

Cybernetic Literacy from Childhood

A roadmap for teaching relationships, feedback and consequences before the old paradigm takes hold

Working draft for educators, clinicians, parents, public-health administrators, regulators and journalists

Short summary

Cybernetic literacy means learning to see living systems, products, habits and institutions as networks of relationships rather than isolated things. A child shown a wolf should not be taught only to name an animal. The child can also be helped to see prey, plants, microbes, weather, territory, disease, death, human action and time. A child shown a soft-drink can should not be taught only to name a product. The child can also be helped to see water, sugar, acid, aluminium, mining, transport, advertising, teeth, metabolism, waste, regulation and profit. Cybernetic literacy begins with a simple proposition: every object has a hidden map.

This document is a roadmap rather than a complete philosophical treatise. Its purpose is to identify the educational shift required if periodontal disease, diet-related disease, environmental damage and institutional failure are to be understood as consequences of disrupted regulation rather than isolated events.

Historically, new paradigms rarely replace old ones simply because evidence is available. First come anomalies, then resistance, then the slow building of a parallel explanatory framework. Cybernetic literacy belongs to that third stage. It does not ask children to memorise a doctrine. It gives them the mental grammar needed to see relationships, feedback and consequences before fragmented, linear habits of thought become entrenched.

1. Why cybernetic literacy matters

Children are born into a world that teaches isolated nouns: tooth, food, pet, disease, medicine, product, environment, economy. Naming is necessary, but insufficient. When education stops at naming, children may grow into adults who see symptoms, products and institutions as separate things rather than as parts of interacting systems.

The Cybernetic Hypothesis of Periodontal Disease provides a concrete starting point. It began with the observation that mammalian carnivore periodontal disease is not adequately explained as a local dental infection alone, but as a breakdown in biological regulation involving diet, mechanical function, oral ecology, microbial life, immunity, systemic health, environment and time. The same style of thinking is needed far beyond dentistry or veterinary science.

Cybernetic literacy is therefore a foundation for health literacy, ecological literacy, media literacy, nutrition literacy, civic literacy and scientific literacy. It teaches children to ask not only 'What is it?' but 'What is it connected to, what does it regulate, what regulates it, who benefits, who pays, and what changes over time?'

2. What cybernetics is not

To teach cybernetics clearly, it helps to say what it is not. It is not merely Germ Theory, although microbes matter. It is not merely linear reductionism, although careful reduction and measurement matter. It is not merely the treatment paradigm, although treatment is sometimes necessary and valuable.

Germ Theory, linear reductionism and the treatment paradigm each contributed important knowledge and practical gains. The danger arises when they become the whole frame: one germ, one lesion, one treatment; one snapshot, one mechanism, one repair. Chronic inflammatory disease, diet-related disease, periodontal disease, ecological disruption and institutional failure often cannot be understood adequately in that way.

Cybernetics changes the unit of attention. It asks how systems regulate themselves, how feedback loops form, how protective mechanisms become amplifying mechanisms, how incentives distort behaviour, and how interventions alter the system they enter.

3. From keyhole snapshots to moving systems

Pre-cybernetic thinking can resemble peering through a keyhole to take still photographs of a room. Each photograph may be accurate, but the viewer sees only fragments: a chair, a table, a person, a shadow.

Cybernetic thinking is more like entering the room with a high-powered movie camera, filming through day, night and seasonal cycles.

The difference is not merely more information. It is a different way of seeing. The cybernetic observer looks for movement, timing, feedback, thresholds, cycles, delayed effects, hidden connections and changing contexts. This is essential when studying living mouths, diets, microbial communities, immune responses, food industries, schools, public-health systems and societies.

4. Every noun has a hidden map

Wolf and soft-drink can are useful classroom examples because they expose the weakness of isolated naming. But many ordinary singular nouns conceal systems: diet, food, population, school, profession, market, treatment, environment.

Diet, for example, is not just 'what someone eats'. It includes agriculture, soil, slaughter, processing, packaging, price, advertising, school meals, family routines, oral mechanics, microbiome, metabolism, waste, disease, regulation and profit. A population is not just a number. It includes age structure, fertility, mortality, migration, housing, education, disease, belief, law, environment and time.

The classroom principle is simple: begin with the noun, then draw the map.

5. Regulators must themselves be regulated

The original Cybernetic Hypothesis concerned mammalian carnivores. In ecological terms, carnivores may function as apex regulators. Their feeding, health, disease, reproduction and death affect prey animals, scavengers, vegetation, soil, microbes and the wider landscape. If apex regulators are altered, removed, misfed or diseased, effects can travel down the food chain.

In deep evolutionary time, before technologically equipped humans became dominant terrestrial regulators through weapons, fire, agriculture and industry, large carnivores occupied a very different position from the one many people now imagine. They were not merely animals within nature; they were among the regulators of nature. Their hunting, feeding, disease ecology, microbiomes, reproduction and death helped shape prey populations, scavenger networks, vegetation, soil life and the wider landscape. The Cybernetic Hypothesis asks readers to recover that older frame of reference. It begins from the possibility that periodontal disease in mammalian carnivores was not simply a private dental misfortune, but part of a wider regulatory system operating through bodies, populations and ecosystems over time.

This does not mean romanticising disease or denying the need for care. It means asking whether disease processes that appear only as menace or defect in the modern clinic may once have performed regulatory work within natural systems. Under disrupted modern conditions, those same processes may become chronic, amplified and destructive. Cybernetic literacy helps children and adults learn this distinction: nature is not organised around human categories of wanted and unwanted, but around relationships, limits, signals, cycles and consequences.

