

A Sensational View of Human Learning, Thinking, and Language

Literacy Research: Theory,
Method, and Practice
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Abstract

Educational research regularly claims, with lots of evidence, that humans learn from experience. However, experience is composed of outer and inner sensations. Thus, if humans learn from experience, we would expect that educational research would be replete with work on sensation. Yet sensation in the wild, outside laboratory studies, plays no real role in educational research on teaching and learning. This paper is based on current research, in several different disciplines, that sensation and feeling activate, guide, and assess cognition and that much of human thinking and problem-solving is based on associations formed from experience that are triggered quickly and unconsciously. We explore the nature of living things, learning and thinking without consciousness, the distinctive nature of the human brain and body, and the role of the physical and social body in cognition. The paper discusses some of the implications of a sensation-based view of human thinking and acting for how we study learning, language, and social identity.

Keywords

sensation, embodied cognition, allostatic load, situational meaning, the social mind

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Introduction

One look at today's world—where humans are creating the sixth great extinction of life on earth (Kolbert, 2014)—will tell you that humans are not very good at thinking, though they often believe thinking is their strong suit. The research on human “brain bugs” will tell you the same thing. Traditional work on learning starts with thinking, not sensation; it starts with mind not body. But living things survive and flourish most through sensation, not thinking. In fact, creatures do not need to be able to think to use sensation to solve problems—to, in that sense, engage in “cognition.” We humans have misunderstood ourselves as types of creatures not so much by trusting thought over sensation, as by failing to see that sensation is the basis of real intelligence and of thinking that leads to survival and flourishing.

Humans Learn from Experience

Educational research regularly claims that humans learn from experience, but little is said about what “experience” means. Experience involves a human interacting with the world and gaining outer and inner sensations (Maturana & Varela, 1972). If humans learn from experience, then we would expect that educational research would be replete with work on sensation. Yet sensation plays no real role in educational research on teaching and learning. There is no mention of the word “sensation” in the 1999, 2000, or 2018 versions of the National Research Council's consensus report on learning and schools, *How People Learn* (National Academies of Sciences, Engineering, and Medicine, 2018).

Living Things

So, let's take the mantra “humans learn from experience” seriously and start with sensation. To understand sensation, we must begin with a question that plays no role in educational research: What is a living thing (Capra & Luisi, 2014; Nurse, 2021)? Sensation is the very basis of life. All humans are living things and if we violate their nature as a living thing, we will hardly get flourishing beings.

Any living being must be able to deal with changes in and challenges from its environment. It does this by budgeting its inner resources (food and energy) so that it can handle routine challenges, yet expend extra resources effectively for emergencies, and always retain enough resources to repair and rebuild (Barnett, 2017, 2020; Solms, 2021; Zimmer, 2021). This budgeting process is called **allostasis** (Barnett, 2020).

To budget its resources, a living thing needs the ability to use past experience to anticipate and deal with the future. This, in turn, requires the ability to retain, inside the creature's body, a record of past inner and outer sensations and the ability to reactivate them as a source of anticipation of and reaction to new challenges. This is a form of “memory.” The nature of life—and the requirement for both surviving and,

hopefully, flourishing—is that a creature’s chemical and biological structure makes “intelligent” adaptive changes in itself in response to change.

So, what makes a living thing intelligently adaptive? The answer is, to a degree, its genetics, but, more importantly, its experience. Yes, we are back to experience. Experiences teach living creatures how to intelligently adapt to change, the most primordial important form of learning. To live is to be able to use the environment—via sensation—as a teacher.

Living creatures whose systems have become overwhelmed by challenges cannot budget their resources well and this leads to damage to their internal organs. This state of being overstressed is called **allostatic overload**. Such a creature needs help before it can fruitfully learn and adapt again. Allostasis, intelligent adaptation to change, and allostatic load should be key concepts in education. They are the foundation on which everything else is built.

