Safety First: Technology and The Teen Brain

We all know how dangerous texting and driving is for our teenagers, in fact, we as parents can't excuse ourselves in this area. Technology can be a great tool in our world, but it can also have some pretty negative effects on our kids.

Parental Control in technology requires Alt/Delete capabilities with our teens. There are critical areas parents need to spend quality time on to better understand their teens, and how technology impacts their thinking. The first thing we need to do is to have a better understanding of how the teen brain works and what technology does to that brain development or lack there of. Most parents don't spend much time, if any, learning about their child's development of the brain. This lack of developmental understanding of their child's brain causes the parent to miss great opportunities of growth with their teen. In this chapter we are going to look at four things;

1. Understanding your teen's brain
2. The potential dangers of social media,
3. Biblical guidelines to help us better deal with our teen's technological world
4. Practical solutions or tips for better parenting in this area.

I have a question for you. Can you give a good definition of what the IGEN generation is? If you have a child now that is 8 years or older, then you have a child who is part of this "type" of generation and you should have a good grasp of what the IGEN generation is. Let me give you a little insight into this term.

The 74 million young Americans born between 1995 and 2012 comprise the most important generation in the nation's history, both in size and composition. One out four Americans, from age 5 to 22, have been collectively dubbed the "iGen" generation, a shortened descriptor for internet generation. This group started out being called generation "Z" but that soon fizzed out because of it's inability to truly identify who these people were. They followed what we all have come to know as "millennials", and thus needed their own identity. In short, this group is the first group that was born with total access to the Internet. The Internet has opened the floodgates to information in a way that no other generation had access to. In the 1990s, the web started exploding and soon the Internet became the greatest tool available for information at your fingertips. No longer did a student have to get information from printed sources, such as an encyclopedia-remember those? By the time that information was printed it was already out of date. Now add roughly 150,000 + apps available on their iPhone and you can see how much different the world of a teen is compared to their parent's world.

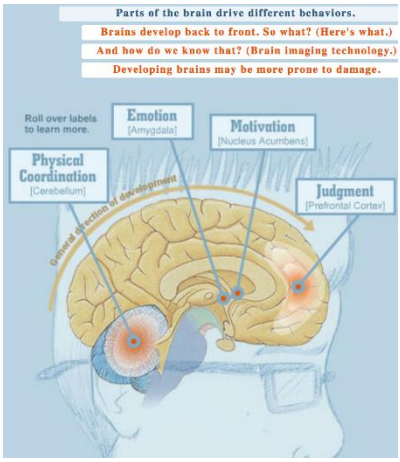
Think about this-According to research, in 2015, 8 out of 10 teenagers had their own cell phone. In the year 2021 you can imagine that it's rare when a teen does not have access to a smartphone. Currently, we have been told that most teenagers access their smartphones as many as 80 times a day. Now here is the real danger facing our kids. Most psychiatrist have concluded that the new normal for a teen is to use their smartphones so they can escape from the emotional and mental struggles they face "offline". In addition, there is a "technology" dependence that causes a lack of self-regulation that hinders their development, mainly due to the way their brains are constructed. Below are some characteristics that research has discovered that IGNERs have due to this huge access of information.

- Growing up more slowly, not wanting to stay home alone, manage their own money, etc.
- **Less likely to attend church**
- **More likely to think for themselves and not believe authority figures in church or government**
- Spending less time in shopping malls
- Less likely to go see a movie
- **Less interested in face-to-face contact with others, preferring instead to connect via smartphones**
- Less interested in reading books, magazines, or newspapers
- Spending more time playing computer games
- Less experienced in having an after-school or summer job and earning money while in high school
- **Feeling more depressed than those in prior generations**
- **Feeling lonely and not needed**
- **Susceptible to higher suicide rate**
- **Spending enormous amounts of time using social media and smart phones; sometimes well into the early hours of the morning**

I have selected some of this list in "bold". These are showing some really troubling characteristics such as lack of desire to respond to authority, lack of true face-to-face social interaction, depression, loneliness, suicides, and technology addiction. **Does this get your**

attention? This is the IGEN generation. They have so much potential for great things yet so much danger lurks out there for the control of their minds. Parents need to be very pro-active and not assume their kids will not fall into these characteristics.

