

## **HFF Curriculum Media, Electronics, and Wifi: How Technology is Affecting Our Youth**

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When I look at how the world has changed in the last 50 years, I am astonished at the speed at which a few aspects of our human existence have become almost unrecognizable in such a short time. In some ways, we humans are quick to adapt due to our innovation and creativity, and we are continually inventing ways to make our lives easier and survival more imminent.

One exceedingly profound way that we have done this is through our use of technology. Technology has dramatically changed the world in which we live and the way we relate to this world, as if we are playing lead roles in a science fiction writer's bizarre fantasy. Many of the ideas such writers hypothesized, although not exactly accurate in the details, were not so far off in the concepts. Without wanting to sound paranoid, Big Brother *is* watching, anonymity is replacing individuality, and there is a massive level of control media, advertising, and the pull of virtual reality is having over what we think and how. There are few rare corners of the world where wifi can't reach, where there are no messages and downloads and location tracking. The noise this constant barrage of information is creating is changing our basic physiology, our social structures and relationships, the very energy on our planet. And are those changes good?

Our lives have been digitalized. Our use of technology has exploded in the last generation, and we are a far cry from Sunday evenings gathered around the TV watching the weekly innocent family television show.

Now, children and teens are exposed to a barrage of violent and sexual images daily. They text messages and send emails to their friends in real time, and if their place of school or work or home does not have wifi, this is a massive inconvenience. It is as if technology has become a foundational component of survival, a fundamental human right. And this has become our new normal. Just as is the bastardization of our current modern diet and the substandard state of our children's health, this may be normal, but is it healthy?

We parents are in a unique situation to see what is happening. We have grown up with technology, but technology was on the periphery of our lives. We remember a time when there was no internet. Email was just catching on when I started university, and we still used books for research. I buried myself in the musty stacks of the library, and I actually remember handwriting my first essays in university before I was gifted an old Comodore 64 computer!

That was not so long ago, in the 80s and early 90s, in fact. Now, every household has the most up to date computer, often one in every bedroom or backpack. Every child has a personal device of some kind, and many of them have cell phones even as young as 8 years old. Children born since the 90s will not know a world that existed

before Netflix, snapchat, instagram, and facebook. In fact, that world will most likely look old and outdated to them: boring and uninteresting.

I don't think many of us would dispute the fact that technology has made communications exponentially faster and our access to information almost without limits. I would not be able to be sharing these thoughts with you if it were not for the internet. But has it made our existence worse or better? Has it made us smarter? More successful? Happier? Healthier?

**There are three categories regarding technology that we'll be talking about here:** media, electronics, and the electromagnetic fields that the devices, themselves, emit.

#### Media

Media are the messages we receive through the technology we produce that affect our interpretation of the world around us – it includes the news, advertising, social media, journals, books, etc.

#### Electronics

Electronics are the devices that deliver such media or other experiences created by a machine such as video games, television, computers, ipods, ipads, and cell phones.

#### Electromagnetic Fields

Electromagnetic fields are the electric and radiation fields that are emitted from an electronic device that interact with and can disrupt our physiological processes.

### **What is Electronic Screen Syndrome?**

So, the question raised is: is this use of technology damaging our children? Is it too much? Dr. Victoria Dunkley who writes extensively about Electronic Screen Syndrome says that it is:

“ESS is essentially a disorder of dysregulation. Because it's so stimulating, interactive screen-time shifts the nervous system into fight or flight mode, which leads to dysregulation and disorganization of various biological systems...over time, repeated fight-or-flight and overstimulation of the nervous system from electronics will often eventually culminate in a dysregulated child” (Dunkley, *Reset Your Child's Brain*, p16).

Let's have a closer look at what is happening, and what is the impact our current overuse of technology (yes, I would say that the majority of us are overusing it) is having on our children and teens.

## **The Stress Response**

Stress is the subject from where everything that I will present for the rest of this article will begin. As Dr. Dunkley was explaining in her book, human beings do have stress, but we are not meant to have the chronic stress or the amount or level of stress that is created by our modern environment and lifestyle or the stimulation caused by the use of screens and gadgets.

