



# Humanum

Issues in Family, Culture & Science

FEATURE ARTICLE

Issue Four / 2015

## The Use of Technology in Home Education

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In 1989 our family began homeschooling, and in 1992 we started working in homeschool administration, providing parents with advice, resources, planning and assessment. Obviously, between 1992 and 2016 computers and the subsequent array of devices and resources have contributed to great changes, but it is equally true to say the elements that make learning at home most effective have remained virtually unchanged. We will look at these elements and consider how they are most effectively applied, both with and without technology. We will also observe general use of technology, identifying the advantages it provides to learning as well as some cautions and significant ills.

As late as 1995, many homes did not yet have a computer, and only a few homeschooling parents were using email. The internet was growing rapidly, as was its reputation for providing uncensored information and images. Professional educators were adamant that the quickly escalating place of computers in the world meant every child should receive training in computer use as early as possible. Consequently, while elementary schools were installing computer labs, many homeschooling parents, though reluctant to invite the world into their living room, were concerned that their children would be significantly handicapped if they delayed computer access. In order to discover just how disadvantaged these students would be, we began consulting with individuals teaching state-of-the-art college courses in computer programming.

The consensus was surprising: Students who had arrived at college with little or no computer background, by end-of-term out-shone and out-scored their classmates who had begun the course well experienced in the use of computers. The teachers consistently cited the same cause. Confident computer users, relying on what they perceived they already knew, listened briefly to instructions and glossed over reading material, impatient to begin fulfilling the requirements of each assignment. Students would already be tapping away at their work while the teacher was still instructing. On the other hand, the neophytes, recognizing how little they knew and how much they had to learn, did not miss a single word of what the teacher said. Today, almost two decades later, the distraction level in computer labs has grown and, sadly, neophytes are now rare; but our advice to parents remains the same: "Your child will not be

handicapped by delaying computer use until relatively late.”

Although it was reassuring to discover that later introduction of computer skills does not handicap children, skill development may only be part of the reason parents want to use computer technology. Especially with software advances of the past decade, there are many academic tools one may have difficulty accessing any other way.

One such academic tool is the online classroom. It is the means by which we have been able to introduce and nurture the method of discussion that forms the heart of a classical education: Socratic dialogue. Reading classical texts and listening to lectures provide great benefit, and a student best internalizes and applies the inherent universal truths when required to articulate meaning and impressions to peers, meanwhile trying to understand and evaluate the impressions provided by others. Originally, all universities engaged learning in this way, and a few of the most successful still do, but the approach is rarely used with school-aged children. By the late 1990s it had become increasingly clear that this ancient approach to learning was very well suited to home education, and a number of families began reading and discussing the classics. What soon became apparent was that, although parents were committed to giving their children a classical education, many lacked the time and experience required to introduce effective Socratic dialogue. They sought means to access tutors well-versed in Socratic dialogue and large enough groups of peers to stimulate rich discussions. But this was not easy.

The mechanics of gathering far-flung participants together on a regular basis made classes in Socratic dialogue virtually impossible to achieve in many homeschool settings, until the advent of the online classroom. Then, suddenly, any student with internet access could join other students and some of the world’s best tutors to pour over the works of Homer, Aristotle, and Aquinas. The effects were astounding. As would be expected, good students blossomed, but we were quite surprised by many who had long since lost interest in education. Within one term, they became increasingly motivated to read, discuss, and learn. Though improvements in technology have made online dialogues more seamless, little else has changed. The discussion of great ideas remains the key to learning and, as a communication tool, the internet continues to facilitate this most powerful means of teaching logic and rhetoric. Meanwhile, the internet can also provide access to other kinds of learning.

Whether online resources address traditional academic subjects or have to do with enrichment materials, there are many to choose from; some at a cost and others free. The internet hosts courses in virtually all subjects, and of particular help to homeschoolers are those that provide rigor in high school Sciences and Mathematics. For homeschoolers wanting more than the basics, the internet hosts enrichment for every possible curriculum. Each year, more resources become available, and students go online for academic research. This is both a good thing and a potentially harmful one.

On the positive side, the internet can serve as a library at your fingertips, making access to even obscure information as simple as pulling out your phone. On the other hand, this virtual library can also be very distracting, drawing a would-be researcher through one link to another, wandering far from the initial inquiry and likely to fall upon sinister sites. An equal handicap for the serious researcher can be the inconsistent reliability of information one may draw from postings emanating from a great variety of sources.

Parents, aware of these difficulties, attempt to create a balance by using libraries and other non-digital resources, but the personal device is ever more present, and it is difficult to create balance in a world increasingly dominated by technology. Life was simple when limits meant

turning off the TV, or even getting rid of it. Initially, computer use could be more easily controlled and limited, but as it became increasingly used for work and study, the lines between use and abuse became less well defined. Now, surrounded by technological devices, it is increasingly possible for families to become dominated by them, and harmful internet content is no longer the only reason parents have for concern. What began as a desire for balance and avoidance of evil must now extend to recognizing that a child's capacity for healthy physical and cognitive function can be altered by time spent on electronic devices.