So, let's look at our teen brain, ours as well, along with the chemicals that drive our teen's decision-making process. I want you to think of the chemicals in the brain by thinking of the term EDSO and the big "C". Now repeat that because you really need to understand the chemicals of your brain and what they do for you. I could write pages on the chemicals of the brain but that is not my purpose in this chapter. I want to expose you to these chemicals, so you have a better understanding of how they work while your child's brain is developing. For the time you have teenagers until they are around 25 years of age, I want you to remind yourself of the following. **Teen's FEEL first and THINK second. Adults usually THINK first and FEEL second.** Why? Because that's the way our brains have been developing. Look at the picture below.



Our brains develop from back to front. That means the logical part of our brain, the part where we get judgement is developed last. It's called the frontal lobe. The back of the brain contains most of the development for our physical coordination while the center of the brain is where we get the emotional and motivation part of our development. Our teen's brain is on high alert with the emotional side of development. That is why you have so many parents asking a teen when they do something that lacked logic "what were you thinking?". In reality, they probably weren't, they were controlled more from their emotional and risk side of development rather than their logical side of development. We must cut our teens some slack during this developmental stage simply because they are trying hard to become a logical thinker while still being impacted from the emotional side of their brain development. That's why teenagers can be so irrational and on an emotional roller coaster one moment, and then the next moment be calm and have some reasoning skills that makes a parent just scratch their head. Now I'm not saying a teenager can't be logical and many are quite smart. What I am saying is that a teen's normal brain development is based more on the emotional side than logical side because their frontal lobe doesn't develop fully until around the ages of 22-26 years old. When I say, "cut them some slack", I'm not saying that bad choices should not be disciplined, or natural consequences should not have their affect on their bad choice. I'm just

saying that too many parents do not try to understand the lack of logical development most teens experience and thus their frustration and anger can override what is the best solution to the teens situation. What is the parent trying to achieve? Discipline or training? We've discussed much of this already and will continue throughout Drivers Ed for Parenting. Our goal in this chapter is to have a better understanding of what our teen is going through in their mind and how technology is impacting their reasoning.

So, what about those EDSO chemicals of the brain?

The **"E"** stands for endorphins. That's the chemical that's known as the "runners high". When endorphins are low, your teen will feel anxious and be more aware of pain. When endorphins are high, they will feel like they can push through and exert energy to finish their task. Endorphins make the body feel good and help mask pain. They help us achieve our goals. These chemicals are most present when you teen is doing something active, like exercise. We have these chemicals to help us determine to "fight or flight". If unbalanced, anxiousness and worry will kick in big time. Endorphins help us deal with stress. However, you can imagine if a teen is living a sedentary life by always just sitting around on their phones or computers, then endorphins are not highly activated. Thus, you have many teens dealing with depression and stress because they are low on endorphins. GET YOU KIDS OUT DOING SOMETHING ACTIVE. DON'T LET THEM JUST SIT AROUND.

The **"D"** stands for dopamine. It's the chemical of the brain where we get our "rush" and the feeling of liking repetitive behavior. We originally needed this chemical to take risk and find food. Once we found that food was pleasurable, we wanted that experience again. So, our endorphins gave us the endurance and stamina to go out and look for more food further out. Once we caught the food, we kept doing it because we liked the feeling it gave our bodies when we ate. Dopamine helps improve our learning and memory, it helps you stay awake, it gives you drive-especially sexually. Medically, it's critical in controlling your blood pressure and increasing your heart rate when needed. It loves the feeling of recognition and receiving awards. This chemical is all about pleasure and reward. Dopamine is also known as the addictive chemical. Many people get addicted to drugs, alcohol, or sex because the brain enjoys the risky behavioral feeling and exerts itself to repeat. Dopamine is needed so we take certain risk (such as asking a girl out realizing she could say no), that requires dopamine. However, it can also be out of balance when a teenage boy decides to drive 90 miles per hour in a residential neighborhood while racing a friend because it's exciting and gives him a rush. Remember, teens

brains are more formed emotionally than logically. They don't think about the consequences of their actions because dopamine encourages the "risky" behavior.