“One way to think about the [ESS] syndrome is to view electronics as a stimulant (in essence, not unlike caffeine, amphetamines, or cocaine): electronic screen device use puts the body into a state of high arousal and hyperfocus, followed by a “crash.” This overstimulation of the nervous system is capable of causing a variety of chemical, hormonal, and sleep disturbances in the same way other stimulants can...In fact, abuse and addiction of stimulant drugs such as cocaine and methamphetamine have a very similar presentation to that of ESS, including mood swings, concentration problems, and restricted interests outside of the substance or activity of choice” (Dunkley, *Reset Your Child’s Brain*, P17).

This overstimulation causes chronic stress and often leads to the various health conditions that a stressed body can succumb to.

## **Effects on Physical Health**

What are some of the physiological effects of stress caused by excessive screentime and electronic usage?

- lack of exercise (which will detrimentally affect growth, development, cardio health, musculature, bone health, hormonal and neurotransmitter health, etc.)
- lack of movement (same deal as above)
- lack of fresh air and outside microbes (the health of our gut microbiome is essential to good health)
- lack of nature (Richard Louve has coined the resulting syndrome as Nature Deficit Disorder)
- eating in front of electronics (leading to poor digestion and nutrition as well as relationship problems and disconnect)
- carpel tunnel and other anatomical injury created by repetitive movements or lack of movement
- poor posture (which causes subluxations, poor breathing, discomfort, and stiffness)
- poor breathing, breath holding (which causes lack of oxygen to the brain and other organs and triggers the stress response)
- mental fog and inability to think, concentrate, or maintain energy
- apathy, anxiety, and depression (due to hormonal and neurochemical changes and social isolation or lack of social skills)
- poor sleep habits and sleep problems (due to electronic usage at night,

overstimulation of the nervous system, and subsequent hormonal and neurochemical disruption)

### **Additional Detrimental Effects or Excessive Screentime**

- poor gastrointestinal health (due to stress, lack of movement, and immotility)
- imbalanced microbiome (the balance of microbes in our digestive tracts and brains that are a predictive factor of either health or disease)
- eyesight deterioration and eye strain
- mental and physical fatigue
- headaches
- mental strain
- lack of sunshine (decrease in the benefits of sunshine and vitamin D, and disrupted circadian rhythm)
- excessive exposure to blue lights and at the wrong time of day (also disrupts the circadian rhythm)
- disinterest in activities outside of screen usage (leading to an unfulfilling life, underachievement, lack of purpose, loss of vitality, loss of real interaction and experiences, and of loss of relationships)

Sleep/wake cycle-disrupting blue lights from computer screens and harsh overhead lights on at night, cell phone usage, stimulating activities such as playing video games or watching movies or television before bed have an over-stimulating and chemically damaging effect on the brain encouraging everything from slow healing to sleep disturbances.

Blue lights signal the brain and the rest of the body that it is time to be awake. When exposed, a complicated dance of chemical and hormonal reactions occur in the body to prepare it for activity and action, such as increased cortisol. This is good during the day. But at night, the body is meant to rest and repair and produce melatonin, the master antioxidant. When this cycle is disrupted, the body is stressed with high cortisol (which becomes catabolic) and low melatonin when it is meant to be resting and repairing, causing a cascade of health problems, especially when this disruption becomes chronic.

### **Your Child's Brain on Technology**

"If we were to look into the brain engaged in screen-time, we'd see the brain getting too much activity in some areas, such as the reward pathways and the pathways sensitive to light, and not enough activity in other areas, such as regions associated with empathy, reading social cues, and delayed gratification. Over time, this leads the brain to develop in a fragmented fashion, making it less flexible and less resilient" (from "A Talk with Victoria L. Dunkley, MD," New World Publishing promotional materials).

