



The World Foundation for Natural Science

The New World Franciscan Scientific Endeavour of The New World Church

Restoring and Healing the World through Responsibility and Commitment in accord with Natural and Divine Law!

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E-Learning or still better Old School?

In many countries of the world, schools are still closed and home schooling is on the agenda. E-learning has now made its entrance in most families. Only a few schools provide their students with analogue learning material and E-learning is celebrated as the means of choice and state of the art in this time of crisis. However, more and more critical voices are being raised.

It is worth pointing out that modern, digital technology offers enormous potential. However, it also harbours risks. After all, man is an “analogue” being of flesh and blood that needs analogue content for his or her development. It is very important in these times to find a developmentally and above all brain-friendly approach to e-learning. We are now preparing the foundation of our future.

A keyword of all advocates is that learning content is no longer boring thanks to digital classrooms, but can be conveyed in a varied, innovative and exciting way. But, not everything in life is always just “fun” and “entertaining”. Especially in professional life, a lot of diligence, stamina and willingness to persevere is required. Learning is not always exciting, school means work. New learning content needs to be developed and not just “consumed”. Paul Thomas, Professor at Furman University, says: *“Classroom learning is a human experience. Technology is a distraction when it comes to the skills of writing, arithmetic and critical thinking.”*

Interestingly, in Silicon Valley, where many tech giants like Google, Facebook, Microsoft, Apple and Co have their headquarters, there is also a Waldorf school – a school that deliberately focuses on a technology-free learning environment. As it says itself: *“Today’s children spend much less time dealing with other children, their caretaking parents and nature. The lure of electronic entertainment in our media-pervaded society*

influences the emotional and physical development of children and young people on many levels and can deprive them of the ability to build meaningful relationships with other people and their environment. [1] For this reason, students are not introduced to computers and tablets until the secondary school level. Before that, great importance is attached to the children's active use of their senses. Whether it is in the school garden, singing and movement, knitting socks or even just folding the cloth napkins for the kindergarten teachers – the latter is not just blunt occupational therapy, but promotes the brain development of the little ones! Surprisingly, three quarters of the children in the Waldorf School have at least one parent who works in the technology industry. Alan Eagle, for example, the Director of Executive Communications at Google, also sends his children there. He also says: *“The idea that an app or an iPad could teach my children to read or calculate in their heads is ridiculous. [...] I vehemently reject the idea that technical aids are needed in primary school.”*

Steve Jobs, the founder of Apple, was also considered a low-tech parent. He rigorously restricted his children's access to technology. The digitalised schools named after him failed in the Netherlands. (The blame for this was less the laptop, but much more the principle of completely self-determined learning). Many parents in the technology industry strictly limit their children's smartphone and tablet times. So why should our children have to learn digitally?

“I get angry when our schools are sacrificed on the altar of technology. Whole crowds of teachers and instructors run like lemmings after the desired goal of having their school wired and networked. Parents are beaming when they pull out their credit cards to buy electronic machines for their child, thinking that this will guarantee a quick solution to all problems or a lightning start to their careers,” writes Clifford Stoll in his book *“LOG-OUT – Why computers have no place in the classroom and other high-tech heresies”*. And he knows what he's talking about, since he was instrumental in the development of the “Arpanet”, the forerunner of the Internet.

Today's technological progress was made by men and women who were all still taught by analogy. It is therefore a fallacy to believe that a society would disappear into oblivion in terms of technology if its children were not given digital lessons in primary school.

How does the brain develop?

The German brain researcher and medical director of the *Clinic for Psychiatry and Psychotherapy III* in Ulm, Prof. Manfred Spitzer, is a luminary in the field of brain development research. He states quite clearly that digital media of any kind must not be made accessible to children until they are 14 years old or older. This is because the brains of children are not yet able to properly process the sensory overload. What may sound like a deficit is pure evolution! Until around puberty, children have to learn and experience with as many senses as possible.

The personality of a child develops during the first years of life. In the first year alone, 700 synapses (nerve connections) are formed in the brain every second. These neuronal connections are the basis for future language skills, creativity and social competence. This is an ongoing process. It is only at the age of about six years that the child's brain is about 95 percent developed. At puberty, the brain then tidies up again: the brain cuts all brain connections that are considered "unnecessary" in order to increase performance. This means that everything learned that is not or only rarely used is "deleted". Manfred Spitzer then also compares the brain to a paradoxical shoe box. A paradox, because the more that is already in it, the more that fits in it. The more the brain is being trained, the more "brain connections" there are, the more can be added. Therefore it is relatively easy to learn a sixth language or a third instrument. The equipment for this is already available. By the way, this also applies to adults: if you only blindly rely on your navigation system, you will eventually lose your sense of orientation. The constant "googling" for any information weakens our long-term memory – creeping dementia can be the result. Who only ever outsources telephone numbers, appointments, tasks and shopping lists to the digital world does not train his or her brain. And the brain is like the muscles: what is not being trained, eventually atrophies. It is not without reason that the expert Spitzer speaks of "digital dementia". Studies have shown, for example, that if you spend three hours firing away at a computer in the afternoon, you forget most of what you learned at school in the morning. What happens on the screen displaces the memory content from the classroom, the flood of stimuli is simply too great for the brain.