Slime Molds

A creature does not need a brain to learn. It only needs to be able to sense the world and learn from this sensation. Modern work on the human brain sees the human cerebral cortex as the site of intelligence, largely because it appears to be the site of “higher-order thinking.” However, a creature does not need a cortex or even a brain to solve problems that appear “cognitive.”

For example, the multiheaded slime mold *Physarum polycephalum* is a single very large cell that can put out and withdraw “tentacles” in a search for food (Zimmer, 2021, pp. 80–89). It can remember previous paths that had no food if it ventures on them again and redirect itself to a more promising path. It can discover the shortest path through a maze. And it can learn to habituate to conditions it initially finds unpleasant, coming to realize that the unpleasant feeling is irrelevant to its survival. Habituation is a form of adaptation and is considered the simplest form of learning. So, slime molds have memory, can solve problems, and can learn, yet they have no brain.

Sensation Again

What makes a slime mold “smart” in its own way is that, even though it is just a single cell, it can sense (detect, feel) sugars and other molecules that diffuse across its environment from food sources and make contact with the receptors on its body (Zimmer, 2021). It cannot “think” but it can **sense**.

As we said at the outset, educational research often claims that “humans learn from experience” yet fails to realize that experience involves a body sensing an environment, not just (or even) thinking. So, if we want to understand human learning, we must understand the sensory and sensual human body, just as if we want to understand slime mold learning, we must understand the sensory and sensual slime mold body (which is only one cell).

The Human Body: Multiple Brains

Humans have, by and large, a poor understanding of what their body is. For example, humans do not have a brain just in their head. They have “brains” in several other body parts as well (Hawkins, 2021; Mayer, 2016). Thanks to the vagus nerve (Dana, 2018; Porges, 2011), the largest nerve in the body, we humans have neural tissue in our hearts, lungs, and guts. The head brain and these other brains send messages back and forth to each other. In the case of our gut, the gut brain sends many more signals to the head brain than the head brain sends to the gut. So, body and brain are one fully integrated thing, and our gut takes no second place to our head.

The Human Body: Our Microbiome

Another thing we often miss about the human body is that lots of it isn’t human. More than half of the cells (and, thus, too, genes) in a human body are not human cells, but little animals like bacteria, archaea, protists, fungi, and viruses (Enders, 2015; Mayer, 2016; McAuliffe, 2016; Yong, 2016). We have many billions of these microorganisms on and in our bodies. In particular, we have a massive amount of them—of many different species—in our gut.

The microorganisms in our guts are crucial to how we feel and to our health. They also help train our immune system (so, something that is not “us” helps us learn what constitutes “us” and that includes “them”). They send constant streams of information to the head brain about the state of the hormones in our blood, the workings of our immune system, and the wear and tear on our organs and tissues. They determine how we feel and whether we should act to change our feelings; they assess the state of our well-being and determine whether we must act to repair our well-being.

We humans, however, have no conscious idea of how these microorganisms and our gut brain make the decisions they do. They send them along to the head brain and the rest of the body with no explanations, just a plea for action. In turn, how we act turns out to be based more on the experiences we have had in life than on “rational thought.”

Humans as Sentient Intelligent Swarms

Our microorganisms are a zoo and, so, humans are zookeepers. If this zoo ceases to be diverse, to contain a wealth of different species, we get sick and can die. As diversity goes down in our zoo, bad microorganisms take over and can do us much harm. The two factors that do the most harm to our zoo are ongoing toxic stress and eating too much industrial food (Moss, 2013; Warner, 2013). Both factors kill lots of the good actors in our zoo—even driving some species important for human health to extinction—and invite bad actors to come in and take advantage of our weakened state.

So, how should we talk about the human body when it is so different than we think it is? We are not “one thing” but a swarm of things, some human and some not, all of

them “us.” We are not a brain in a body, but an embodied brain (or embodied mind) and a brainified body (or mindful body). We are, in reality, a **sentient intelligent swarm** where sensation and intelligence (“cognition”) are properties of the whole swarm (not just single senses and an isolated brain). Beware education that ignores the gut and does not speak to the swarm. We are also *social* sentient intelligent swarms, swarms that gather in herds and create swarms of swarms.

