



Hare vs Hedgehog: Education and Technology

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Abstract

It is commonplace to find the age in which we live described as an age of fundamental change in the way people interact. Recent rapid advances in technology have enabled, facilitated or accelerated communications in personal, commercial and educational contexts to such an extent that virtually all fields of human activity appear radically transformed, and on the verge of even more radical transformations. In these circumstances, schools, colleges and universities need to reflect on and to adapt their teaching, learning, and assessment practices, in order to provide an education that is of and for our time, through judicious and controlled use of new and old technologies. What may help us in the process is an awareness of the dialectic between orality and literacy that has existed and developed ever since the invention of writing. In the light of this, I shall try to formulate some practical suggestions for recalibrating our systems to deal with current and future challenges.

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الأرنب في مواجهة القنفذ: التعليم والتكنولوجيا

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المستخلص

من الشائع أن يُوصف العصر الذي نعيش فيه بأنه عصر التغير الجذري في طريقة تفاعل الناس. فقد أتاحت التقدّمات السريعة الأخيرة في التكنولوجيا، وسهّلت أو سرّعت الاتصالات في السياقات الشخصية والتجارية والتعليمية إلى حدّ جعل جميع مجالات النشاط البشري تبدو وكأنها قد تحوّلت جذرياً، وهي على وشك تحولات أكثر جذرية بعد. وفي ظل هذه الظروف، يتعيّن على المدارس والكليات والجامعات أن تعيد النظر في ممارساتها التعليمية والتعلمية والتقويمية، وأن تتكيّف معها، بغية توفير تعليم يتمشى مع عصرنا ويخدمه، من خلال الاستخدام الحكيم والمنضبط للتقنيات الحديثة والقديمة على حدّ سواء. وما قد يساعدنا في هذه العملية هو الوعي بالجدلية بين الشفاهية والكتابية، التي وُجدت وتطوّرت منذ اختراع الكتابة. وفي ضوء ذلك، سأحاول صياغة بعض المقترحات العملية لإعادة معايرة أنظمتنا للتعامل مع التحديات الحالية والمستقبلية.

الكلمات المفتاحية: التقدّمات التكنولوجية، الاتصال، التعليم.

1-Introduction

Sixty-plus years of change

My first entry into an educational establishment coincided almost exactly with my seventh birthday in April 1962. A good twelve months earlier, the school I was to attend had found me so skinny and frail that they advised my parents to keep me at home for another year, regardless of the fact that I had learned to read and write by the age of five. Since then, I had devoured all sorts of newspapers, magazines and books, and had become notorious for dropping names that I could not possibly know and using words that I could not possibly understand. Was I exceptionally gifted or excessively precocious, or just a tiny bit of both? The jury was still out when I took my seat at a Grade One desk. There, I promptly set to work with the educational technology with which I had been equipped. Most prominently, each pupil had a slate tablet in a wooden frame, squares on one side, lines on the other, an eraser attached, and a wooden pencil case on the side. The age of the stylus had already passed, and classrooms were no longer filled with the scraping and screeching of sharp points on hard surfaces. Our own 1962 state-of-the-art slate pencils were wood-coated with a soft chalky core, while the classroom blackboard was written on with sticks of chalk, mostly white, sometimes coloured. Nowadays, more than six decades later, whiteboards and smartboards have become the default installations in technologically advanced and well-funded institutions, although there are apparently still some advocates and practitioners of the time-honoured medium (1):

Chalk is also preferred by some educators because they believe writing with chalk slows down the pace, allowing students to better follow the lesson and more easily take notes. And, if for no other reason, as one teacher said in an online blog in praise of chalk, using a chalkboard means the lights in a classroom have to be on. "It is seldom that students fall asleep when the lights are up," he wrote, "but in a traditional lecture format, when the lights dim, the eyelids drop".

