Inconvenient truths about effective clinical teaching

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I've been teaching clinical medicine for more than 30 years but it seems to be getting harder, not easier. Conventional wisdom in the USA holds that the problem is time and money (or, more precisely: time is money). Hospitalised patients, discharged before doctors can get to know them, are sicker and quicker today. Outpatient teaching is no less awkward, 10-minute office visits and outdated Medicare reimbursement rules gumming up the works. Long overdue restrictions on resident work hours won't solve these problems.[1]

Too little time and money for clinical teaching betokens lack of respect too. Most academic centres in the USA don't provide adequate support for clinician-educators' salaries despite substantial government subsidies for postgraduate education. This shortfall is not an oversight; it is a calculated budgetary decision. Insult compounds injury when physician-researchers openly disparage the academic gravitas of physician-educators on the same faculty.

This situation raises the obvious question: is clinical teaching today not only more difficult but also less effective? One might assume that our research-proud profession would know the answer.[2] In fact, despite shocking indictments of the quality, safety, and equity of US medical care,[3–6] we know little about the effect of clinical teaching on learners or patients, nor even how to measure it.[7,8] Worse, we don't seem very concerned about this situation. In 2006, four major medical journals (*BMJ*, *JAMA*, *Lancet*, and *New England Journal of Medicine*) and four medical education journals (*Academic Medicine*, *BMC Medical Education*, *Medical Education*, and *Medical Teacher*) published a total of one original outcomes study of this kind (which found no correlation between measures of teaching effectiveness and patients' clinical outcomes).[9]

Lacking evidence, I do what clinicians do when we don't have the data we need: I go with my gut instinct. My gut tells me that clinical teaching today—my own and others'—is less effective than it used to be and needs to be. Among those who will disagree are many academic leaders and quality gurus who don't even acknowledge the question. They maintain plausible deniability by looking elsewhere: we need better systems, they say, not better doctors. No doubt they are right about the systems.

I propose that the decline of clinical teaching in our training programmes is, like global warming, an inconvenient truth. Even if we saw evidence as eerily convincing as Al Gore's pictures of melting polar ice-caps,[10,11] many in academic medicine would look the other way. Rather than take remedial action, we will be tempted to do the greenhouse-gas-shuffle: blame it on random variation or transient aberration (anything but ourselves) and hope the hurricanes and heat waves just go away.

Doubly inconvenient would be to learn that fixes from the past might not work in the present. For example, due to digital information systems, clinical trainees inevitably review patients' laboratory data and diagnostic images before they do a history or physical examination. This change portends more than the devaluation of bedside skills;[12] it is nothing less than complete inversion of the conventional diagnostic process. The good news is that innovation in medical education eventually catches up with advances in science and technology.[13] The bad news is that the pace of change is glacial.[14,15] Worse, we know so little about medicine's informal curriculum (clinical training) that it's hard to know where to start.[16–19] In this spirit, I describe eight habits of exemplary clinical teachers I have known and try to emulate still.

Think out loud

Making transparent to learners the teacher's own clinical reasoning is the most powerful predictor of learners' satisfaction.[20] This method is not the same as talking off the top of one's head, a habit common among ineffective teachers. Instead, thinking out loud is highly disciplined and strategic,[21,22] with three primary purposes. First, it communicates a general framework for solving the clinical problem at hand. In the past, this was the main challenge for clinical teachers: to extrapolate from the particular patient to the general (all presentations like it) and back again. But now even novice learners, armed with expert guidelines and algorithms, can lend logic and authority to their problem-solving strategy. Thus, teachers today can afford to spend less time thinking out loud about these things. This efficiency assumes that learners read about their patients and apply well what they read, not always a safe assumption.

Second, all clinicians struggle to translate the results of published research into the care of each unique patient. This population-to-person problem, the generic dilemma of practising evidence-based medicine, needs not only the skill to search and understand the published medical literature but also the judgment to use it or not in individual cases.[23,24] This translational process, though imperfectly understood, is the essence of what clinicians do.[25] For this reason, effective teachers do this translation out loud, articulating it in detail for learners as well as patients.