So, we have seen that to understand learning we need to know about their “bodies.” In the case of slime molds and humans, the body’s sensory system and the nonconscious decisions of its sensory system can learn and adapt with no need of (in the case of slime molds) or no need of reference to (in the case of humans) reflective consciousness (“higher-order thinking”).

Human Nature

Once we have ensured that living things under our care are flourishing as living things, then we must go on to ask how we can also help them flourish as specific kinds of thing. If you do not understand what kind of creature a donkey is, you will not be able care for donkeys well. You may do them harm and they might well do you harm (donkeys can kick you across the field). The situation is no different for humans.

Humans, too, are creatures of a certain kind; there is such a thing as human nature. This is not to say that either donkeys or humans are all the same. Each donkey and each human is an individual. Their genetic makeup and the way genes interact epigenetically with the environment is so complex that no two donkeys or humans are the same (Eagleman, 2020). Even identical twins differ in how their brains are wired since there is not enough DNA in the body to wire the human brain, thanks to its massive complexity (Kandler, n.d.).

Unfortunately, humans have long been mistaken about the kinds of creatures they are, both in everyday conceptions and in scientific ones. New work in a wide variety of areas of science is starting to remedy this situation, but it may be too late, given the vexed state of the world today (Gee, 2020).

Beliefs and Theory of Mind

So, why, if good sensory organs and the good “decisions” they make are necessary for intelligent adaptation to the world, not brains or conscious thought, do some creatures have a brain capable of consciousness not just in the sense of awareness, but even in the sense of being self-reflective? Other creatures than humans have consciousness, some even in the self-reflective sense, but let’s just concentrate here on humans.

While a creature does not need a brain to solve problems and, thus, the cortex is not the defining feature of adaptive intelligence, it does need a brain to have “beliefs.” Only creatures that have evolved a “theory of mind” have beliefs and beliefs about beliefs (Moffett, 2018; Suddendorf, 2013; Tomasello, 2019; Varela et al., 1991). Humans use their beliefs about what is in other humans’ minds to predict what

these other humans might do. These predictions are based on what they think is going on in their own minds and what they think this has to do with how and why they act. They apply their model of themselves to others. Of course, humans have had no access (save quite recently in history and then still only partially) to what is actually in their mind—in reality, their brains—and, thus, their beliefs about beliefs are unlikely to be empirically correct in regard to how their brain actually operates.

Evolution Does Not Select for Truth

Once a creature gets beliefs, evolution will not select for true beliefs (Hoffman, 2019; Sapolsky, 2017). If a belief is wrong, but works for a creature's survival, then evolution will select it and it will be passed down. If a belief is true, but does not work for a creature's survival, evolution will not select it. Thus, for example, many humans believe that "everything happens for a (good) reason," since this makes it easier to survive in a world where suffering and death are inevitable, though it is very unlikely to be true. Furthermore, belief in humans is more social than it is individual and, as we will see below, works more for group cohesion than for truth *per se*.

So, if false beliefs can be good for our survival, what's the problem? Why should any of us care about truth? The reason we should care is that evolution (and often, too, society) works only in the short run. It "makes decisions" in the present but has no long-term plan. Evolution did not and could not see the meteor coming for the dinosaurs. But truth matters in the long run. If you do not plan for the meteor, you die.

Identity Signals

There is an additional reason why humans so often ignore evidence and long-term consequences. Humans are social animals like sperm whales, crows, and ants and unlike octopuses (who are nonetheless impressively intelligent). Humans have an inherent and powerful **need to belong** (Jackson, 2019; Moffett, 2018; Tomasello, 2019). What it means to humans to belong is that they are accepted by social groups in such a way that they feel what they do can make a difference and they feel, as well, that they matter and count. If humans feel they do not matter and that what they do does not make a difference, they get sick in mind and body.