But I am getting ahead of myself—as, arguably, is educational technology, of which my experience proceeded from slate tablet and pencil via fountain pen and ink bottle, to the ballpoint pen or biro that was initially discouraged by teachers, as a destroyer of neat handwriting. Not being the neatest of writers anyway, I began to hack away at the 1947 Olympia typewriter that we had at home, and I continued to use mechanical typewriters until the mid-1980s, notwithstanding a brief affair with an Italian Olivetti of the electric kind in the first part of that decade. When seemingly everyone around me turned to word processors, I resisted—to me, Amstrad screens looked too much like those of the Space Invaders machines that had begun to spread a little before. When I first saw a genuine computer,

though—which was one with a fruity logo—I cast aside my reservations and installed a digital device on my desk.

My transition from student to teacher that had taken place somewhere along the road meant that I could now exercise greater control over which instructional technology was used, in what manner, and for which purpose. Blackboard and chalk, paper and typewriter still dominated during the late 1980s and early 1990s, when I worked at 'third-world' universities in Tunisia, Algeria, and Malawi. In those countries, my computer use was limited, as was my access to printing and xeroxing facilities: most of my classroom handouts were copied from typed stencils, on apparatuses of a kind that I had known since my school days. But my move from Malawi to Taiwan in 1993 then catapulted me from the backwaters to the frontline of the emerging digital age. An office desktop computer with an internet connection was standard issue, I got my first-ever e-mail account, and my Department Chair, though already well past retirement age, proved to be as much of a trailblazer in electronic communication as some of the younger colleagues who saw the medium's potential not only for serious conversation, but also for chat and banter. The latter sometimes gave rise to small-scale prototypes of the phenomenon that is now globally known and universally labelled 'shitstorm': a perhaps predictable side-effect of communication that combines minimal effort and cost with maximal speed and reach, as well as with great potential for anonymity and role-play.

Talking of side-effects, these are arguably most likely to proliferate when new technologies are introduced to an excitable community of novice users, and by the same token to an at least equally excitable community of potential profiteers. When radioactivity was first discovered in the early part of the last century, it was exploited in lots of ways for lots of non-scientific, frivolous, or fraudulent purposes (2).

It didn't take long for hucksters to turn radiation into a must-have. In the United States and Europe, radioactive products from the 1920s through the 1940s included toothpaste, hair cream, cosmetics, and even suppositories. All are collectibles today among hobbyists who are fascinated by the American obsession with radiation. A recent BBC news item lists pillows, vacuum cleaners, washing machines, mirrors and toothbrushes as items that are currently marketed with a claim to AI-capability. The author of that article sounds skeptical about at least some of those claims, which seem reminiscent of 20th-century advertising for purportedly radioactive products that did not contain radium in any notable quantity and were hence not hazardous. Today's equivalent can be seen in "companies claiming AI capability when really their

products don't actually use machine learning." (3) But as with the aforementioned radium merchandise, may there be a greater danger inherent in products that live up to their manufacturers' claims than in those that don't? In other words, is plain ineffectiveness better than harmful functionality? Clayton (2024) (3) suggests that "the use of the term AI has become counter-productive," and cites the example of a device that is clearly AI-capable, but is not explicitly labelled as such. At the same time, he questions the utility of certain AI-capable appliances:

I come across a product that clearly does use generative AI: A fridge that analyses the food in it and can suggest recipes. At last something that appears to be pretty obviously AI. But then I'm hit with another question. Do I need my fridge to give me recipes? I have never felt frustrated about the lack of culinary advice given to me by my fridge.

This is a fairly casual and indirect hint at a general issue that can surely not be ignored: the impact of convenience technologies on human skills and abilities. We lessen the number of occasions or opportunities for walking or heavy lifting, and we drag our slackening bodies to tread belts and pump weights in fitness studios. We use GPS trackers in our cars, and we complain about losing our sense of direction; we use electronic calculators, and we complain about losing the basics of arithmetic. What we may forget is that the latter two examples are the respective second stages in developments that began with the invention of maps in the one case, and the invention of numeric symbols in the other. If you use a printed map to navigate, you are one step away from tracking your route only in your head. If you do a complex calculation on paper, you are one step away from computing the result without physical representations of numbers. In both instances, you use means of external data storage and handling to aid your mental processes: means that mark the transition, in a phylogenetic as well as in an ontogenetic perspective, from orality to literacy.

