty effect – the fact that pupils are keen to engage with newness, e.g. due to increased interest in the new technology<sup>11</sup> (*cf.* Clark & Sugrue, 1991). Practitioners far and wide happily report the enthusiastic reaction of students—and sometimes positive results, too—as a result of introducing new technology, a cookery class, or the teacher wearing an alligator costume, without realising that in fact they are reporting on the effect of a fad, a welcome but brief distraction, more than on the actual effect of the intervention were it a systematic one. Professionals who took the trouble to go down to the original HiWEL sites, such as Mark Warschauer (2004), Payal Arora (2005) or Donald Clark (2013a,b) summarised the effects of the project as mainly used for play (games and Paint, with English-only content ineffective), leading to low-level learning, short-lived and not sustainable in

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<sup>10</sup> Also, the children were supposedly able to use a word processor and spreadsheets – it seems rather unlikely that they taught themselves to use a spreadsheet out of their own will and inclination.

<sup>11</sup> For instance, the children in the HiWEL locations could and would spend much time on the computer provided, because they probably did not have too many toys, extra-curricular activities, or other distractions...



the long run (with literal holes glaring in the walls, some within two months from the installation of the hardware), in part due to lack of support from the community upon which it had been imposed without consultation, and where it was deemed irrelevant and distracting by the parents (Warschauer, 2004).

Mitra emphasises learner autonomy. Of course, children can and do learn many things despite the teacher, but this does not mean that given the right resources they will educate themselves without schooling. Independent self-directed or ICT-based study rarely happens simply because knowledge is at hand. We want our learners to be autonomous, but children first need to learn *how* to learn on their own. Just as the transmission model is nowhere near the current orthodoxy in language education, so there has been a “major shift *away* from ... unmediated, purely learner-centred models that flourished in the late 20<sup>th</sup> century and a recognition of the key role played by the teacher in the joint construction of learning opportunities” (Scott Thornbury in a comment on Chong, 2014; *emph. added*<sup>12</sup>). Torn Halves (2013) aptly draws attention to the “clear perception [in child-centred pedagogy] that autonomy [may] only be achieved after a period of heteronomy, with children needing the pedagogic care of their Socratic teachers in order to achieve their full potential”. Published research indicates that children may lack the cognitive skills necessary to render unaided peer-supported enquiry productive (*cf.* Kuhn *et al.*, 2000; Kuhn & Pease, 2006; Dean & Kuhn, 2007). We have not yet “managed to create a world where children can do most things by themselves,” as Mitra would have it. The reason why we do not teach children the same methods of solving problems as we see in corporations is the numerous cognitive, motivational and affective variables that distinguish children from adults (Paradowski, 2007, pp. 247–52).<sup>13</sup>

Evaluations of programs such as One Laptop Per Child gave rather paltry results, with some benefits in cognitive skills, but otherwise no evidence of increased maths or language (Cristia *et al.*, 2012). Even with older and more mature learners autonomy does not work with everyone. Not everyone will be an autodidact; learning just of your own accord requires strong motivation, self-discipline, goal management... If it were otherwise, surely many pupils who have regular access to the Internet would have by now educated themselves successfully without school. But just as libraries with books and encyclopaedias had not brought along autonomous learning and rendered schools redundant, as pointed out by Scott Thornbury (in a

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<sup>12</sup> See also Biesta (2013) for a critique of the reductive ‘learnification’ of education.

<sup>13</sup> And while it would be easy to propose that pupils exercise responsibility for their learning and wash our hands, at the end of the day it is the teacher who gets evaluated when they do not.



comment on Dellar, 2014), the high incompleteness rates on Massive Open Online Courses (MOOCs, ranging from 86 and 99% in various studies<sup>14</sup>; Koller *et al.*, 2013; Perna *et al.*, 2013; Ho *et al.*, 2014, 2015; Jordan, 2014; Reich, 2014) or language-learning software such as Rosetta Stone or Auralog TELL ME MORE (attrition rates by the end of the course at 97.8% and 99.4%, respectively, with nearly 80% of the learners dropping out before completing the first of a 20-week course; Nielson, 2011) are likewise far from promising for the notion of autonomy. Successive waves of technological innovation have so far failed to be a game-changer that would significantly transform education, with empirical research remaining “resolutely equivocal about the ‘learning’ that can actually be said to result from the use of digital technologies” (Selwyn, 2015, p. 3). There may be a chance for a Jamal Malik to once become a ‘Slumdog Millionaire’, but how isolated are such proverbial prodigal paragons of success? How many millions others never get anywhere close?