For humans, as social animals, beliefs are very often not really claims for which they can marshal evidence. Very often beliefs are not justifiable claims, but **identity signals** (Funkhouser, 2017; Jackson, 2019; Klein, 2020; Rauch, 2021). Social groups create signals of their identity—including beliefs as social signals—and their members use these signals to create solidarity with each other (as "us") and distance from others (as "them") in the name of survival as social beings, not isolates.

Associations and Connections in the Brain

Well, of course, we do have a head brain, just as we have lungs and a gut, so let's consider how it operates. The human head brain is a massive **association engine** (Clark, 2015; Eagleman, 2020; Purves, 2019; Seligman et al., 2016). Humans have experiences in the world. These experiences give rise to sensations in the body, outer ones like sight, hearing, smell, and taste and inner ones like feelings and emotions. Via sensation, humans discover associations among different elements of the world. These associations are stored as connections among different ensembles of neurons in the brain.

For example, your sensorial experiences in the world may have led you to associate together with the following features (among others) of experience: being small; gray; feathered; a bird; with patches of red; commonly seen around homes; commonly seen at bird feeders; a good singer; often found in flocks; named "House Finch." The associations among all these features got into your head by seeing house finches and being told their name or having seen it in a bird book. All these features are connected in your brain.

Once these associations are in your brain, you can use them—by activating the neural connections that represent these associations—to **recall** a specific experience you had of house finches. You can use them to **imagine** house finches when none are present. You can mix them with other elements of experience to **create fantasies** like house finches sitting for tea. These associations can be triggered in sleep to make you **dream**.

You can also use them to think and **reason** about house finches. Imagine you see a bird that triggers all your house finch associations except that it has yellow patches, not red ones. You see this bird with a flock of regular house finches. So, you infer or hypothesize (two types of reasoning) that there must also be yellow house finches not just red ones, and that yellow ones are much rarer than the red ones. By "infer" here we mean that you—perhaps tentatively—add to your house finch associations the features "sometimes, but rarely, yellow."

Worldviews

Learning, thinking, imagining, fanaticizing, dreaming, and remembering are all different uses of the **massive web of associations** represented by neural connections in your brain (Eagleman, 2020; Solms, 2021). This web of associations is, at any one time, your **model of the world** (your worldview) and it can change every time you have a new experience. This web is the product of your experiences in the world and the sensations to which they have given rise.

Automatic and Conscious Associating (Simulation)

Thinking, reasoning, imagining, and remembering are all activations of the connections in our brain that represent associations from our experience. So, all these different functions are forms of "associating" in different contexts for different purposes.

Associating can be done in two different ways (Kahneman, 2011). One way is automatic (fast, unconscious) and the other is deliberate (slow, effortful, conscious).

A person might have come, from many different experiences, to automatically associate raised voices or arguing with a fear that people are or will soon become angry and associate this anger with threat and threat with shutting down or fleeing. This is not an uncommon pattern among young people who have been physically abused early in life (Burke Harris, 2018). They can come to generalize this response to many different situations. It can become dysfunctional because they assume and respond to threat in situations that do not really merit it. This is fast associating.

With help, such young people can be taught to stop this automatic chain of associations in some situations, pause, and engage in deliberate (effortful, conscious) associating (reflection). We humans do this by **simulating** different scenarios in the “theater of our mind” before we act or react (Barnett, 2020; Barsalou, 1999; Hawkins, 2021; Hoffman, 2019; Seligman et al., 2016). This is like running a videotape in our mind—even more like playing a video game using our brain as a game platform: we imagine seeing and doing things in different ways and trying new responses (Gee, 2017a). Then we act or react, not automatically, but purposefully. In this way, young people can learn to see situations in new ways and begin to form new associations that do not trigger fear and a desire to shut down or flee. This is deliberate associating.

The self-reflective conscious brain exists to simulate. **Simulation** is the human brain’s superpower. Automatic association is crucial for survival and for performance under time pressure. Simulation is crucial for undoing habitual responses so they can be redesigned for better performance and is crucial for changing our worldviews.