Excessive electronic usage not only causes overstimulation and stress that alter hormonal and chemical balance, but also alters the way in which a child and adolescent's brain develops. Due to the process of pruning, where the body prunes away areas not in use, excessive electronic usage influences the very development of a child or teen's brain.

This phenomenon is not only affecting young brains, but the brains of people of any age. Digital Dementia is the new condition on the block, coined by Manfred Spitzer to explain the cognitive decline experienced by people who overuse digital technology. Attention span is dwindling to less than that of a goldfish, and overstimulation is deteriorating our ability to sort, process, and think clearly.

## **PTSD**

PTSD has historically been associated with war veterans, refugees, and other people who have experienced horrific life events. However, we are now learning that due to the body's stress response, even when experiencing *virtual* stress, and the newfound assertion that our bodies cannot distinguish between an *actual event* and a *perceived threat*, we and our children can suffer the symptoms of PTSD, as well as negativity and fear, simply from watching events on television or playing virtual games, even if we have not had traumatic experiences. Therefore, our children can have symptoms of PTSD from simply following dots on a screen.

## **Electromagnetic Fields (EMFs) and Electromagnetic Radiation (EMR)**

There is another effect that the use of technology has on the human body, an effect that is due to the radiation and electromagnetic fields the devices, themselves, give off.

We are electrical beings. It is by way of electrical chemical reactions that our brains, hearts, and the cellular communication of our bodies run. Our earth is also electric with magnetic forces that coincide with the human body. We are at our optimal health when our own electrical frequencies match that of the earth's, and when this frequency is disrupted by human-made electricity and radiation, even at levels once believed to be negligible, we have negative health effects.

We are now bathed in electromagnetic fields and electromagnetic radiation at all times due to the invention of electricity and our use of devices and machines such as appliances, hand-held screens, computers, and wifi.

Electromagnetic fields and electromagnetic radiation are increasingly being recognised as a form of toxicity damaging to our health. Both of these dangers are very real, and there has recently been a significant amount of research on the

dangers of the radiation our modern day conveniences such as electricity, computers, iPads, and cell phones present to us, and in particular, our children.

Electromagnetic Fields (or Electromagnetic Radiation, pollution, EMFs or EMRs), are fields of energy that surround us every day. Wires and transformers and radio waves transmit a dizzying array of electric and magnetic traffic as well as radiation. Our bodies are equipped to deal with some radiation - in fact, the sun bathes us in radiation every day, and the earth emits its own magnetic fields. It is part of how our natural world works.

But we are not meant to have to handle the constant barrage of EMFs that we have created, the *artificial* EMFs, nor are we to be disrupting our circadian rhythms (our natural sleep/wake cycle) through artificial light well into the time when our bodies need to be resting and repairing.

Think about your body as an antenna conducting all of that energy. If there is nowhere to discharge that energy, then your body absorbs it, altering your body at a cellular level, a *DNA* level. Michael Neuert, Electrical Engineer and EMF expert, says that:

*In the beginning, scientists assumed that EMFs could not affect our health because EMFs are not an "ionizing" type of radiation. This means that they cannot ionize molecules in the very dangerous way that x-rays and nuclear radiation can harm us.*

*Scientists were then surprised to discover that EMFs can indeed cause hazardous biological effects by another method — by heating up sensitive tissues within our bodies. Today, most of the official EMF safety standards for the general public are designed to protect us from these potential heating effects.*

*But scientists are now in the process of discovering yet another way that EMFs can affect our health. Similar to the way that EMFs cause electromagnetic interference (EMI) problems for sensitive electronic and computer systems, a growing body of research suggests that low-level EMFs can also influence or interfere with certain sensitive "bio-electromagnetic" processes within our cells, brains and bodies. In fact we are learning that the human body is an amazing "bio-electronic" living machine, utilizing many sensitive electromagnetic processes for the proper functioning of our brain, nervous system, immune system and other organs. (<http://emfcenter.com/new-research-shows-how-emfs-affect-us/>)*

The extent of the damage that EMF exposure can cause the human body is unknown, yet with the research that is coming out on the subject, we do know enough to be more than concerned, we know enough to take action. In her book, *Zapped: Why your cell phone shouldn't be your alarm clock and 1,268 ways to outsmart the hazards*

of electronic pollution, Ann Louise Gittleman gives us a bit of science “of what happens when you’re overexposed to EMFs” (Gittleman, *Zapped*, p. 27).