Third, effective teachers purposefully expose for learners the ambiguity and ambivalence inherent to clinical medicine by thinking out loud in the moment (on the fly) as patients' problems arise in real time. Such spontaneity requires teachers to share extemporaneously their own inchoate thoughts about what to ask, what to

look for, what to do. Inevitably, some of these outspoken ideas will seem, in retrospect, irrelevant or mistaken. But learners need to see the teacher's own problem-solving journey—including fits and starts, blind alleys, and missteps. Clinical medicine is messy, with many working diagnoses disproved and therapeutic trials abandoned. Effective teachers give learners a bird's-eye view as they struggle themselves to tidy up the mess.

The inconvenient truth is that thinking out loud needs more than expertise and confidence; it also needs humility, a virtue not encouraged widely enough in the medical education hierarchy. If our profession is serious about lifelong learning, we must recognise that learning can't happen without humility. Teachers who humbly think out loud help to show the way.

Activate the learner

Experts agree that adult education is a tango: it takes two. The dance will fail, no matter how expert the teacher, if the learner is not actively, even passionately, engaged. But clinical teachers typically lead teams of learners—in the USA, groups of residents, interns, and students—whose different skill levels need different moves by the teacher. (By contrast, consider the one-on-one mentoring deemed essential for all researchers-in-training.) The group tango is made doubly difficult by conditions on the dance floor: in today's hurly-burly hospital wards and clinics, getting the work done—taking care of patients—must take priority over teaching. Under such conditions, how do clinical teachers activate learners?

Two steps are fundamental. First, effective teachers insist on learners' motivation as a precondition for their activation. Unmotivated learners waste teachers' time. They don't belong in a profession where lifelong learning (indeed, love of learning) is an absolute requirement. They should be encouraged to change careers (once disability and fatigue have been excluded as the underlying problem). Second, effective teachers synergise learners' needs with their patients' needs. How? They repeatedly pose two questions to their team of learners: what do we know about this patient? What more must we learn to provide them the best care? This agenda exploits the fact that learners on different levels learn and help patients in complementary ways. Whether it is the student who elicits crucial new history or the senior resident who develops the ultimate treatment plan, each member of the team contributes by pulling their own weight on their own level.

Beyond this basic two-step, the key to activating clinical learners is the teacher's style. The Socratic style would seem ideal for medicine, guiding adult learners toward self-discovery in dialogues orchestrated by the teacher. But its tortuous process and delayed effect make the Socratic style impractical in most clinical settings. Alternatively, the autocratic style has many practical advantages, especially when the patient's clinical condition is dire and the right moves must be made right away. However, this (shut-up-and-do-what-the-teacher-says) approach fosters a culture where learners learn by following orders, activated by fear of ridicule in the present[26] and reprisals (poor evaluations) in the future. One needs look no further to appreciate why so many practising clinicians rely on expert opinion, whether evidence-based or not, and why they dread making errors.

Most effective clinical teachers use the democratic style. They assume that clinical learners mature most when encouraged to think and act autonomously under pressure. Here, the challenge for the teacher is knowing when to stand back and when to jump in, giving learners enough freedom to grow without hurting themselves (and their patients). This balancing act is not for the faint of heart: given too much autonomy, clinical learners endanger patients in the present; given too little, they might endanger them in the future. Thus, the democratic style needs leadership as well as teaching skills. The need for both explains why some teachers who perform brilliantly in the classroom don't do as well at the bedside.

The inconvenient truth is that the success of the democratic style is somewhat mysterious. William Penn captured some of its nuance when he said: "Let the people think they govern, and they will be governed."[27] Teaching democratically is all about activating learners' initiative while protecting them from themselves. This effort will succeed in medicine only if wise, watchful teachers lead learners to "think they govern".[27]

Listen smart

Effective clinicians listen carefully to their patients. Effective teachers, who diagnose and treat learners in parallel with diagnosing and treating their patients, also listen carefully to learners.[28] They tune in to learners' acquisition, synthesis, and presentation of clinical data, logic in clinical reasoning, patient-centredness when making decisions, and grasp of the high standards of medical professionalism. Listening to learners requires insight and understanding beyond that needed to listen to patients;[29] for example, it needs a meta-analytical understanding of what makes any clinician effective. Such requirements explain why many effective clinicians are not effective teachers: they don't know how they do what they do so well.[22] Even master clinicians, when listening to learners, might not know what to listen for.