Experience is Social and So, Then, is the Mind/Brain

So, humans learn from experience. Experience is composed of sensations that create associations. Importantly, the human body only senses what the brain pays attention to. In any experience, the brain pays attention only to a small part of what is available to be sensed. It pays attention only to what **matters** to the person at that time and place.

When a human confronts the world in an experience, especially a new sort of experience, there is far too much that could be paid attention to. The person could easily become overwhelmed and, in turn, form no coherent or useful associations. Humans pay attention to what they care about, and they learn what to care about from social groups to which they belong or want to belong (Barnett, 2017; Chabris & Simons, 2009; Huntsiner, 2013).

These social groups show newcomers what the group believes is worth caring about and how this caring should guide the newcomer’s attention in an experience. Furthermore, these groups show the newcomer what actions the group believes are good to take to achieve goals the group believes are worthwhile. And, the group shows them, too, how to assess the outcomes of these actions in terms of what is good enough and how one should proceed past failure to a goal. Social groups give newcomers an **affective and evaluative framework** that has been developed and

sustained through time by the group (Gee, 2004, 2017a). Such frameworks are a crucial part of human beings' web of associations.

In this way experience is social. The associations one forms and how they connect to other associations in our model of the world are often determined by others, by the social groups to which one belongs or aspires to belong. Our web of associations is shot through with associations among values, standards, and ways of caring that stem from social groups. We could call this **social affect and valuing**.

Affect

Our bodies constantly give rise to inner sensations, many of them unconscious, that affect what the body does in its dynamic interactions with its environment (e.g., raise or lower our blood pressure). In certain circumstances, inner sensations raise conscious awareness (Barnett, 2017, 2020; Damasio, 2018; Furtak, 2018; LeDoux, 2019; Solms, 2021). When they do, we seek to interpret them. Purely physical sensations are interpreted as feelings. So, we might interpret a growling sensation in our stomach as "feeling hungry." Physical sensations caused by socially relevant situations are interpreted as "emotions." So, we might, in a given context, interpret sensations like tension in our muscles, a rapid heart rate, and increasing body heat as anger triggered by a person or some other aspect of a socially relevant situation.

Our inner sensations and their interpretations (hunger, anger) lead us to engage in certain actions, actions that are affected by our social groups and cultures. How we act on a feeling or emotion can be automatic. We feel hunger and we reach for sweets; we feel anger and we lash out. These are habituated responses, often socially conditioned. But we can, with effort or help, engage our conscious mind to reflect (engage in simulations) on how we should act. We can come to realize that we might, in the end, be happier if we ate something more nutritious than sweets or be better off by not lashing out, but using another course of action. These are cases of deliberate associating.

We might also discover that in some situations where we interpret bodily sensations as hunger, we might have better interpreted them as nervousness or anxiousness or where we interpret bodily sensations as anger, we might have better interpret them as fear at a loss of face. We can be wrong about our feelings and emotions or come to revise our interpretations.

Bodily sensations and the feelings and emotions to which they give rise—which we can together call **affect**—are crucial to cognition. They can arouse the conscious mind to engage in simulation (reflection, planning) and they always evaluate the progress we are making in the actions we have taken to respond to our feelings or emotions. These actions are good to the extent that they lessen bad feelings or emotions or increase or sustain good feelings or emotions. If you must act or choose in some situation but have no feelings or emotions about your action or decision, you have no basis on which to choose or act and no way to evaluate your choices or actions. **Affect** arouses, drives, and evaluates deliberate thinking and the actions it leads to (Barnett, 2017; Damasio, 2018; Panksepp, 1998; Solms, 2021).