*Your cells get overwhelmed by messages from inside and outside your body...  
Your cells become unglued...  
Chemicals pouring from your ruptured cells damage your cellular DNA...  
EMFs may disrupt normal cell division...  
EMFs create oxidative stress that further damages DNA and other physical processes.* (Gittleman, *Zapped*, pp. 27-29)

Radiation is yet another major disruptor to the body. “Cell phones and other wireless devices, in particular, emit radiation, and that radiation penetrates even deeper into a child’s brain due to the thinness of their skulls and the fluid content of their young and developing brains,” said Ann Louise Gittleman in a 2015 interview with The Children’s Health Summit ([www.childrenshealthsummit.com](http://www.childrenshealthsummit.com)). In his article “Physics and biology of mobile telephony” published in *The Lancet*, GH Hyland, PhD reports that:

*Preadolescent children can be expected to be more vulnerable to any adverse health effects than adults because absorption of GSM microwaves is greatest in an object about the size of a child's head because of the “head resonance” effect and the greater ease with which the radiation can penetrate the thinner skull of an infant. Also the multiframe repetition frequency of 8-34 Hz and the 2 Hz pulsing in the DTX mode of cellphones lie in the range of the alpha and delta brain-waves, respectively. In a child, alpha waves do not replace delta waves as a stable activity until the age of about 12 years. Furthermore, the immune system, whose efficacy is degraded by this kind of radiation, is less robust in children. This makes them less able to cope with any adverse health effect that might be provoked by chronic exposure, not only to the pulsed microwave radiation but also to the more penetrating low-frequency magnetic fields associated with the current surges from the handset battery which can reach 40  $\mu$ T (microtesla) (peak) near the back of the case.*  
([http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(00\)03243-8/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(00)03243-8/fulltext))

In addition, radiation from cell phone usage has been linked to cancer.

*Dr. Vini Khurana, an award-winning, well-published Australian neurosurgeon and expert on the subject of the effects of cell phones on human physiology, stated that mobile phones have a greater health danger than smoking cigarettes or exposure to asbestos. His findings testify that using a cell phone for more than 10 years doubles the risk of developing brain cancer...Dr. Khurana affirms that an increasing number of cases of brain tumors in heavy mobile phone users have been reported, especially on the side of the head where*

*the user favored holding the phone.* (<http://www.electricsense.com/302/cell-phone-radiation-tobacco/>)

Europe has gotten serious about banning cell phone usage for children and wifi in schools

([wifinschools.com/uploads/.../europe\\_seeks\\_to\\_ban\\_mobile\\_and\\_wifi\\_in\\_schools.pdf](http://wifinschools.com/uploads/.../europe_seeks_to_ban_mobile_and_wifi_in_schools.pdf)), and many parents in the US and Canada are also rallying for this same purpose.

Cell phones are not toys or alarm clocks. EMFs and radiation are, in fact, more harmful than smoking and asbestos. This is a serious problem.

Wifi, electromagnetic fields, cell phones, and radiation:

- damage genes
- disrupt the immune system
- disrupt hormones
- disrupt neurotransmitters
- are shown to be cancer-causing because of their effect on the immune system and cellular health
- contribute to the development of illnesses and diseases that are the result of a compromised immune system, chemical imbalances, hormonal imbalances, and even nutritional imbalances
- according to Dr. Dietrich Klinghardt, wifi and other wireless exposure can cause the exacerbation of infections and increase the consequences of heavy metal toxicity

### **Our Future Generations**

Studies have shown that men exposed to cell phone radiation through carrying them in their pockets had a significant reduction in their sperm count. Think about this – cell phone radiation is actually creating infertility, which will have a direct impact on the future of our human population.