Moreover, studies of digital technology use in the academic context showed that many of the benefits are in fact more strategic and concerned with the logistics of university study (aiding work organisation and efficient completion of set learning tasks: locating and retrieving books and articles, submitting assignments, working out course requirements and scheduling, accessing lecture content) rather than truly empowering or enlightening learning *per se* (Henderson, Selwyn & Aston, 2015).<sup>15</sup>

Knowledge is incremental and requires competent scaffolding. In order to learn new things, we need some core foundations to base them on, before we even *begin* to explore the limits. And then some facts will be established more effectively with direct instruction than with inquiry-, problem- or web-based learning (Hattie, 2008). Jeremy Harmer (2014) observes: “How on earth did Copernicus and Galileo come to their startling conclusions. Did they, perhaps, never go to school and so were spared the brain death?” Only after they already know *something* can you start asking students questions. But to create conditions for balanced, comprehensive,<sup>16</sup> holistic, systematic learning and make it productive, efficient and less frustrating, you need to select good content, pose the right, well thought-out questions, and prioritise, structure

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<sup>14</sup> See also Katy Jordan’s interactive visualisation at <http://www.katyjordan.com/MOOCproject.html>

<sup>15</sup> The SOLE example video in the plenary showing a ‘granny’ asking the children to repeat a poem after her looks very much like ‘orthodox’ teaching – she is doing a traditional repetition drill; not exactly an innovative 21<sup>st</sup>-century pedagogy.

<sup>16</sup> By ‘comprehensive’ I do not mean ‘grammar school’, and the current system of school education in many countries often still fails to meet these goals.



and organise the process. Google will not do this. Random questions asked in a piecemeal fashion may in the best scenario only lead to fragmentary pieces of scattered knowledge.

If we leave pupils to merely follow their and their peers' naturally narrow interests, they are unlikely to get far (especially if we want to slowly but surely equip them with knowledge and skills they will need if they want to pursue university study). We need to show them at least some of the possible paths and crack open the doors, so that they can look beyond their immediate interests.<sup>17</sup>

We can learn much more from people who are more experienced and better educated than from similarly ignorant peers. While teachers are not keepers of all knowledge, they should know enough to gain their students' trust and confidence in their capacity and competence – that is one of the reasons why an effective teacher should typically know much more than s/he teaches. Our children trust us—parents—and ask us questions because they believe we have the answers; we are an authority for them. A teacher should also be one, and that requires knowledge, not just kindness and good intentions.

The choice of questions matters, and they should be selected in a wise and *relevant* manner. “Seven minutes from a blank screen to the first downloaded game” is hardly a guarantee of tangible real-life progress for a village child. Mitra's quadratic equation question in turn might make sense if the kids remembered what it was after time or knew how to solve it. But, importantly, was that knowledge (or the molecular structure of the cell, or “why most men can grow a moustache while most women can't”) practically useful for them, did it make them better off, help them get out of the slum, get into college, or land a job?<sup>18</sup> The question should be asked, what can the pupils *do* with the knowledge that we want to impart? While at it, if we decide to keep the ‘grannies’, rather than ‘beam them in’ from a totally different culture, would it not be more useful for the kids to learn things that are *tangibly usable* and *locally pertinent*? How are the knowledge and life from alien cultures beamed through VR realistic for the remote children? How likely are they to become part of the lives portrayed? Would it not be more appropriate to depict more achievable models? Why outsource grannies

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<sup>17</sup> Michelle Sowe (2013) points to one more danger: “in the era of ‘personalised search’, ... the answers that children are likely to find online are heavily skewed towards those they've previously found. This tends to limit exploration and amplify confirmation bias, narrowing minds rather than broadening them.”

<sup>18</sup> Admittedly, the same criticism could be levelled at much of current school education.



instead of recruiting local ones (unless, of course, the latter are not available, in which case the proposed solution is much better than nothing)? Globalisation does not obviate the need to navigate and function in local communities and realities; that is why the best textbooks are usually written (or at least co-written) by domestic teachers (who, in the case of language teaching, often have to cleverly defy the one-size-fits-all policies of international publishing monoliths).