Normally, an adult brain would weigh the logical against the emotional. For example, a man who is married, might think about having an affair because the dopamine encourages him to enjoy the feeling of risky sexual behavior. But on the other side, as we'll see later in this chapter that the chemicals, serotonin, and oxytocin, are more selfless chemicals, and they kick in on the logical side of the brain. The man now "thinks" of the consequences of such actions and how it will affect his wife and children. If he is balanced chemically and spiritually, then he'll shake his head and say, "what was I thinking." If he's smart, he'll let the dopamine give him the pleasure of buying flowers and taking his lovely bride out to a fancy restaurant and let the reward lead wherever it takes them. On the other hand, a teenage girl might think that her boyfriend loves her because he said so and she allows herself to have a sexual relationship where dopamine played a big part in. It helped her with the feeling of pleasing him and rewarding him for "loving" her. However, she didn't think logically of the consequences of those actions and later found out she was pregnant. Her boyfriend who said he loved her, now deserts her and she feels awful. The risky behavior was worth it at the time but looking back she now knows that such behavior had life changing events. Pleasure is great and a gift from God when used in the proper context. We'll see in a moment how a parent can help their teen deal with all of these emotions that run through them while they are developing their mental capacity. But let's keep looking at the other chemicals.

The **"S"** stands for serotonin. Whereas the first two chemicals, endorphins, and dopamine, are more selfish related because they drive what's pleasurable to the individual. Serotonin leans more toward being a selfless chemical along with it's sister chemical oxytocin. Serotonin is important because it helps balance out dopamine. Where dopamine can enhance impulsive behavior, serotonin can inhibit impulsive behavior. Proper levels of serotonin can help process our emotions while making us feel happy, calmer, and focused. It helps regulate our moods, our sleep patterns, our appetites, and even our sexual drive. What's critical for a parent to understand is when things like alcohol are present in a teen, the alcohol effects the serotonin in their body so as to elevate it (usually due to the amount of alcohol-makes it go sky high). This elevation of serotonin then can lead the teen to manic or risky behavior and cause dangerous mood swings. Guess what, it's not just the alcohol that makes the teen act like they do. It's the chemicals in their body that become imbalanced that make them act like they do.

Doctors will tell you that serotonin is like the body's own natural anti-depressant, while producing the feeling of happiness.

Now this is very important. Serotonin is the feeling of pride we get when we perceive that others like or respect us. It raises our esteem and makes us feel important. Serotonin is a "shared" type of chemical, and that's why I say it's more selfless than selfish. It often can impact us to feel a certain way because of how we know it makes others feel when we do certain things. Let me explain. When a student feels the pride of accomplishment for graduating college as they walk across the stage to get their diploma, you'll hear parents and family shout and clap as they see their child walk across the stage. Both are experience levels of serotonin. One act (student graduating) affected another act (parents shouting praise). Think of the feeling you would have if you ran a marathon but no one was there when you crossed the finished line versus the feeling you would have crossing that finish line with friends and family screaming for you. In both instances, you would accomplish the same thing (running and completing a marathon), but the feeling you would experience with everyone shouting for your would be totally different than the feeling you would have if no one was there. That feeling was caused by serotonin. Endorphins gave you're the endurance to complete the race, dopamine gave you the "rush" and runners high of feeling great as you ran, while serotonin gave you the feeling of pride and accomplishment as you felt other's acknowledged you. See how they all work together?

Next come the **"O".** The "o" stands for oxytocin. It's been known as the people's favorite chemical. Why you ask? Well let me tell you. It's the feeling of friendship, love, or deep trust. It's the feeling we get when we do something nice for someone and we see how they react. Think of it this way, it when we get all the warm and fuzzies. Without oxytocin we wouldn't want to do any acts of generosity. Oxytocin makes us social people and make us care. Unlike dopamine, which is about instant gratification, oxytocin is long-lasting. The more time we spend with someone the more time we feel trusted and are willing to open up about ourselves. Oxytocin boosts our immune system, makes us better problem solvers, and makes us more resistant to the potential addictive behaviors of dopamine. In the physical realm, oxytocin plays a major role in helping the woman and man during sex, as well as helping the woman during childbirth with her body changing so the child can come out through the birth canal. It also helps the woman produce breast milk after childbirth. Oxytocin also plays a huge role right after the birth, in the bonding and feeling of love and support between mother and child. The same emotional feelings the couple had in the "romantic" arena of trust, support, and love are

now immediately transferred to the child and mother of feeling loved, supported, and trusted. Just always keep in mind that oxytocin is critical to your teen. When it's properly balanced in their life, they will feel love, accepted, and known.