The fact is, scientists know that electronic devices and electrical systems are harmful to our health, we just don't yet know the extent.

All of these physiological problems lead to high stress on the body that leads to inflammation and immune system dysregulation that leads to every diagnosable illness and disease including cancers and all of the top chronic childhood illnesses and conditions including:

- ADHD
- Autism
- Atopic conditions
- Asthma
- Mood disorders

Obesity  
Learning disabilities  
Autoimmunity  
Cancer

### **Mental/Emotional Effects**

There is also significant fallout in relation to our children's mental health that is caused in part by the physiological issues such as the stress response and overstimulation, as well as addictive behavior (that we touched on earlier), and the social problems and disrupted personal growth that we will get to in a moment.

In relation to our children's mental health, in addition to the all too common diagnosis of ADHD, new syndromes and conditions are cropping up every day to explain many children's inability to cope with life and increasingly prevalent behavioral problems, some of which are:

Digital Dementia  
Oppositional Defiance Disorder  
Intermittent Explosive Disorder  
Electronic Screen Syndrome  
Nature Deficit Disorder

Where are these behavioral problems coming from? Are we just less skilled parents than our own parents? I don't think so. Much of the cause can be tied to excessive screentime and overuse of technology. These mystery conditions don't appear to be different conditions but varying manifestations of the same problem.

Here are some of the manifestations:

- meltdowns and tantrums
- moodiness
- withdrawal
- ADHD and autistic-like behaviors
- demand for instant gratification
- lowered emotional IQ
- anxiety
- depression
- anger and rage
- lack of empathy
- overwhelm
- entitlement

### **Social Problems**

There is also a myriad of *social* consequences involved in the overuse of technology that is affecting our youth, our families, and our communities.

Emily Roberts, the psychologist behind the teen counseling and guidance website, *Guidance Girl*, lists dozens of social implications of the overuse of media and technology such as cyber bullying and social anonymity. These issues lead to:

- self esteem wrapped up in social media
- incorrect representation of humanity
- focus on the superficial
- lack of connectedness with peers
- lack of connectedness with elders
- lack of connectedness with the world
- superficial relationships/lack of depth
- less observant
- increased sense of anonymity

### **Intellectual Consequences**

There is currently an ongoing raging debate over whether intelligence is affected by technology, and researchers, professors, parents, and theorists are arguing both ways. But I challenge you to consider this: studies have shown that distraction and forgetfulness are conditions that are becoming more prevalent amongst our youth. Why would that be? Just try to talk to a classroom of teen students who are allowed to carry their phones to class or watch a soccer game with younger siblings of the players who pass their time playing on their ipads instead of watching and ask them what the score is, and you will see my point. The very thing that proves our intelligence through our inventions – technology – may be the very thing that is making us dumber in many respects.

Intellectual Consequences:

- dumbs us and our children down because television is a passive form of entertainment and stimuli, numbs us because we are dealing with the constant barrage of input so we become less sensitive, less able to know when it is too much – tune out.
- lowers intellectual IQ
- lowers emotional IQ. Delayed gratification leads to more emotionally intelligent children. Screentime stimulates the reward system in the brain and gives instant gratification.
- prunes the brain in ways that are not always positive and burns the stress response into neural pathways.

### **Spiritual Consequences**

Spiritual growth trumps all. In the simple yet beautiful book *The Seven Spiritual Laws for Parents*, Deepak Chopra says that a sense of spiritual awareness is the one thing that leads to the success and wholeness of our children ahead of anything else. Without it we have:

- emptiness
- existential angst

Excessive screen time takes time away from spiritual practices and processes such as thinking, self-exploration, and being in the presence of nature and a sense that there are forces and connections bigger than our selves and the compartments that electronics can put us into.

## **Addiction**

The biochemical rollercoaster ride of excessive screentime can create the perfect storm for addiction: disrupted hormones, imbalanced neurotransmitters, emotional strain, lack of spirituality, and poor physical and mental health. Children and teens can easily become addicted to the chemical high they get from the pleasure centers of the brain when receiving a text or playing an action-packed video game. Our children just can't naturally get the extreme dopamine high electronics can give us, thus leaving children anxious, deflated, and wanting the next fix.