The Dilemma

If we put everything we have said so far together, we come upon a massive dilemma for us humans. The vast majority of what we feel, believe, desire, and do is not the product of conscious choices and decisions. In fact, we often have no idea why we have the feeling, emotions, beliefs, and desires we have or why we have acted as we have. These things are very often actually determined by the automatic workings of our feeling and emotions, the chemical and biological properties of our body in dynamically changing equilibrium with the world, our microbiome, the automatic associations triggered in our brains, and the often tacit development of social affective and evaluative frameworks from our social groups (Gazzaniga, 2011, 2018; Simler & Hanson, 2018).

Faced with this massive number of causes about which we know little or nothing consciously, one function of the self-reflective conscious part of the brain—a function that has sometimes been called **the Interpreter**—is this: the Interpreter considers whatever limited evidence it can gather and makes up the best story it can about why we feel, desire, believe, and act as we do. We think our story is true, the total picture, but it is no such thing (Gazzaniga, 2011, 2018). And, too, the stories the Interpreter makes up are largely inherited from our social groups (including religions), media, and schooling. And remember, humans orient to comfort not truth, so the story is designed to work, to help us and our social groups, not to be true (Gee, 2020).

Language

Well, though this paper is based on a talk delivered at the 2021 Literacy Research Association Conference, we have not yet talked about language. Students of language always like to start with language, just as students of cognition always like to start with thinking. But we have argued that we must start with sensation if we really believe humans learn from experience. Thinking and language come not first but last, in evolutionary history and in the logic of understanding ourselves as living things of specific kinds. Thinking and language are built on the base of sensation and association, not the other way round.

Humans speak or write, in most cases, to guide the embodied associations and simulations other humans will use to make sense of what is being said or written. Words and grammar are cues or clues to help the hearer (or reader) activate old associations or form new ones in specific situations (Bergen, 2012; Borges, 2000; Gee, 2017b; Glenberg & Gallese, 2012; Halliday, 1978; Hanks, 1995).

An Example: A Video Game Dialogue

As an example of how this works, consider the dialogue below (this example is adapted from Gee, 2017b):

Bead: Are you really dead

Allele: Yes, did you get the heart?

- Bead: I got the heart—another guy was helping
Allele: Good
Bead: I am standing over your body mourning
Allele: I died for you
Bead: So touching
Allele: It's a long way back
Bead: I know—I've done it

These utterances make little sense unless you know that these utterances were made in the situational context of two brothers playing a massive multiplayer video game and communicating, from two different real-world places, via the in-game chat. The brothers interpret the utterances not in some literal or general way. They interpret them in terms of the situation they are in and their shared histories as two people who know each other well, playing a massive multiplayer game. In video games, death isn't permanent and your corpse can be seen by other players, even by you yourself as a player, before you get back your (avatar) body and live on.

The brothers give the utterances in this dialogue situationally appropriate meaning in terms of the associations they trigger in their minds. The pronouns "I" and "you" are given meaning here as a reciprocal pair that means person to person, brother to brother, fellow player to player, and avatar to avatar. Each of these relationships is the source of various associations based on past history, shared knowledge, and the sensations coming from the game.

These associations all interact with each other. Perhaps, Allele's "I died for you" and Bead's cynical sounding "So touching" reverberate for the brothers in terms of other events in the lives outside the game; in terms of the history of their gameplay in this game or others; and in terms of the roles and skills their avatars have and how they play out in gameplay. Note that "I" does not mean "speaker" (this is just its system meaning). It means here, in this situation, "a known person, a known fellow player, and a known avatar" each of which—and all of which together—pair with the situational meaning of "you" here.

This dialogue unfolds along with images from and actions in the game. This unfolding ensemble of physical and verbal sensations pair with the unfolding and interacting ensemble of associations that activate in the brothers' brains. In turn, these associations (as situational meanings) affect the words and actions the brothers take and giving rise to new associations. Language + sensations from the world (here the physical world and the game world) interact with embodied associations and simulations that constitute the ongoing interpretations and storying of the brothers' play and, too, lives. It is a dance, the dance of (situational) meaning.