Now for the **Big "C".** What does that stand for? It stands for cortisol. Think of cortisol this way. First, it's only to be temporary. It's to be a flash in the pan and not hang around. If we let the chemical hang around then we are going to be in constant worry and fear. Cortisol is responsible for the stress and anxiety we experience when something goes bump in the night. It's our fight or flight response. Cortisol alerts us to the possibility of danger and helps prepare us to take proper measures to survive. It's a great chemical when used only to deal quickly with anxiety and fear. If we let it hang around it becomes dangerous to our health. A constant flow of cortisol wreaks havoc with our glucose metabolism. It increases our blood pressure and impairs our cognitive ability. Let me give you an example of how cortisol impairs your thinking.

Once when my wife and I live in Lubbock, Texas, we lived in a one- story apartment that was maybe 30 feet from a very busy street. One night while asleep we heard this very large crash and it sounded like someone went through our front bay window or perhaps it was a burglar. I didn't know, I only knew our hearts were racing in the pitch dark. Being the brave man that I was, I grabbed my trusty 9 iron and walked around the corner and screamed, "in the name of Jesus I command you to leave". I flicked on the light expecting to see this huge glass mess or worse case an intruder coming toward me. Instead, I looked around and saw no glass, no intruder, in fact I couldn't see anything wrong. Then as I turned toward the kitchen there it was. Our problem that gave us the fight or flight feeling (Cortisol). It was what you call a "printers tray". For those of you who are not into "foo-foo". A printer's tray is a wooden tray with a bunch of little wooden squares that hold little breakable items. It appeared to have fallen off the wall and that's what made all the noise. You see how cortisol works? It impaired my cognitive ability by not allowing me to think straight. All I was wanting to do was survive and it kicked in to allow me the courage to do so. Now imagine if I knew that loud noise in the beginning was the printer's tray. I'd tell my wife to be careful when she walks into the kitchen in the morning because there's a bunch of glass on the floor from the printer's tray that fell. Then I would have rolled over and gone back to sleep. No cortisol needed.

Cortisol increase aggression and can actually suppress our sex drive, and generally leaves us with a feeling of being stressed out. Cortisol can compromise our immune system and we become more vulnerable to illness. So, keep this in mind. Serotonin boost our self-confidence and inspires us to help others feel proud of what we do. Oxytocin, relieves stress,

improves our cognitive abilities, and boost our immune system by lowering our blood pressure so we can better solve complex problems. Cortisol is only to be used in our bodies to help us survive something that requires the burst of emotions through a stressful situation. If it hangs around too long, then we'll start experiencing long-term affects on our body.

Well there you have it. Now you know some key things about your teen's brain. They think feel first and think second for a reason. Their brains are not fully developed yet. Their frontal lobe is still developing and that's where most of the logic is found. They have strong emotions because that part of their brain is pretty well developed. Remember, our brains develop from back to front which means physical first, emotions second, mental last. Now put all the special chemicals of the brain in that development and you can see how a teen can sometimes appear to be pretty messed up in their thinking. Now we come to the critical part of how technology messes with our kids brains.

According to Dr. Ian Armstrong, a well-known neurosurgeon, social media is a critical stimulus to our teens that can be good and bad, depending on how it is used. He talks about how the teenage brain is growing very rapidly and gathering information extremely quickly. Theses "pathways" are being laid down in the brain and growing according to what stimulates those neurological connections within the brain. In a nutshell, the brain is "learning" all sorts of different ways to learn. The teenage brain is in hyper speed of learning but mainly driven by their emotions and not their logic. The brain is wanting to learn new experiences with travel, music, reading, singing, social conversations, physical interaction, guided instruction, and a thousand other stimuli. BUT with the concept of what is called "plasticity", the opposite can take affect as well. In other words, if the brain senses that certain functions are not being used it will slowly start to weed out those things it doesn't use very often in order to learn. This is why it is so important that our teens don't just get their information and stimuli from one main source such as their phones and the internet.