In referring to time spent on any device the term "screen time" is catching the attention of mainline media due to the effects of electronic devices on mental and physical health. Not all screen time is the same. There is a great difference between simple "work" screen time and that which is interactive and provides immediate rewards. This includes social media and many phone apps.

A small child sits on the floor with her mother's cell phone in hand, with her forefinger tracing letters of the alphabet and receiving a cheery chime each time she does it well. Another child, slow to start speaking, gains positive reinforcement each time he taps on the correct square in response to the friendly digital voice listing basic colors. These games seem innocent enough, providing young children with academic advantages while mom is busy teaching an older child or feeding the baby, but a great deal more lurks under the surface. Whether at this basic "educational" level or with more complex games, the human brain responds very differently to the most simple of virtual rewards than it does to basic work, even if the same device is being employed.

With young people of all ages, anything more than half an hour per day of interactive screen time with an entertainment or social focus seems to be the tipping point for development of addiction. In *Psychology Today* Victoria Dunckley, M.D. writes: "Many children are 'hooked' on electronics, and in fact gaming releases so much dopamine—the 'feel-good' chemical—that on a brain scan it looks the same as cocaine use. But when reward pathways are overused, they become less sensitive, and more and more stimulation is needed to experience pleasure." Dunckley relates depressed mood, lack of motivation and poor memory to the resulting levels of unnaturally high arousal and firmly recommends an electronics "fast" to reset the brain.

Adults, though perhaps more cautious, are as susceptible as are young people, and among the effects of being "hooked" on digital media is the steady increase in screen time among adults. The average American adult user spends 5.6 screen time hours per day, half of which is on mobile devices. It may be assumed that a busy homeschooling mother simply would not have the time to spend on screen, but there is more than sufficient evidence to the contrary. Frequency of posts and immediacy of responses indicate the dominance by devices in many homes, and recently a mother expressed how much richer her life has become since she quit checking her phone first thing each morning. She confessed she simply couldn't resist learning what she had missed during the night: the news, what others had posted, and whatever else one can learn from a phone. She was reluctant to change, but she had begun to realize how dominated by technology she had become. Even the simple rewards from information, posts, and personal texts had hooked her, and the process of withdrawal was difficult. Now that she has conquered the habit, she marvels at the wealth of experiences she had been missing: spending quiet time with her husband, tiptoeing in to watch her sleeping children before waking them, reading, and praying, even exercising. Now the phone, if she gets to it, is relegated to a status far lower than her own well-being and that of her family.

Among users of all ages, addiction places the electronic device at the center of the person's life, displacing many other things, but there are other kinds of harm that have little or nothing to

do with addiction. Some may think that if personal devices aren't being used for games or social media they will not have adverse effects, but there is more to these devices than the obvious reward stimulations.

The human brain reacts to all forms of input and is constantly programming itself to deal with and utilize each of them. When a child is first learning to become ambulatory, rolling over soon leads to creeping. The brain develops important pathways with each stage and a major one when the creeping turns into a crawl. Later cognitive abilities of the child will be found strong or weak based upon the simple crossing of the centre line that had occurred at the crawling stage. Much of what affects our brain as we grow has to do with the interaction between receiving, thinking, and doing. It is not a coincidence that children are physically very active during the period when most of their future cognitive ability is being developed. Use of technical devices supplies plenty of receiving, a little thinking, and even less doing. The resulting unbalanced development contributes to cognitive inabilities, especially in young children.

Very young children, two years old and younger, cannot distinguish between what is on the screen and what is real. Because of this confusion of realities, areas of cognitive development are crippled by screen time of any kind, implying all devices should be avoided. With children two to five years old, sitting in front of a screen provides abundant visual stimulation with little physical demand. The pathways in the brain that associate visual intake with action become under-utilized while visual sensory pathways can become over-loaded. Of course, brain development is more intense in the young, but it is ongoing through adulthood, and the virtual reality of technical media affects that development.

Among the most intense developments throughout life, but especially formative among the young, is the social responsibility that emerges from daily interaction with other people (common decency) and the practical intelligence that results from living in the world (common sense). Both common decency and common sense are absent in an infant. They need to be learned, partly through instruction, but largely through real experiences. We learn to value others and treat them with respect when we ourselves are valued and respected, but we also learn the importance of these values when we experience disrespect and when we see in others the effects of our own unkindness. Failure teaches us at least as much as success: often more.

Common sense is gained in much the same way: some from the wisdom of our elders but a great deal by trial and error. One error and one suffering at a time, we learn that all actions have consequences for good or ill and that we are responsible for our choices. The combination of our common sense and our common decency helps us recognize our responsibility to act with prudence and have a positive effect on the world in which we live.