The same principle provides an allegory for human society. Parents, schools, professions, corporations, regulators, governments, media platforms and markets all regulate conditions below them. When regulators are poorly informed, commercially captured, narrowly trained or rewarded for the wrong outcomes, disorder can spread through the system. A cybernetic society must therefore ask: who regulates the regulators?

6. Oral health as daily cybernetic practice

Tooth brushing and interdental cleaning should be taught as daily biological regulation, not merely as private chores or afterthoughts before a dental appointment. The mouth is one of the body's most important microbial and inflammatory interfaces. Daily habits at that interface matter.

A cybernetic approach does not reduce periodontal disease to hygiene failure. Diet, chewing, microbiome, immunity, saliva, systemic disease, stress, ageing, culture, commerce and care access also matter. But precisely because the system is complex, low-cost daily regulatory behaviours become important public-health tools.

What gets rewarded gets done. Schools, childcare centres, workplaces, aged-care facilities, insurers and public-health agencies should treat effective prevention as something to be designed, cued, supervised, normalised and rewarded across the lifespan.

7. Teaching progression

Toddlerhood and early childhood: children learn that things are connected. A wolf connects to prey, plants, weather, microbes, death and time. A tooth connects to food, brushing, microbes and pain. A bottle connects to water, plastic, transport and waste.

Primary school: children begin drawing object maps. They compare water, fruit, soft drinks, school lunches, pets, rivers, phones and supermarket shelves. They learn feedback words: loop, reward, habit, consequence, repair, waste, balance, amplification.

Adolescence: students can examine marketing, institutional incentives, chronic disease, food systems, environmental costs, professional responsibility and regulatory failure. They can learn that evidence is stronger when it follows processes through time rather than relying only on isolated snapshots.

8. Public-health and administrative design

Education alone is not enough. Children are surrounded by advertising, ultra-processed products, soft-food culture, social modelling and institutional routines that often work against health. Cybernetic literacy must therefore be supported by system design.

Administrators should ask whether schools make access to water easier than soft drinks, whether meals encourage chewing and real food familiarity, whether oral-health routines are taught and reinforced, whether parents receive practical support, and whether public budgets reward prevention as reliably as repair.

The same logic applies to adult life. Workplaces, hospitals, aged-care facilities, prisons, sporting organisations and insurers can either reinforce disease-producing habits or help maintain regulation.

9. Testable predictions

Cybernetic literacy should be evaluated, not merely praised. Compared with conventional information-only education, cybernetic object-map education should improve children's ability to trace cause and consequence, identify hidden relationships, recognise commercial incentives, and maintain daily oral-health routines.

Measurable outcomes could include brushing quality, interdental cleaning where age-appropriate, sugary and acidic drink exposure, school oral-health indicators, diet-related knowledge, systems-thinking ability, parent engagement, dental attendance patterns and longer-term periodontal measures.

At population scale, the larger question is whether early cybernetic literacy reduces the demand for late repair in dentistry, medicine, veterinary science, environmental management and public administration.

10. Ethical safeguards

Cybernetic literacy must not become a vehicle for blaming children, parents or patients. Many families face poverty, time pressure, unsafe environments, food deserts, dental-care barriers and intensive commercial pressure. A cybernetic approach should reveal those conditions, not hide them.

Nor should cybernetic teaching become propaganda. Children should be taught to ask questions, trace evidence and revise maps. A good cybernetic lesson does not say, 'Here is the one correct answer.' It says, 'Here is how to look for connections, consequences and feedback.'

The same safeguard applies to disease. Children should not be taught that suffering is good or that treatment is unnecessary. They should be taught that biological processes have contexts, histories and consequences. A process that once helped regulate a natural system may become harmful when the system is altered. That distinction is one of the foundations of mature health literacy.

11. Conclusion

Cybernetic literacy is prevention before prevention. It teaches children to see the systems that produce disease, waste and professional repair costs before those outcomes become normal.

The task is not to make every child a systems theorist. The task is to give every child a more truthful mental grammar: from object to relationship, from snapshot to process, from treatment to regulation, from isolated noun to living system.

If future researchers, clinicians, teachers and regulators learn to approach disease philosophically as well as technically, they may come closer to the workings of nature and therefore become better at their jobs. Cybernetic literacy is one small beginning toward that larger cultural repair.

Selected references and source links

- Lonsdale T. Cybernetic hypothesis of periodontal disease in mammalian carnivores. *Journal of Veterinary Dentistry*. 1994;11(1):5-8. [Link](#)
- Lonsdale T. Periodontal Medicine and the Limitations of Linear Causality: Time for a Cybernetic Framework. *Journal of Periodontal Research*. 2026. [Link](#)
- Lonsdale T. *Raw Meaty Bones: Promote Health*. 2001. See especially Chapter 10 on Germ Theory, linear reductionism and the treatment paradigm. [Link](#)
- UNESCO. *Early childhood care and education*. [Link](#)
- UNESCO. *Education for Sustainable Development*. [Link](#)
- National Academies / NCBI Bookshelf. *Child Development and Early Learning*. [Link](#)
- Feriver S, Teksöz G, Olğan R, Reid A. Systems Thinking Skills of Preschool Children in Early Childhood Education Contexts from Turkey and the United States. *Sustainability*. 2019;11(5):1478. [Link](#)
- World Health Organization. *School-based oral health promotion*. [Link](#)
- Bramantoro T et al. *Effectiveness of school-based oral health promotion programmes: systematic review*. 2021. [Link](#)
- Cochrane. *Programmes based in primary schools designed to help prevent tooth decay by changing children's behaviour*. 2021. [Link](#)
- Meadows DH. *Thinking in Systems: A Primer*. Chelsea Green Publishing. 2008.
- Bateson G. *Steps to an Ecology of Mind*. 1972.