Language, at the level of situational meaning, is a tool that allows humans to design and shape each other's web of associations, associations ultimately rooted in sensation. In the act, we reorganize each other's experiential base and prepare each other to

experience the world differently in the future. We reciprocally use language to remake each other minds (brains) and, thus, too their model of the world.

Another Example: “Democracy”

The word “democracy” has a grammatical (system level) meaning (a “definition”) that is just a holding place for all the accumulated associations we have built up from all the situations we have been in where the word has been used. At any one time, this web of associations (which the word “democracy” simply points to) is our **resource base** for creating situational meanings in context. This associational resource base for “democracy” is the current limit of our capacity to act, interact, and experience democracy. If I want to change your meanings for the word—and therefore your capacities to sense, simulate, and act—then I must give you new experiences, often guided by words (a form of teaching) that help you know how to care and how to pay attention in new situations.

When two people come together to talk or argue about democracy they bring not dictionary definitions, but two different webs of associations for “democracy” based on their experiences in the world and in media, each of which has been shaped and directed by affect. In talk their webs of associations collide, comingle, interact, and something new ones can born in each of their models of the world. Of course, they can also retrench and stand their ground, learning nothing new. Or they can fight out a war of identity signaling. It is the job of the language and literacy teaches to teach people how to do the first. The other two are things humans are already good at. It is their job to see talk and text as not primarily about conversion or persuasion, but a deeper understanding of our own and other people’s models of the world.

Consider the uses of the word “democracy” below. In each case, it is clear that how much or little these comments mean to you is determined by the experiences you have had in talk, texts, actions, and interactions in the world. A dictionary is of no help whatsoever. These are all comments based on the models of the world of their authors that reverberate in multiple ways as they contact different models. Meaning in its situational sense is all about “being there” or having been there in discussions and events in the world.

- (1) “... yet I believe [Milton] Friedman is right that thoroughgoing restrictions on economic freedom would turn out to be inconsistent with **democracy**” (Gee, 2015, p. 116).
- (2) “If **democracy** is about creating processes that allow people to empower themselves, then pirates [people running illegal pirate radio channels] are clearly the perfect catalyst for such processes” (Mason, 2008, p. 47).
- (3) Penalosa [Mayor of Bogota, Columbia] observes that “high quality public pedestrian space in general and parks in particular are evidence of true **democracy** at work” (Brown, 2008, p. 193).
- (4) “That is the fate of **democracy**, in whose eyes not all means are permitted, and to whom not all the methods used by her enemies are open” (Weisberg, 2008, pp. 181–182).

- (5) **“Democracy** is not just an election, it is our daily life.” (Blockmans & Russack, 2020, p. 3).
- (6) **“Democracy** must be something more than two wolves and a sheep voting on what to have for dinner.” (Bovard, 1994, p. 333).
- (7) **Democracy** is finding proximate solutions to insoluble problems. (Niebuhr, 2011, p. xxi).
- (8) “To acquire immunity to eloquence is of the utmost importance to the citizens of a **democracy.**” (Russell, 2004, p. 247).

Conclusion

If education is to work for human flourishing, then here are the steps:

- (1) Work on the embodied mind/mindful body in terms of its allostatic load and adaptative intelligence in its interactions with the world. Lower stress, maintain the human microbiome, and give experiences that make for good adaptive powers.
- (2) Work on humans as beings who need to belong and who use beliefs as identity signals. Help them find belonging in good places.
- (3) Realize that humans, for the most part, make decisions based on affect, the state of their bodies, and associations activated on automatic pilot. Be sure this habituation is based on good experiences that make for good habits.
- (4) Work on the way humans can use simulation to reimagine their choices and actions and plan for the future. Art, with its capacity to make the taken-for-granted new and strange again can be crucial here.
- (5) Work on the interpreter by giving humans better ways to tell themselves stories that are both comforting and true.
- (6) Teach language by building people’s experiential resources so they can create good and effective situational meanings in context.
- (7) Always teach to a living, embodied human with specific social affiliations, not to a disembodied asocial thinker (none exist).


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