The more time a child spends time in a virtual world, the less time is available for real social and physical experiences. When normal social time is replaced by virtual reality, the child is allowed to avoid the hard work of socialization and instead be responsible to self alone, able to choose and control virtual interactions and not experience the negative consequences of selfishness. As for the neglect of common sense, the virtual world allows a child to be a hero without suffering, be reckless without real harm, and have absolute control over reality. The effects are immediate and translate directly to real life, where individuals resist virtues and are perplexed by a reality that demands they are not the centre of their universe.

According to hiring managers, the influence of time spent in virtual environments has had a profound impact upon individuals now aged 21 to 32. Compared to the previous generation,

they tend to be more creative and open to change, but they are twice as likely to be driven by the reward of money, four times more narcissistic, and far less likely to be a team player. They are also less confident. These trends illustrate a lack of engagement with reality, and there is little reason to believe the next generation will do better. With much greater access to technology, the generation now aged 5 to 20 may become even more challenged in areas of common decency and common sense.

This is grave cause for concern, yet there are further areas of concern, including the effects of simply the amount of time spent facing a screen of any kind. Researchers are becoming alarmed at the impact that blue light has upon the viewer, no matter what is on the screen. Whether it displays a movie, a game, math lessons, or a simple screen-saver, the screen effectively mimics daylight. According to our natural day-night internal clock, our body anticipates bedtime by releasing the melatonin needed to slow us down and allow us to sleep. Even short durations of screen time can fool the body into delaying melatonin release by several hours. This, combined with the arousal stimulated by screen time, can rob children (and adults) of deep sleep. Lack of sleep contributes to fatigue and lack of concentration that in themselves cause unnecessary failures and lead to stress. Real stresses, combined with virtual ones, create a host of other problems, including irritability and even depression. *Increased risk of teen suicide has been linked to screen time, especially when used in the evening or night.*

The other part of “screen time” is time easily wasted, and an abundance of missed opportunities. This is particularly true of students. At a time of great opportunity, when the luxury of learning has not yet been superseded by work and family life, it is a shame to spend large amounts of time on entertainment, gaming, and internet chat. It is also a shame to be formed by media more than by people, as many progressive educators propose doing. Even when Blackberry devices and iPhones were relatively new, educators began strongly promoting the use of personal devices in the classroom, proposing that students would become freer to learn. A perceived asset of such a system cites the use of personal devices as a solution to the immense social pressure students experience in the classroom. Bright students feel awkward about knowing the answers when the most popular students do not, and the majority of students fear mockery if they answer poorly or even at all. Personal devices would provide students with opportunities to answer questions privately and without peer pressure. Another proposed benefit would be access to the very best teachers even if they are not physically located nearby. Yet the proponents of such a system seem to have forgotten the power of discourse in the development of a person’s capacity to think.

Similar forgetfulness is demonstrated by parents who believe their child can be adequately homeschooled in a cyber classroom. Although technology is able to avail students of resources not otherwise easily attained, the heart and soul of education lies in personal relationship. Meaningful discussions with real people will always trump even the most attractive virtual presence. Even online Socratic dialogue with a world class tutor, though it provides essential skills of dialogue and clear thinking, cannot replace a conversation around the supper table. Parents who take what has been gained through online courses and apply it to the domestic environment achieve something greater. Good conversations with thoughtful people are formative and produce modelling of behavior, refinement of values, and opportunities to think out loud and debate ideas. Living with adults, having responsibilities, experiencing real work, and enjoying creative play are powerful educational tools that screen time can only hope to emulate and can never duplicate. Great books will always be superior to curricula, and conversations will always be superior to workbooks.

Probably due to the century-old bias that believes education is something that happens in

particular places outside the home by people who are professionals, parents tend to underestimate the centrality of the home as a place of learning. They also tend to underestimate education's most powerful tools, probably because they may appear familiar and ordinary. Institutional education gives the impression that it takes years to learn skills, knowledge and computation skills that can actually be achieved in months, given the necessary level of motivation and maturity. The world enthusiastically sells its wares, especially a plethora of technical tools. Each era produces new educational theories and methods, but too few utilize the most effective approaches ever developed, that fit naturally into ordinary life.

Ordinary family life, lived with care, provides the most effective means of learning and, at the center of it all, open and engaging dialogue. Virtually unchanged since the ancient Greek philosopher Socrates employed a system of asking questions in order to draw students into deeper understanding and right-thinking, dialogue is the principal tool at the disposal of parents. Socrates didn't write books or create texts: he lived with, discussed with, and discovered the truth with his students. Ordinary parents in their own home are very capable of doing the same. Technology, used carefully, need not dominate but can truly assist in the gathering of information and development of skills. It will be kept in check if parents remain confident and utilize their advantage of dialogue at the profound level of relationship. In spite of, or perhaps because of, its simplicity, the home is able to shape common decency, common sense, and right-thinking. Ultimately, nothing should be allowed to replace the on-going dialogue that begins before birth and continues throughout life.

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