Just as sugar is an addiction most people don't recognize as life-altering or life-threatening, addiction to electronics is a very real, very damaging phenomenon sweeping our modern families, and due to the evidence I have presented thus far, may be even more detrimental than other more visible addictions since it is covert – more insidious than alcohol, drugs, or a poor diet.

## **Stunting Personal Growth**

What about the individual child? What is happening (or not happening) to their personal growth? How does excessive screentime potentially affect their development as a *person*, their development as a functioning member of society? How can it affect their desires, dreams, work and life choices, relationships, and future potential?

Excessive screentime robs our children of themselves due to:

- lack of downtime
- lack of space to think and problem solve
- lessens ability to wait for results
- teaches them to check out and not in
- lack of awareness of the world around them

- turn to instant gratification such as texting, snapchat, and watching youtube videos instead of pursuits such as meditation, mindfulness, enjoying life, and spending time with family and real life friends
- lack of time with a diverse and rich life experience
- altered attitude toward their own real-life experiences
- less enjoyment and connection with parents when electronics are babysitters and will, therefore, lead to learning less from their parents and more from the media and peers

In addition, children and youth can experience:

- Diminished creativity
- Living vicariously
- Apathy
- Inability to cope with life
- Lack of clarity
- Lack of focus
- Lack of purpose
- Watching life rather than living it
- No real connection
- No real experience
- Not hands on in their lifelong learning
- Lack of feeling that there is a place where they belong, a community where they matter

## **Recognizing the Problem**

What happens when we don't recognize the problem?

Relationship problems, less success in life (whatever that means for each child), labeling, loss of sense of self and confidence, misdiagnosis of conditions resulting in a cascade of medications when the cure may have been to turn off the screens, the list goes on...

## **Solutions**

So, now that we have identified the problem, what, on earth, can be the solutions? How do we parents compete? How do we ensure that our families have a healthy relationship with technology?

1. Be aware of the power of technology.
2. Use technology as a tool and to your advantage.

3. Set boundaries and limits around your and your children's usage.
4. Go on a screenfast, if warranted.
5. Do activities like board games, walking, sports, hiking, swimming, potlucks, playing at parks, attending plays, making art, gardening, building furniture, mechanics, reading, writing, playing an instrument, singing, etc., instead.
6. Nurture spirit, creativity, space, self-reflection, mindfulness, and awareness.
7. Foster gratitude and sense of self, responsibility, self control, discipline, patience, love, and self-care.
8. Elicit the Relaxation Response through quiet time, meditation, and mindfulness. Meditation alleviates the stress response, instigates the relaxation response, and even lengthens the telomeres, the protective caps on our DNA strands!
9. Protect your family from EMFs and Radiation.
  - limit usage (duration)
  - lessen proximity
  - protect body with nutrients
  - ground your equipment
  - ground yourself
  - find out where there is dirty electricity and exposure
  - remember that cell phones *are not* toys
10. Return to nature.
  - nature is meditative
  - nature makes you feel connected
  - nature reminds us of what it means to be of the *natural* world
  - nature is larger than our small selves
  - earthing while being in nature is grounding (literally and figuratively), both allows us to discharge human-made EMFs from the body but also allows us to get emotionally and mentally grounded in our thoughts and actions

## **Conclusion**

Technology is a permanent part of our lives. It is so pervasive in every aspect of our existence that we can boldly assert that it is here to stay. However, we need to decide if it will be a tool we use to advance the success of our children or if it will contribute to their ill health and the unraveling of our families and communities. Technology is not evil, but it is also far from benign. What is certain is that overexposure to electronics and radiation as well as overuse of screens and devices is one class of root culprits that is damaging to our children's health, and through

awareness and empowered action, we can protect our children and make their lives and ours much more harmonious, rich, and fulfilling, as well.