In Mitra's own words his SOLEs are "like cybercafés for children" with "a supervisor who can't teach anything because he doesn't know anything." In these 'cybercafés' it is enough if the children know how to figure out the solutions; the quality or veracity of the answers themselves do not seem to matter: "Don't evaluate. Admire." Mitra asserts that "the good news is that [the kids] never [end up in wrong places] ... and they invariably come up with right answers" and conclusions. Well, the truth is that they do not – Mitra's very *SOLE Toolkit* (2013) inadvertently exposes the danger, where samples of children's work divulge their gullibility, substantive errors and blatant failures of reasoning (pp. 12f.; cf. Sowe, 2013). Carrying out successful webquests requires extensive prior digital literacy training: the ability to search, to deal with the jungle of infinite content, to critically evaluate and sift through the sources assessing their credibility, reliability and relevance, to distinguish what is reliable from half-truths, the pseudoscientific and the downright erroneous<sup>19</sup>, to sort the information and evaluate the arguments encountered, to question assumptions and entertain alternative hypotheses, to make sound inferences and notice logical connections, to make reasoned judgments, to cite sources... (*ibid.*; admittedly, today's school usually does not teach this, either). These critical thinking skills should be developed, because children are going to depend on the Internet more and more, but that acumen requires training, cognitive skills, and prior subject knowledge. As Michelle Sowe (*op. cit.*) cautions, adult facilitators must not simply sit on their hands and admire these answers, as an ignorant volunteer will; they should be able to competently evaluate and question the arguments and hypotheses that the students come up with (as well as step in—or better yet, prevent—when they encounter adult, hate and other undesirable content). We cannot reasonably expect to plug kids to the Internet and turn them into Wolfram Alphas. Just as we do not expect children to learn everything from their own mistakes, but try to prevent some, in the same way we want to teach them other things. While there are several testimonies around the web from teachers who have been applying SOLE ideas in their classrooms,

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<sup>19</sup> Only the other day I was looking at statistics guides interpreting the *F*-test reading, and two of the first five results on Google provided wrong interpretations.



reporting children's engagement and improvement in reading and presentation skills<sup>20</sup>, they are exactly that – carried out under the supervision of knowledgeable instructors. Collaborative learning works best when under the guidance of a teacher (and sometimes in self-study groups of older students, which form fairly rarely anyway). Those who try to draw analogies between Mitra's SOLEs and Plan Ceibal in state primary schools in Uruguay should remember that in the latter context the delivery of EFL classes takes place via videoconferencing with both actual qualified and experienced remote language teachers and local teachers on the spot, who are at once being trained and learning English alongside their pupils.

Moreover, is a teacher just a repository of information and transmitter of knowledge? Learning is not simply about 'downloading' information into 'empty vessels' and education is about much more than mere finding and transmission of bits of information. It is the development of literacy (including digital literacy), understanding, reflectiveness, critical thinking and reasoning skills, and the ability to synthesise facts. It also includes fostering study skills and cultural transmission. This is so much more than merely knowing how to copy-and-paste information; children just reading out what they have found online is but an old method given a new medium/guise (Harrison, 2014). As Jeremy Harmer (2014) points out, the role of the teacher means adapting instruction, prompting and encouraging, ensuring students stay on task and helping maintain focus, being a caregiver and counsellor, the ability to predict problems and find solutions as they emerge, helping overcome obstacles (which can be really frustrating for students if they are only left with an 'ignorant' granny), offering personal feedback and guidance, fostering good learning habits, being an authority and a role model, instilling values... you name it – and so much more than a mere facilitator. An amateur supervisor will not manage most of these well, let alone a remote one.

Mitra concentrates on learning in groups, but education and the teacher should at least in equal measure focus on and benefit the learner. *Each individual learner*, because every learner is different, progresses at a different pace (hence should be offered *individualised* feedback), and in the end it is the individual, not the group, who is usually assessed or applies to enter university or get a job. (By the same token, teachers should praise not only group achievement, but also—if not primarily—individual achievement.) The Internet will not replace quality one-on-one interaction with a live tutor

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<sup>20</sup> Besides, reading and presentation skills are not the only abilities that children need to master.



present on the spot, the genuine student-teacher relationship, or the trust that ensues. It is teachers who make a difference and will be remembered, not technology. Also, while collaborative learning can bring benefits, children also need to learn how to learn on their own.