Effective clinical teachers diagnose and treat two general types of learning disorders: pathological conditions and developmental delays. Pathological conditions need urgent attention because pathology in one domain (eg, defective data synthesis) might metastasise to other domains (eg, clinical reasoning); equally dangerous, one learner's pathology could infect other (typically, more junior) learners on the same team. By contrast, developmental delays are less urgent because all clinical

learners attain some competencies more slowly than they attain others. But these delays are important and should not be ignored. So-called watchful waiting, often the best option in clinical care, is rarely the best strategy in clinical teaching. All clinical learners have room to grow, and the teacher's job is to help them grow. In the clinical vernacular, effective teachers are interventionists. But active intervention first requires active listening.

When listening to learners, teachers who lack independent knowledge of learners' patients will be less effective. Why? Because teachers cannot listen smart when they encounter a patient for the first time during a learner's presentation. Under these conditions, the teacher can assess the internal validity of the presentation (does it make sense?) but not its external validity (is it true?). Such teachers, at best, will be inefficient; at worst, they will be complicit in serious error.[30] By contrast, hospitalists in the USA tend to get high marks for inpatient teaching, because their job is to assess patients independently.[31] Similarly, tertiary referral centres might be less conducive to effective teaching than some community hospitals (where the clinicians already know their patients well).

No doubt it is hard work for teachers to assess independently all of their learners' patients in a timely manner. Teachers who do this well complain of being perpetual interns. The inconvenient truth is that personal attention to detail is what is needed to teach clinical medicine effectively. As Alfred North Whitehead noted in The Aims of Education:

> All practical teachers know that education is a patient process of the mastery of details…There is no royal road to learning…There is a proverb about the difficulty of seeing the wood for the trees…The problem of education is to make the pupil see the wood by means of the trees.[32]

Keep it simple

Recommending simplicity will seem disingenuous; certainly medicine is not simple. But teaching medicine as simple does not intend that teachers dumb it down, make it simplistic; rather, simplicity exhorts them to reduce their presentation, as chefs will do, boiling it down to its hearty essence. Many clinical teachers don't do this, sometimes in deference to medicine's complexity (and sometimes to show off their own), but often because they don't appreciate its pedagogic power.

First, one must understand complexity well to express it simply. Clinicians who can't reduce to simple terms what they think probably don't understand what they think well enough to apply to patients' care. Effective teachers keep the teaching simple because they know that concise and clear expression improves communication with patients, too. In boiling complexity down for learners, they show learners how to boil it down for patients.

Second, effective teachers address a specific scenario by conveying general principles relevant to all situations like it. For example, the principle of not letting the sun set on a hot appendix is useful whether the particular patient has appendicitis or not. Whitehead favoured this approach to education:

> The really useful training yields a comprehension of a few general principles with a thorough grounding in the way they apply to a variety of concrete details.[32]

To diagnose the cause of oedema, for example, only two facts are pivotal: the patient's jugular (central) venous pressure and serum albumin level. This principle is always useful, not because the two facts always make the diagnosis but because, even when they don't (eg, in cases of vena cava obstruction), they always point the way. Many such principles have been validated in empirical studies to "help physicians…know what clinical data are important to obtain."[33] Effective teachers promulgate such rules because they give learners what William Osler called "good methods and a proper point of view."[34]

Third, effective teachers recognise the difference between scientific knowledge (which has intrinsic value) and clinical knowledge (which has value only if applicable to patient care). Ultimately, all clinicians must translate complex clinical knowledge about their patient into one simple decision: do this, or do that. Effective teachers show them how.

The inconvenient truth is that keeping it simple is complicated. Even the most effective teachers find it hard to do consistently and well. Additionally, its reductive technique sometimes annoys advanced learners who are more interested in the exceptions than the rules. But this point is where Osler's "good methods" begin to pay handsomely, where learning curves rise, for teachers as well as learners. Getting there is a good thing, even if it isn't simple.

These first four habits comprise the acronym TALK (table 1). But, just as clinical effectiveness is measured more by what clinicians do than what they know, teaching effectiveness is measured more by what teachers do than what they say. Thus, the final four habits pertain to how effective teachers "WALK the walk" (table 2), not how they "TALK the talk".