Where we are and what we do

At the new threshold where we appear to stand today, it well behoves us as educators to recalibrate our conception and our management of orality and literacy respectively. If, as Ong (2002) (4) asserts, "contrasts between electronic media and print have sensitized us to the earlier contrast between writing and orality," can we then confirm that such sensitivity has been adequately incorporated into our educational practices in "an age of 'secondary orality', the orality of telephones, radio, and television, which depends on writing and print for its existence"? I would submit that an answer to this question is best approached by scrutinising the respective roles that writing and speaking play in the range of teaching, learning, and assessment tools and technologies currently used in the

Humanities and Social Sciences; and I would argue that with the advent of AI-generated text production, it is mandatory to foreground ways in which orality can be re-emphasised, and at least partly rescued from the shackles of writing.

To this day, pieces of writing constitute the main proof of achievement in HSS degrees. From short compositions via five-paragraph essays to research papers and dissertations, students are required to write for grades, and when they are asked to give presentations, they tend to project and to read out written text word by word, rather than to speak freely. For teachers, there is an increasing challenge to establish students' authorship, and/or their author-ity over the text that they submit. It is now surely easier than ever before to plagiarise, although software developments have at the same time also increased the possibilities of detecting plagiarism. But if the hare has ostensibly caught up with the hedgehog, we have good reason to assume that the vast majority of plagiarisms go unpunished, in spite of universities' insistence on commonly accepted codes of academic honesty. Experience indicates that while habitual and intentional plagiarising is still the exception, occasional and incidental plagiarising is widespread (5).

Yet if you look at the number of formal cheating investigations on any given campus, they typically amount to less than 1 percent of the student body, said Tricia Bertram Gallant, director of the Academic Integrity Office at the University of California at San Diego, whose research focuses on ethics and integrity in education. In short, plagiarism is extremely underreported. Using other people's words or ideas without proper acknowledgment may be the #1 unforgivable sin in academia, but in our time, it has a rival in the even more devious and stealthy practice of ghostwriting. There is a huge international market for academic papers to be produced on demand, and in full compliance with formal and content specifications, for more or less substantial fees. While the demand largely comes from the more affluent parts of the world, the suppliers are frequently in less affluent locations: a new and particularly insidious form of colonialism. The only antidote to this practice that I can think of is the close monitoring of a paper's conception and completion, in frequent face-to-face conversations between instructor and student. This of course involves a great deal of time and effort on both sides, but I think it is time to invest such time and effort in order to shift the focus of student performance from the product to the process, and to acknowledge that, as Plato somewhat paradoxically suggested in writing about writing (4).

real speech and thought always essentially exist in a context of give-and-take between real persons. Writing

is passive, out of it, in an unreal, unnatural world. So are computers.

Talking of computers, I feel that we need to rethink a particular kind of assessment tool that appeared in the 1920s and proliferated immensely during the electronic age: the multiple-choice test, being one that requires neither speech nor writing from those who take it. It combines the semblance of objectivity with maximum convenience for the grader: all things being equal, a software package will process the electronic answers in real time, and if the instructor wishes them to, students can have their results straight after they have submitted their responses. This procedure is naturally popular with teachers who have large classes and may thus have a reasonably valid excuse for wanting to make their own lives easier, but even so, it can hardly be denied that any mechanising of an assessment process is ipso facto a de-humanising of it. But is this necessarily a bad thing? Eliminating human subjectivity was the explicit intent of those who came up with the multiple-choice method, and it may be argued that the least desirable forms of assessment are bound to be those in which the erratic and unpredictable human factor is most prominent. Consider this statement from the early 19th century (Kleist, 1951)(6), Perhaps there is no occasion on which it is more difficult to reveal one's good points than in a public examination .