Groups often mean problems. The HiWEL project benefited mostly the strongest on the street<sup>21</sup>; girls and frailer children were relatively rarely seen on the computers (Arora, 2005; Clark, 2013a), and those who managed to persist—e.g. Amita in Kalikuppam village—had had to spend much time and effort to counter boys' initial prejudice (Mitra & Dangwal, 2010, p. 680). While observations of the HiWEL stations did bring up examples of peer tutoring (Inamdar, 2004), leaving children to themselves typically engenders problems of power and hierarchy: for many children 'peer groups' and playgrounds mean social exclusion, isolation and discrimination (Arora, 2005; Clark, 2013a). This is why supervisors are needed: it is one of their responsibilities to prevent ostracism, stop the more assertive students from monopolising resources, and provide universal access to knowledge.

The problems do not stop once the group has successfully formed. Group work in effect often means that it is easier to get out of working: members will participate to different degrees, typically one or two persons do most the work while others are freeloading, scribbling on desks, playing with their phones, and distracting the others. As a result, it is not always the most effective approach.

Much of current testing is indeed done in an outdated fashion. Mitra makes a case for examinations involving the Internet and collaboration, arguing that current tests "are preparing [students] for employers who are unfortunately dead". Collaboration and the Internet are undoubtedly useful in a number of jobs, but there are at least an equal number that have to be performed individually and without the distraction. Many of the skills and knowledge sets that Mitra writes off as obsolete are still necessary. More importantly, if our knowledge were contingent on access to the Internet and a 'lifeline', that would lead to a terrible sense of insecurity: What is there is no WiFi? What if my battery goes flat? What when you leave school and no longer have access to the Internet or 'granny cloud'?<sup>22</sup>

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<sup>21</sup> The ratio in the HiWEL experiments was 200 children per computer (Mitra, 2005). Not all have worked on the machines – which is why it was possible to form control groups.

<sup>22</sup> On another note, how long will the grannies' commitment hold out? Teachers are employed long-term; what if the volunteers' enthusiasm peters out and they vanish, deserting the children?



Apart from the feeling of security, knowing things by ourselves endows us with a great sense of satisfaction and gratification. Moreover, some form of knowledge assessment is needed for placement and selection purposes, e.g. to enter university, for the labour market, and other high-stakes scenarios. Silicon Valley companies may hire coders who have dropped out of secondary school as long as they can manage a programming task, but it is not a way to check suitability for every profession (*if* that is to be the sole purpose of education in the first place; there is probably a reason why not all schools are vocational schools). Some degree of standardisation and door-opening language certification (while it should not be in the sole hands of a select few companies) is justifiable as long as the standards are well thought-out, and testing should not be ditched altogether.

For both the above reasons we should not dispense with learning languages simply because “maybe machines will translate” (let alone the emotional connection established with another person when we can communicate without a go-between, and the cost, accessibility, still limited functionality of the available software<sup>23</sup>). For all immediately practical benefits there are also the numerous verbal and non-verbal advantages of bilingualism (Paradowski, 2011) that no machine translation will provide.

It is only a *myth* “that learning happens not when kids are moved by life offline, but when they go online” (Torn Halves in a comment on Stanley, 2014). The sandbox, playground, street and village green have always been places of unassisted and collaborative discovery learning. Provision of Internet access does not add up to education; to the contrary, in ‘minimally invasive education’ the computer seems to invade and attract central attention (while everything is still planned and monitored by adults), with little genuine interaction going on in the videos, where children seem to focus on the machine more than on one another (Harrison, 2014).

Given the limited amount of contact time with the pupils at school, our instructional approach ought to be efficient, to facilitate as much learning (both in and after class) as possible. Mitra suggests 25 to 45 minutes per one ‘big’ question. Thus, especially as the content of the sessions are to be “a chat about anything at all”, SOLEs seem viable if they *complement* other

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<sup>23</sup> By the same token, arithmetic (without the computer or calculator, which deprived communities do not have ubiquitous access to) comes in handy when you do the shopping, exchange money, or calculate your tax or bank interest rates. Relying on technology alone can lead to such consequential screw-ups as the Excel coding error in the now-infamous Reinhart-Rogoff paper (2010; cf. Herndon, Ash & Pollin, 2014), whose incorrect findings were used to bolster now-criticised austerity economics.



pedagogical practices and are only part of schooling, in a judiciously blended learning approach, or as extra-curricular activities, for instance a potential daycare or after-hours alternative, but not as the sole (pardon the pun) valid alternative to regular schooling. Children get plenty of time without adult supervision anyway (including, in more and more cases, Internet time).