Wear gloves

Infection control has never been more important than it is today, but wearing gloves addresses a broader issue here: effective clinical teachers are hands-on role models. This practice involves frequent physical interaction with patients—demonstrating the clinical utility of physical examination, the therapeutic value of touching, the diverse benefits of bedside care.[35–37] It also needs a conscious effort to make real to learners the physical experience of sick patients and the glorious relief good doctoring can bring them. Most physicians-in-training are young and healthy, unfamiliar with the travails of being a patient; many have never felt excruciating pain, profound weakness, or desperate dyspnoea. Thus, even

	Strategic goals	Educational challenges	Clinical challenges	Inconvenient truths
Think out loud	Show learner the process, not merely the outcome, of expert reasoning	Articulate, in real time, pivotal steps when making clinical decisions	Missteps inevitable	Requires humility
Activate the learner	Promote learner's initiative and autonomy	Know when to stand back versus when to assert clinical authority	Patient safety always the top priority	Needs democratic leadership skills
Listen smart	Efficiently assess validity of learner's presentation	Know what to listen for	Assess patient before assessing learner	Requires mastery of patient's clinical details (teachers as perpetual interns)
Keep it simple	Exemplify concise communication and rule-based decisionmaking	Use reductive general principles to illuminate clinical complexity	Each patient is unique; some don't follow the rules	Easier said than done

Table 1: **Teaching habits of effective clinical teachers—TALK the talk**

the little things done by hands-on teachers can have great effect on learners: feel the febrile patient's sweat-soaked back on early morning rounds; find her a fresh dry gown; flip her pillow over to the cool side; see her close her eyes in respite. These and other bedside ministrations have been relegated to others today. But effective teachers know, and show, that there is no better way for doctors to connect with patients.

The importance of hands-on teaching has another implication: the most effective clinical teachers are practising clinicians. This point doesn't mean that researchers and administrators can't teach; however, they must do enough direct patient care to grow their own clinical skills, not merely maintain them.[38–40] In many US centres today, academics practice only when on-service (a few weeks per year); not infrequently, this practice amounts to continuing medical education for the attending physician, who unabashedly learns more from the house staff and students than they do from him. The notion that those who teach clinical medicine need not practise it is absurd, a convenient delusion that demeans the discipline and those training to learn it.

The inconvenient truth is that hands-on clinical teaching is largely unappreciated today, despite the effort and expertise required. Well-intentioned reforms in many US medical schools have created separate tracks for academic promotion of clinician-educators but these tracks are widely considered second-class. (Externally funded researchers go first class, as they should.) Private insurers and payers don't reward teaching either, a remarkable oversight in view of their alleged interest in more effective clinical practice. In a very real sense, hands-on clinical teaching has become its own reward, a vestige of professional altruism that will survive only if today's teachers can pass the torch on to a new generation—not a forgone conclusion.

Adapt, enthusiastically

As Osler said, "Medicine is a science of uncertainty and an art of probability."[41] What the science predicts, however confidently, might not happen; what clinicians do for patients, however artfully, might not succeed. Thus, despite the best laid plans, all clinicians must adapt to the unexpected. Effective teachers seek these situations because they present the greatest opportunities to learn (and to help patients). Exploiting these opportunities is not an easy thing to do, for several reasons.

Two demons haunt all clinicians: chance and fallibility. Assessing the agency of chance is difficult[42] but clinical teachers should try, because clinical error is a different kind of learning opportunity than bad luck. Both are instructive but only error provides the opportunity to learn the most difficult of all cognitive skills (when, and why, to change one's mind) and the most wrenching of all clinical responsibilities (how, and to whom, to admit

	Strategic goals	Educational challenges	Clinical challenges	Inconvenient truths
Wear gloves	Promote hands-on doctoring	Role-model unfashionable skills (physical exam) and countercultural behaviour (nurses' work)	Continuing refinement of clinical acumen to complement advances in science and technology	Bedside care undervalued and inadequately rewarded
Adapt, enthusiastically	Embrace clinical uncertainty as a valuable learning opportunity	Role-model aplomb and savoir faire when unexpected clinical events occur	Changing one's mind; admitting error; lack of evidence for many clinical dilemmas	Managing clinical uncertainty highly stressful yet poorly taught; burn-out an occupational hazard
Link learning to caring	Show, and expect of learners, empathy and responsibility for each patient	Role-model professionalism and patient-centredness	Understand the patient's illness as well as their disease	Medical consumerism (care as a commodity) undermines medical professionalism
Kindle kindness	Establish generosity (not politeness) as the standard for all clinical interactions	Give encouragement (hope) to learners even when giving critical feedback	Treat the disease as your enemy but the patient as your friend	Unknown whether simple human kindness is teachable