So, let's look at the effects of social media. Studies have shown that phones, social media, and computers have a tremendous effect on the brain, especially the teen brain that is growing at warp speed. More and more studies are actually showing that over 90% of people who own a cellphone say that it is always within an arms-reach. This has created a generation of people who are increasingly becoming anxious if that phone is not within close proximity. Medical science has discovered that increased levels of cortisol (which is not intended to hang around in our bodies for long periods of time) is growing by leaps and bounds within humans which is causing higher levels of stress, depression, and anxiety.

Think about this, kids are on their phones at least 8 hours a day. Students who get on their phones before bed will allow the "blue light" that comes from the phone to increase levels of dopamine in the body as well as the cortisol. Both chemicals at high doses will affect sleep cycles. The teen brain needs rest because it is driven to learn and if they are not getting enough sleep then the brain will actually start slowing down it's ability to learn to help cope with the chemicals that are out of balance in the brain. Parents need to work hard at not letting their teen use their phone for about 2 hours before they go to bed. That my friends is going to be very difficult, especially since we as adults do the same thing. So keep this in mind, if your child is addicted due to high levels of dopamine rushing through their brain (the feel-good chemical), the pre-frontal cortex (frontal lobe) which is responsible for planning, distinguishing right from wrong, determining what is appropriate behavior, and decision-making, will start to minimize it's growth and function highly in the areas that it keeps getting stimulus. Thus, plasticity sets in and will start to ignore other critical areas needed for growth such as appropriate behavior and good decision-making. That is why often times you'll find there are many teens who struggle with proper behavior and do what is right. Studies show that many of these teens who exhibit almost rebellious behavior spend a large amount of their time on their phones and gaming. The key to all of this is over-stimulus of the brain by using phones and computers for social media. There must be a balance if our teens are going to be able to adapt at what life is going to throw at them.

Parents must make sure they are not letting their child learn and develop those "pathways" that the brain is developing by social media, the internet only. They must be able to have other experiences that allows the brain to grow and learn. What breaks my heart is when I talk to teens today, its getting more and more regular that they can't look me in the eye when they talk. Why? Because they have trained their brain to communicate through text and not verbal and emotional connections to people. When they are forced to have that conversation, they often will struggle because the brain has not developed that skill of communication. We are raising a generation that is going to have a very hard time learning how to deal with conflict and express their true feelings because they live in a different technological word where that is not really needed. So the brain cuts it off. Parents must understand that social media was not designed to be a learning tool but an entertainment tool that is linked to a marketing platform. It's used to hook your kids through marketing and gather as much information as they can about the user not just making a social connection. That's why when you are on Facebook and click on a site about a certain product or content, you'll find other links all the sudden start popping up on your Facebook about what you just recently spent some time on.

Putting two plus two together then, since the teen's brain is not fully developed in the frontal lobe yet, what you allow over long periods of time to enter into their brain will have certain long-term consequences. Kids will hate it, but parents must limit the amount of time their kids are in front of the phone or computer screen. Get them out in the real world where their brains can learn and experience beyond the make-believe world they are often faced with in social media. They can't learn body language and read emotional connections with others through a phone. Though words are important, the tone of those words affect the emotions of people. I believe that is why you see so many young people even up to their mid to late 20's seem to be emotionally immature today. Not that all of our children will grow up to be emotionally immature, but it is a danger that exists.

We are seeing an epidemic of depression and anxiety among our young people today. I'm convinced a big part of this is due to social media. Kids are trying to live up to what the fantasy world of social media has created. It is allowing even the quietest of children to become a star as long as they can look into a camera on the phone or computer and create a fictional character of who they really are. For example, they may have 1,000 likes as "friends" but actually only have a couple good friends in real life. Their acceptance and value is found on the screen and not in people.

In closing this chapter, I just want to encourage you to spend more time understanding the development of your teen's brain. This has so much to do with their behavior and your inability sometimes to communicate rational thought to them. Understand how social media can create a person within your teen that is not "real". By understanding that they are fearfully and wonderfully made in the eyes of God will go a long way in helping them grasp hold of the truth that they don't need a fake persona on social media to be accepted.