SOLEs also seem better suited for learning subject content than language. Picking up a few key words in English (for instance to navigate the Internet) does not constitute having developed competence in the language (Chong, 2014). David Deubelbeiss (in a comment to Dellar, 2014) aptly comments that “language is a skill, not a knowledge set.” Hugh Dellar (2014) rightly reminds us that linguistic development takes time, requires vast exposure, graded input, scaffolded communication, reformulation, recycling, and *ample repeated opportunities for practice* (cf. Paradowski, Chen, Cierpich & Jonak, 2012) – all these are best facilitated by an experienced classroom practitioner with linguistic and methodological knowledge, not a search engine or a ‘grannie’ for a couple hours a week (however well-intentioned, that will never replicate proper immersion for naturalistic acquisition).<sup>24</sup> Children will not reach high levels of linguistic competence as a by-product of engaging in webquests. The role of the language teacher is further well-articulated by Dellar, who lists instructing, being able to explain and clarify language points, grading input (Google and the Wikipedia will not know what the children already know and what not), encouraging noticing, correcting, flexibly offering personalised feedback on output and progress, being aware of her/his students’ modalities and learning styles, etc.

Finally, praise empowers when truly deserved,<sup>25</sup> but it should be administered with care. Constant unwarranted and overdone praise (which, true enough, does not happen too often in school education, where the now thankfully only proverbial stick is still used more readily than the carrot) soon deflates and only results in insecurity. Children know well when they did something good, and will treat undeserved praise as insincere. Likewise, “tell[ing pupils] that there are no rules” may not be the best pedagogical

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<sup>24</sup> The best kind of foreign-language communicative competence that can develop from occasional interactions with random ‘grannies’ will be pidgin-like, much like for instance the Ahmad ‘tea ladies’ working in British households and companies in Hong Kong in the 19<sup>th</sup> c. They could communicate quite fluently with their bosses using Chinese Pidgin English (in many cases picking it up from people of similar background—much like the Indian children in the HiWEL experiments), but that knowledge was fragmentary and limited to certain specific contexts, e.g. day-to-day routine communication about the items in the pantry.

<sup>25</sup> A fellow professor once recalled how, after the first day of moving to a new (private) school, his son came to him elated to report “You know, the teacher praised me.”



approach: children need something they can hold on to to have a sense of security and stability. Also, while we should not underestimate our learners, neither should we overestimate their abilities (by e.g. giving them assignments they may not be able to cope with).

Educational solutions must be sustainable. Mitra's claims that "computers work the same wherever they are" and "whatever [a computer] can do to children will do it to the same extent wherever it is" fail to recognise that these hinge on logistics and prior digital literacy, and that sometimes computers do not work because they are not. How omnipresent are good computers in rural and remote places? Internet coverage is not available or easily accessible everywhere, either – Jeremy Harmer (2014) cites Sir Tim Berners Lee from March 2014 saying that over 60% of the world's population do *not* have access to the Internet. The set-up requires hardware, infrastructure (fibreoptic cables, broadband Internet, stable and reliable power supply) and regular maintenance (it is not enough to dump a computer and leave it there, as the fate of HiWELs glaringly demonstrated). SOLEs are still limited in their outreach to those who have access to the Internet. The digital age has brought with it new, compounded inequalities, and the provision of EdTech is unlikely to bridge the yawning gaps of class, race, gender or other social disparities, and to be a door-opener in remote deprived rural communities that exist on Rs 80 a day (Clark, 2013b), where digital technology is hard to come by and where more immediate priorities may be water, sanitation, food, medication and other down-to-earth basics. SOLEs can perhaps bring the chance of some learning to wider circles where no other option exists, but often the real problem holding many children back educationally is poverty and deprivation. Parachuting expensive shiny hardware with an Internet connection will in such contexts likely be more a temporary distraction from the real problem than a systemic and sustainable solution (Clark, 2013a).