Table 2: **Teaching habits of effective clinical teachers—WALK the walk**

mistakes).[43] Ironically, this learning opportunity could explain why some teachers, always on the lookout for teachable moments, find error when bad luck is equally likely. Such attribution bias is dangerous; clinical errors are frequent enough without inflating their number.[4] All clinicians accumulate guilt over the course of a career—even when we deal with our mistakes constructively, most of us incur a personal loss—and increasing that guilt arbitrarily doesn't help.[44] Teachers walk a tightrope here. Teetering between finding fault and ruing randomness, their missteps have consequences either way.

But adapting to the unexpected needs more than hard-headed honesty about our errors and biases. It also needs creativity, an ability to improvise when making uncertain clinical judgments. Evidence-based medicine zealots might disagree, but randomised trials and expert guidelines will never address more than a fraction of all conceivable eventualities in clinical medicine. In other words, judicious improvisation will always be an integral part of what clinicians do. But when (and how) do clinicians learn this skill? Not in US medical schools, according to Melvin Konner, the anthropologist who wrote trenchantly about his experience as a medical student:

> Medical school [and] graduate school…have diametrically opposite purposes. The graduate school must produce a unique product: the student must…go as soon as possible beyond what has been taught…The medical student must on the contrary end by being as similar as possible to every other medical student…according to a process that leaves no room for originality. At the end of study, all…medical students…should perform the same examination, write the same assessment, and formulate the same options for treatment.[45]

One might conclude that postgraduate medical education also should produce carbon-copy exemplars of some curricular ideal (although Konner doesn't say as much; he wrote only about medical school). But this notion, seductive to many who want to standardise clinical care, fundamentally misunderstands what clinicians do and what effective teachers must teach. The formal medical school curriculum, albeit bloated and intimidating, is the easy part of medical education; the hard part is learning how to decide what to do when no one knows what to do, creatively using clinical judgment to help the patient as best one can.[46]

The inconvenient truth is that clinicians learn to manage uncertainty haphazardly, without formal instruction, despite its manifest importance to patient care. As a result, most clinicians don't like surprise. Enthusiasm for surprise—a sort of swashbuckling eagerness to handle whatever happens next—allows effective teachers to confront the unexpected head-on, the only way to address it. Such brio is a lot to ask of any teacher lifelong; many of us burn out, a problem we must learn more about.[47]

Link learning to caring

Patient-centred teaching refers to teaching that is directly and immediately relevant to each patient's main clinical problem. Whether sepsis or somatisation or a surgical abdomen, this main problem determines what must be taught and learned about a particular patient today. Patient-centred teaching contrasts sharply with teacher-centred teaching, an all too common practice where clinical teachers teach what they know whether it addresses the patient's problem or not. Although patient-centred teaching requires explicit prioritisation of the patient's problems, effective teachers take pains not to prioritise disease (what the patient has) more highly than illness (what the patient feels). This fundamental tenet of clinical medicine has become countercultural in many academic centres today.

But, whether the caring agenda is strictly technical (disease-oriented) or more holistic (illness-oriented), its defining characteristic is notable. Here, patient care refers to what doctors do for patients, the services we provide, whether brief counselling or major surgery. Such things, of course, clinical teachers must teach. But there's the rub: thus defined, care is a thing—a product provided by clinicians, received by patients, measured by quality analysts, quantified by payers. This banal definition, especially when combined with the mistaken notion that well-trained physicians are interchangeable, contributes to the increasingly popular idea that clinical care is a commodity.

Francis Peabody took a different view when he observed famously that "the secret of the care of the patient is in caring for the patient."[48] In words that still resonate today, he noted:

> The physician who attempts to take care of a patient while he neglects [the patient's emotional life] is as unscientific as the investigator who neglects to control all the conditions that may affect his experiment. The good physician knows his patient through and through, and his knowledge is bought dearly. Time, sympathy and understanding must be lavishly dispensed but the reward is to be found in that personal bond which forms the greatest satisfaction of the practice of medicine.[48]

For Peabody, dying of cancer at age 47 when he wrote, caring meant not only the things clinicians do for patients but also the personal bond that gives them meaning.