Apart from the fact that is repulsive, irritating and that it offends one's finer feelings to be continually on the alert while one of those learned horse dealers probes our acquirements and, according to whether there are five or six of them, buys or dismisses us;—it is difficult to play on a human mind and induce it to yield its peculiar sound: clumsy hands so easily disturb its pitch that even the most experienced observer of men, practised in the art of mental midwifery, as Kant calls it, to a masterly degree, could go wrong in this case owing to unfamiliarity with his patient .

There is undeniably much that can go wrong in oral examinations, depending on the way they are managed: candidates may perform below their true potential, as indicated above, but they may also be made to look better than they actually are, by means of staging a show that is carefully choreographed, or indeed scripted. In this case, not only is the ground covered by the examination circumscribed beforehand, but the path through the delineated terrain is likewise mapped out in such detail that no more than a semblance of true orality remains. Such planning can operate at all levels, but is perhaps most likely to occur when the prestige of an examiner is to some extent co-dependent on that of the examinee: having, for instance, a PhD candidate fail his or her defense will rarely do much good to the supervisor's standing. All told, as Kleist remarked more than two centuries ago, examiners “may often thank

their stars if they themselves can leave the examination without having exposed themselves.” (Kleist 1951, 6)

Being human, we can at best try to minimise the degree to which human subjectivity, human deviousness, human incompetence or plain human error will impact our actions. Hence, the attraction of AI or Artificial Intelligence as a potential safeguard against damage caused by NI or Natural Idiocy. Being human, however, we should acknowledge the danger of regarding man-made autonomous systems as infallible: accidents occur when, for example, when “some people rely too heavily” (7) on Tesla's Autopilot. And of course software working on a much more basic level than that of AI can also cause disasters of various kinds, as evidenced in fairly recent crashes of Boeing 787-Max aircraft, as well as in the even more recent Fujitsu-induced Post Office Scandal in Britain, where almost a thousand Sub-Postmasters were prosecuted, many of them convicted, and some of them jailed, “after faulty software wrongly made it look like money was missing from their branches. (8).

The Post Office affair shows human error at work in three different ways. First, in the design of the software that evidently produced erroneous results even when fed the correct data. Second, in the blind faith professed by the Post Office, in the software that they had purchased from a reputable company. Third, in the refusal of just about anyone who could have performed or ordered an interrogation of the software rather than of the accused persons, to do just that. What began as one or more presumably honest mistakes without malicious intent, was thus allowed to stand for an incredibly long time, uncorrected by technical, managerial, political and judicial expertise. What should moreover be noted is that the most consequential communications between the various entities seem to have been conducted in writing, and that oral, face-to-face encounters of the accused, all valued and trusted members of their communities, did not carry enough weight to alter the outcome, until many years later.

Challenges and responses

For me, the lesson to learn here cuts two ways. First, it shows the imperfection or fallibility of humans, who have the uniquely human capability of compounding the consequences of their mistakes by plain denial of the facts, or simple transfer of the blame. But second, it shows that the only way of rectifying the fallout from this all too human defense mechanism is to involve as many more humans as needed to get pertinent and divergent second, third, or fourth opinions. The main function of our educational systems should be, in my humble opinion, the formation—in German ‘die Bildung’—of a sufficient number of individuals who are not merely able, but moreover inclined and willing, to doubt and to challenge received wisdom. For this

purpose, teaching, learning, and assessment must shift the emphasis as far away as possible from false objectivity, i.e. the tyranny of the 'correct' answer, and from false orality, i.e. the tyranny of the scripted monologue, or the equally scripted dialogue.