The renowned brain researcher Prof. Gertraud Teuchert-Noodt is a great advocate of analogue, "old-fashioned" teaching; she sees no alternative in e-learning and digital teaching and makes it clear: "I say mobile phones, notebooks and tablets have no place in schools. She puts it drastically: "*The 'Oberstübchen'* ("small upper room"=colloquial expression for brain/ head with slightly pejorative connotation) *can't mature like this.*" Children's brains are not yet sufficiently developed to work with digital media in an

unharmful and effective way. The guiding principle “the sooner the better” is stupid and irresponsible. Digital media hinder the development of a functioning memory, especially but not only among young people. These deficits are irreversible: “A *lost generation is just emerging, and I find it irresponsible that pedagogy is going full steam ahead with digitalization,*” warns Prof. Gertraud Teuchert-Noodt.

Digital media are fast, too fast for our children. Children cannot tolerate the speed in their brains at all. Children need quiet and slowness. “A *childhood without digital media is the best start into the digital age.*” So-called learning games should also be avoided. Because even there you often don’t need to know the exact answers, the program gives you the answers by means of a selection procedure – real life is not multiple choice.

Our children have to write less and less, one click is enough. But learning and living is more than just clicking, copying and pasting. We have forgotten, or have never experienced, that it makes a big difference whether we write a text by hand, type it in or just copy and paste it. But why is this so? Anyone who takes handwritten notes cannot simply write down what they hear one-to-one due to the rather slow pace of



writing, but is forced to put the information on paper as briefly and concisely as possible. The information heard is thus processed and memorized more deeply. A corresponding study with students confirmed this: The “Handwriting Group” could remember facts and concepts from the lecture one week later better than their fellow students from the “Laptop Group”. Similar experiments with kindergarten and school children yielded the same results. Whether learning new letters or memorizing content: Those who had written something by hand could remember it better later!^[2] Learning should, it cannot be repeated often enough, be done with as many senses as possible. For e-learning you need at most one and a half senses (sense of sight and touch).

The American linguist Naomi Baron recommends the use of analogue (learning) books. The reading of longer texts is more difficult on the screen, the in-depth reading, remembering what has been read, personal access and emotional involvement are more difficult. According to the Dutch book scientist Adriaan van der Weel, the ability to remember is enhanced by the physical location of what is read. Text passages are linked to their position in a particular book. If you scroll while reading, instead of turning

pages, or even read several texts on the same device, you do not have this effect.

“Digital education“ in practice

Australia has already invested almost 2.5 billion dollars in the digitalization of its school system in 2012. Just four years later, the country began to remove all laptops from schools. Why? Because the students did everything with the laptops – except learn. The USA, Turkey, Thailand and South Korea had similar experiences. In 2015, the OECD pointed out in a report that children who frequently use computers at school have much worse learning outcomes.

A study [3] published in 2017 showed that the more children use digital media, the more their language development is inhibited. This is because digital media do not convey the tone of voice, facial expressions or emotions of the other person.

It is no longer unusual for young people to spend several hours a day in front of a screen. As a negative consequence, they become alienated from nature. More and more children and young people prefer to spend their time indoors rather than outdoors. But it is precisely these diverse impressions and sensory stimuli that stimulate children’s brains to grow! Do we now want to support this addiction to digital content through e-learning in our schools?

Humanity is missing



Learning is a social activity. Paul Laurent, former employee of Intel and Microsoft (who, by the way, also sends his children to the Waldorf School) says: ” *Dedication needs human contact. The exchange with the teacher, with the peers.*” School is much more than just a room where knowledge is conveyed. The digitalisation of schools has resulted in the dissolution of the class association. The process of learning is

individualised too much and not age-appropriate. Even primary school children suddenly have to organise their learning times themselves, decide when they want to work on which content in which form and quantity. This requires a great deal of self-discipline, which not every child brings with him or her “from home”. The teacher

becomes a mere learning companion who does not even need to be physically present. But we know from psychotherapy that the only effective factor is the relationship between client and therapist. At school it is no different. There too, the relationship between student and teacher is the most important element. From a trusting and constructive environment the student draws a large part of his motivation to learn and willingness to make an effort. This social and *real* environment will never be able to replace a computer or even a sophisticated learning program. Students in countries with highly digitised education have not shown any improvement in reading, mathematics or science.[4]

It should not be forgotten that we often expose our children and young people to constant electromagnetic radiation when learning with computers and tablets. Digital education also means widespread WLAN in schools. This is because many laptops and tablets can now only be connected wirelessly to the Internet or school network. In addition, wireless data transmission does not lead to a cable tangle and can be available everywhere in the entire school building. However, this only works if a WLAN router is installed in (almost) every classroom. However, the German Federal Environment Agency wrote: "WLAN access points, WLAN routers and base stations of cordless telephones are best placed in the corridor or another room where one is not permanently present."[5] Digital learning is therefore not compatible with this recommendation!

In view of the many disadvantages of digital learning and its sometimes irreversible consequences, we should think carefully about when digital media and forms of learning really make sense and should only use them in a measured and age-appropriate manner – for the sake of our children and the future of our society!

Sources:

[1] <https://waldorfpeninsula.org/curriculum/media-technology-philosophy/>

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[3] <https://www.aappublications.org/news/2017/05/04/PASScreenTime050417>

[4] OECD-Bericht 2015: „Students, Computers and Learning: Making the Connection“, <https://read.oecd-ilibrary.org/education/students-computers-and->

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[5] <https://www.umweltbundesamt.de/en/press/pressinformation/not-to-be-sniffed-at-stuffy-air-in-schoolrooms-the>

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