Of course, to link learning to such depth of caring assumes that learners (and teachers) care so deeply. This assumption is not true for all clinicians today; some of us don't care, not in the way Peabody meant. Worse, the medical profession as a group has not tried to discover who these careless clinicians are or how they got that way. Ask patients what makes a good doctor and many will give some variation on the same answer: a doctor who cares about me. But the truth is that our profession has not taken the trouble to study systematically what

such caring means. Our negligence in this matter is not merely inconvenient, it is deeply troubling, calling into question how much our profession really cares about patient care.

To their credit, august professional organisations have defined competencies requisite for all clinicians, including the 800-pound gorilla called professionalism.[49–52] Its components no doubt make up much of what patients look for in a doctor who cares. But defining professionalism won't make it happen; only the professionals can do that. Fortunately, thousands do, magnificently, every day. The unanswered question is who will join their ranks, take their place? Who will convince future generations that Peabody's way of caring is normative, not nostalgic? The inconvenient truth is that no one knows the answers to these questions, and not all of us care.

Kindle kindness

Ultimately, teaching is all about the learner, not the teacher. Thus, effective clinical teachers aspire to a sort of selflessness whose tangible expression is kindness to learners, especially when assessing them (giving feedback). Kindness makes even the toughest criticism hopeful, empowering the learner by making learning less oppressive. Not incidentally, patients appreciate kindness too.

If, then, kindness makes patients more satisfied, teachers more effective, and learners more receptive, we should kindle it. But, what is it, exactly? It is not merely politeness, as the philosopher André Comte-Sponville has argued.[53] He does not demean politeness, surely an important thing:

> All the world's a stage, and living means acting…Not being virtuous, we make a pretense of virtue; this is called politeness. Not knowing how to love, we act as though we did; this is called morality.[53]

But, in medicine today, this apparent pretence of virtue is often confused with the real thing. The new provider-customer model of the doctor-patient relationship abets this confusion, making little distinction between the solicitude of a salesman and the benevolence of a physician. Some learners today don't know the difference. Unfailingly polite, they pretend kindness, a smarmy sham of the real thing.

The real thing, in the philosopher's view, has more to do with gentleness than politeness. On a mundane level, physicians' gentleness is tactical. Privileged to enter the intimate lives of strangers, they use gentleness to enable empathy and communication. But its deeper relevance—to Peabody's secret of caring, to the ideals of medicine—shows itself when gentleness combines with generosity.

> Generosity invites us to give in the absence of love to the very people we do not love, and to give them more the more they need it, or the better equipped we are to help them. Indeed when love cannot guide us because we do not feel it, let us be guided by urgency and proximity. This…is…generosity. Joined by justice, [generosity] becomes equity. Coupled with compassion, it becomes benevolence…But its most beautiful name is its secret, an open secret that everyone knows: accompanied by gentleness, it is called kindness.[53]

How, then, can teachers kindle kindness in medicine? It can't be done in a classroom. No doubt medical learners are "good at reading what the environment expects of them—and then meeting these expectations".[54] But courses in medical ethics and medical humanities, however valuable, can't kindle kindness. The inconvenient truth is that there is only one way: someone has to do it, walk the walk for all to see. "Example is not the main thing in influencing others," Albert Schweitzer said, "it is the only thing."[55]

Demonstrating kindness doesn't mean that clinical teachers must be heroes or saints. In fact, what matters are the little things, what Comte-Sponville calls "kindness of manner".[53] Such simple human kindness is natural to most physicians-in-training (in whom it must be nurtured); unfortunately, it is not natural to all. Whether kindness is teachable is a crucial question because, without its spark, kindness in its nobler forms—altruism, benevolence, equity—cannot be kindled. The ideals of medicine, both in practice and in teaching, "begin…and end…with the patient".[56]

Some might think these habits set the bar too high. Certainly they exceed my own reach more often than I like. But there is much to recommend lofty goals, especially today when the science of medicine is soaring. Clinicians must catch up, not to compete with the scientists but to become their equal partners again.[2,57] To do so, we can tap new sources of energy—computer-simulated training, decision-support systems, faculty development programmes—but we must also prove their power and cost-effectiveness. Better educational research is essential.[58–60] Above all, we must acknowledge a final inconvenient truth: "Our will to take action is a renewable resource."[11] Temperatures are rising. We best take heed before the tides rise too.[61,62]

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