These days, the term 'critical thinking' is invoked by many educational institutions: many more, I would reckon, than actually and actively promote critical thinking. Offering courses in Critical Thinking is certainly not sufficient for this purpose, especially not if assessments in such courses are conducted in formats that demand the ticking of boxes. Critical attitude needs to be fostered throughout curricula, and critical behaviour needs to be consistently encouraged and rewarded, especially at a time of competing narratives with ever more sophisticated tools of persuasion or manipulation that may be wielded by just about anyone with the necessary knowhow and hardware. The age of omnipresent persuasive AI is already looming large (9).

In the not-so-distant future, generative AI could enable the creation of new user interfaces that can persuade on behalf of any person or entity with the means to establish such a system. Leveraging private knowledge bases, these specialized models would offer different truths that compete based on their ability to generate convincing responses for a target group—an AI for each ideology. A wave of AI-assisted social engineering would surely follow, with escalating competition making it easier and cheaper for bad actors to spread disinformation and perpetrate scams.

The authors of this article argue that flagging AI in such a manner that human users know whenever they are interacting with a non-human entity, will not adequately protect them from such social engineering, since "people can form emotional connections with, have empathy for, and attribute human thought processes to a computer program with anthropomorphic characteristics (9), even if they know they are dealing with a non-human. The AI may thus take on the guise of a trusted friend and confidant while acting as Iago to our Othello; and the capacity to create such malicious dissemblers is set to mushroom with the advent of AGI or Artificial General Intelligence which Mark Zuckerberg's company Meta is avowedly intending to develop, with a view to the possibility of making it freely accessible. The Guardian cites a number of critics of this plan, including "Dame Wendy Hall, a professor of computer science at the University of Southampton and a member of the UN's advisory body on AI, [who] said the prospect of open source AGI was 'really very scary' and that it was irresponsible of Zuckerberg to consider it." (Milmo 2024) (10)

Such is the race between the hare and the hedgehog, or between the hare and the tortoise in the Classical version. We now find that the technological

tortoise has always already moved on a bit when the hare believes to have finally caught up with it, just as the virtual hedgehog that appears at the end of the track is ever indistinguishable from the real one that the hare has tried to outrun. The hare, in the first analogy, represents the community of users and regulators attempting to keep pace with technological developments, and never quite managing to stay level; in the second one, the hare is emblematic of bona fide users who harness technology to transcend human limitations, but who always encounter the same imperfect and error-prone humanity at the finishing line of each stage. This is to be kept in mind whenever we deploy technology in education: it is no magic wand and no panacea for human shortcomings that it may, however, serve either to conceal or to aggravate. No system of quality control through outcomes assessment, performance review, peer evaluation or accreditation procedures, however elaborate those may be, can be guaranteed to produce valid results, let alone to improve the quality of work within an educational establishment, where the intended formative effect of reviews is too easily lost in summative frenzy.

The rhetoric of excellence, another ubiquitous term in educational goals and mission statements, can even be seen to have detrimental effects, as Moore et al. posit (11).

In this article, we have advanced an argument that "excellence" is not just unhelpful to realising the goals of research and research communities but actively pernicious. A narrative of scarcity combined with "excellence" as an interchange mechanism leads to concentration of resources and thence hypercompetition. Hypercompetition in turn leads to greater (we might even say more shameless [...]) attempts to perform this "excellence", driving a circular conservatism and reification of existing power structures while harming rather than improving the qualities of the underlying activity.

These are pernicious consequences of 'excellence' when used as a discriminatory concept in the literal sense of the word. Even greater damage may result, however, from an inflationary use that deprives the notion of all meaning. An 'A' grade that spells out 'excellent' has precious little significance if it is not a distinction: a pyramid loses its nature when the top is as broad as, or even broader than, the base. An honest and realistic awareness of differences in ability and performance should be the basis of any educational practice, but the default today seems to be the pretence that excellence is, if not always achieved by everyone, at least in everyone's reach. Inflated grades pander to inflated egos, nurturing a widespread overconfidence that will look unrealistic at best, and at worst, absurd. In anglophone North America, a common shorthand for this mechanism is Lake Wobegon Effect, referring to

the fictional Minnesota town described by its creator Garrison Keillor, as a place where “all the children are above average. (12) This effect is evident in statistics such as these (Maylett 2024), (13)

•Only 2% of high school seniors believe that their leadership skills are below average.