It is hard to believe Mitra's claim that all good teachers in India seem to want to live in Delhi or other big urban centres – after all, there are familial, social and numerous other considerations. There are numerous teachers who have been doing a fantastic jobs in deprived areas (as well as teachers who have been doing less so in metropolitan centres). Mitra fails to consider the myriad other, out-of-school extra-curricular factors that affect school achievement and influence children's scores (Berliner, 2013; Navaratnam, 2014): family support, economic realities, availability of extra-curricular activities, more talented children being sent to 'better' schools (Dellar, 2014), which is why in every classroom different students end up with different grades. If all that students needed was a good teacher – oh, if only it



were that simple! The graphs where Mitra plots school results (tests in English, maths and science in the state of Uttar Pradesh in India, and GCSEs in NE England) against (geographical or socioeconomic) remoteness (the latter measured in income deprivation, or density of council housing) show an apparent correlation, but firstly, correlation need not imply causation, and secondly, the graphs only show a few *trends* with quite a few visible outliers (e.g. the second highest total score actually coming from a school located 170 km away from Delhi; Mitra, Dangwal & Thadani, 2008), no correlation in Math or English (performance in English was poor in all schools except the first highest-scoring), while in Hindi a school 215 miles away from Delhi scored lower than two 250 miles away. There was also no correlation between pupils' scores and teachers' preference to move to an urban centre, only a general correlation between preference to move and living in a rural (vs. semi-rural) area, and between teacher's preference to move and pupils' results in Hindi and Math, so the claim of Mitra *et al.* that "the students in schools where teachers did not wish to migrate to an urban centre had achieved higher scores in all the subject tests" (2008, p. 177) is simply belied by the authors' own data. The schools in that study also differed in terms of the number of teachers (p. 173), the extent of the execution of the government scheme of freely providing the students with basic facilities such as food, water, books and uniforms, and class attendance (p. 171).

Some of the negative commentary that followed the plenary (e.g. Stanley, 2014) was fuelled by fears that Mitra might be proposing to do away with well-trained professionals and replace them with Internet-enabled hardware coupled with outsourced retired volunteers, untrained and ignorant but kindly Geordie amateurs. This concern about job security was voiced for instance by Lindsay Clanfield (in a comment to Stanley, 2014): "We as a profession have been struggling against the native-speaker backpackers for more than forty years. Now we need to deal with grannies too." Now, I will not defend *bad* teachers (let us not be afraid to call a spade a spade; there do exist instructors who should never have been allowed to set foot in the classroom); where they are bad, they had better either go or improve. And SOLE as Mitra envisions it is probably better than nothing to bridge the 'digital divide' or wherever teachers are in short supply or reluctant to go, in settings where children would otherwise be denied opportunities for education. But I understand Graham Stanley (2014) when he warns of the danger of the SOLE movement going to places where there is no shortage of good teachers and replacing current pedagogical practices, and—more importantly—how it can become pernicious if evangelist EdTech advocacy is taken up by policymakers, national agencies or other planners and stakeholders to justify reducing public expenditure on education, cutting the



number of teachers in schools, and diverting funding (especially when the worth of the global EdTech marketplace has been assessed to exceed \$5 trillion; Selwyn, 2015, p. 5). It is therefore the task and duty of experts to educate not only students, but also governing and advisory bodies, ministries, and other involved influencers.

As I see it, while Mitra's vocal appeal to reform general school education should not go unanswered, the teaching profession is not about to disappear any time soon, just as House, MD will not be replaced by 'Doctor Google'. In his 2012 MIT Media Lab talk, Mitra said: "With broadband access to Google, you can pretend to be educated... pretend to be a doctor... might be able to figure out a diagnosis." The crucial words here—emphasis mine—are 'pretend' and 'might'. Yes, you could *pretend* to be a doctor. And you *might* even Google up your symptoms and with a bit of luck and background knowledge come up with an accurate diagnosis and advice regarding the cure. But that does not *make* you a doctor, and it could be really dangerous to rely on the opinion of an Internet-connected layperson in cases that require professional advice and treatment. So, yes, the concept and realities of school learning should undergo another overhaul—and Sugata Mitra is certainly helping spark off critical debate around current educational practices—but maybe not entirely along the path and to the extent that he suggests, and EdTech is not a silver bullet or a panacea for language teaching problems.<sup>26</sup>

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<sup>26</sup> Let alone the fact that computers cannot do a lot of the things that a good teacher can, e.g. rephrasing what a student has said into more appropriate English (Dellar, 2014).



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