%25•of people believe that they are in the top 1% in their ability to get along with others.

%94•of college professors report doing above-average work.

These figures are cited on the website of a company that, in the same breath, offers a solution for the problem: an array of measurements “such as performance evaluations, 360-degree feedback, and performance metrics(13). But the hare that in this manner speeds away from warped human self-perception will then only lay the matter at the foot of other, equally fallible humans who are bound to try and do their job to the satisfaction of their paymasters. If the latter want to maintain peace on the shop floor, they will not want too many employees to be too brutally disillusioned. If they mean to wage war on underachievers, they will expect results that can be weaponised. In either case, they kick the can down or rather up the line, with answers that pose new questions: namely, who shall coach the coaches, who shall consult the consultants, who shall evaluate the evaluators, who shall accredit the accreditors, or as Juvenal put it nearly two thousand years ago, “who shall watch my watchers?” (Heyes 1885(14.)

Two underlying assumptions are at work here: a belief in the inherent measurability, and a belief in the near-perfectibility, of educational processes. These force institutions to produce palpable evidence of ever-better outcomes, in an effort that consumes so much time and energy that it is likely to impair rather than to enhance the quality of teaching and learning (15).

This outcomes-assessment rigmarole has been foisted on all colleges, adding a whole new layer of bureaucratic make-work. Reports and meetings bleed into one another like endless war. Forests die for the paperwork, brain cells die, spirits too—as precious time and energy are sucked into this black hole. And this is to make us more...efficient? Only in an Orwellian universe. This is to establish a “culture of evidence,” we’re told. Evidence of what? Evidence of compliance, I’m afraid.

Therein, I think, lies the touchstone for the introduction of new technologies. AI may be used to cut down on the time spent by faculty members on tedious administrative tasks such as the writing of self-studies, reports, and performance reviews; it may, however, also be used to create greater demands for outward tokens of productivity. Higher research output expectations could be met by a higher turnout of more or less AI-generated papers with comparatively little

attention to quality; evidence of higher research impact could be created on purpose, by making AIs learn who and what to cite preferentially. Our students could in turn pay the price of customised software packages rather than that of human ghostwriters, and then submit large quantities of writing in record time. These developments would happen fastest in institutions determined and equipped to be ‘cutting-edge’—and virtually all others would need to follow. Arizona State University has already gone ahead and partnered with OpenAI, whereas academics right across the board (16), have responded to ChatGPT with both excitement and dread, grappling with how to embrace a tool that, while bursting with potential, can also hallucinate and be used to cheat on assignments.

AI has undeniably arrived, and so has the time for us to deal with it. This is going to involve a complex but necessary learning process for individuals and institutions engaged in education, who must not leave the use of Artificial Intelligence to irresponsible or untrustworthy actors, or to bureaucrats alone. Meanwhile, teachers might endeavour to at least partly liberate oral, face-to-face communication within educational establishments from the shackles of that “genteel, literate domesticity” which restricts exchanges to “crisp little conversations [...] in which any agonistic edge is deliberately kept dull. (4) It would help if we got more of our students involved in debates of a largely unscripted and improvised nature, with plenty of scope for spontaneity. It would help if we created more occasions where our students are required to speak freely and think on their feet. It would help if we got more of our students to treat presentations as performances that engage and woo the audience. It would help if we got more students to routinely and directly voice disagreements with us as well as with each other. It would help, finally, if we teachers ourselves challenged the administrative powers—that-be by becoming a little less compliant with, and a little more subversive of, their universal and too often undisputed reign.

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