

Tending the Light

Essays on Montessori Education

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Computers in the Montessori Home: Guidelines for Decision-Making

This is the first Montessori article I wrote and the first that was published. Knowing of my background as a computer scientist and software engineer, Donna Bryant Goertz encouraged me to write on the fraught topic of children's use of computers at home. The first version of the article was published in the 1999 volume of AMI/USA's Parenting for a New World series. I rewrote the article in 2010 and found that I needed to make only minor edits in 2014 for the version included here. Although current digital technology such as smart phones and tablets is revolutionary in many ways, the developmental needs of children remain the same, as do the arguments for keeping children's use to a minimum.

Forty years ago, digital computers were large, complex machines expensive enough to be owned only by businesses, universities, and governmental agencies. Today computers are small, complex machines cheap enough to be owned by children. It is almost taken for granted in America that children who do not have ready access to computers at home are at a terrible educational disadvantage. Hardware and software manufacturers have found, to their delight, that parents who would never buy computers and software for themselves can be persuaded to buy them for their children. In many households, the family computer monitor has become (along with video games and network television) the third in the unholy trinity of screens that dominate the family's recreational life. As the adults in the family become more and more attached to

their computers, disappearing into individual screens can become what the family typically does “together.”

There is no doubt that the personal computer, when used wisely and with attention to the child’s true developmental needs, can be a powerful adjunct to classroom learning. However, it is often difficult to sort out what “wise use” means in concrete situations—all the more so because of the confusing messages circulating in the culture and its media.

Perhaps the most important thing that Montessori educators can say to today’s parents is “Relax. Your child will not be intellectually stunted because they do not have access to a home computer. Virtually nothing a well-rounded child needs to know requires the use of a computer to learn it.” In truth, with the possible exception of certain mathematical and engineering ideas related directly to the design and programming of computers themselves (hardly the focus of most software marketed to children), the introduction of the digital computer has changed almost nothing in the fundamental intellectual landscape of childhood. This is largely because the child’s most important intellectual tasks are determined not by fads or the advent of new technologies, but by the unfolding of the human organism according to a genetically coded plan conditioned by the entire span of human evolution. It was the genius of Maria Montessori that she was able to map out much of this process of human development and begin to understand how educators might support it in a systematic and universal way. When we understand the true needs of the developing child, much of the hype about how indispensable computers are to children quickly evaporates.

Many of us already have computers at home, and we will have noticed that our children seem to be fascinated by them. How can we use the computer in the best interest of our child’s learning and development? Here are four questions that may help.

1. Is my child at least seven years old, reading fluently, and writing effortlessly in cursive? If not, the child is simply not ready to use the computer—or, more accurately, the computer is not designed to support your child’s development. Children below age seven learn in ways very different from those of adults and older children. Young children learn

primarily through physical movement and by using all of their senses to explore the physical environment. Computers restrict both of these modes of learning. Young children also tend to uncritically absorb whatever is presented to them—a disturbing thought, considering many of the sounds and images that flow through the multimedia screens of our home computers.

2. Does this software support my (older) child’s current developmental needs? Are there better ways to meet those needs? Most software marketed to children can be divided into two categories: games and “educational software.” Some educational software is packaged in a game-like format, ostensibly to make it more interesting to the child.

The question to ask about games (computerized and non-computerized) without educational content is “Could my child be having the same kind of relaxation and fun doing an activity that is not a developmental waste of time?” With a little thought and creativity, we can almost always answer “yes.” Educational games and other educational software need to be carefully reviewed, case-by-case. The educational benefits of the software need to be balanced against the potential side effects, such as:

- social isolation;
- missed opportunities for collaborative learning;
- missed opportunities for neurological development that comes from activities based on intensive use of the hands, body, and creative thinking;
- development of sedentary habits (contributing to the current epidemic of obesity in children);
- presentation of material in ways that conflict with the Montessori child’s classroom experiences;
- and substitution of extrinsic rewards for the intrinsic joy of learning.

This last side-effect deserves more comment. Much software for children is based on the tacit assumption that children are not intrinsically interested in learning and must therefore be tricked or manipulated into learning by hiding the educational content under

layers of multimedia gimmickry. Nothing could be farther removed from the Montessori philosophy and experience. On the contrary, it is precisely the joy of learning and increasing self-mastery that drive the child to overcome the challenges of the material. If a child finds certain material uninteresting, the Montessori educator would usually take this to mean that it was not yet the right time for this child to learn that material. From this perspective, it can be a real harm to seduce a child into “going through the motions” just to be rewarded with a funny noise or a favorite cartoon character cartwheeling across the screen. What is the child really learning? That learning is boring, but cartoons are fun? To expect whiz-bang showbiz responses at school for each little increment of effort? That they cannot learn without an authority figure to validate and praise their efforts? All this is really just a high-tech way of once again imposing an adult educational agenda on the child, instead of supporting the child in the exciting task of constructing a self according to the blueprint that is uniquely theirs.

Proponents of video-gaming and other computer software for children are now citing research that shows that children who play video games out-perform their peers in certain aspects of cognitive development. This is hardly a surprise: People do tend to get much better at things they extensively practice, and the brain adapts to whatever training it receives. Closer examination of these claims reveals that unless one wants to be an air traffic controller or a fighter pilot, these enhanced cognitive-spatial skills are good for little more than playing more video games. All that time and effort is better spent developing cognitive skills that can only be developed the “old-fashioned” way: by many years of creative use of hands, body, and mind in a sensorially and socially rich environment. It is these higher “executive function” thinking skills that research profoundly links to success and happiness throughout life. And if it is extra cognitive development you seek, the research supporting the cognitive enhancement gained by learning to play a musical instrument is much more robust than that cited by the pro-video game crowd.

3. Does this software support my family's values? The values of the school community of which my child is a member? Many computer games, and even some “educational games,” have shocking amounts of violence. Unfortunately, this will continue to be the case since violent

games sell like hotcakes in our country. Nevertheless, protests from parents have made software developers a little more sensitive to the needs of the children's software market. Sometimes the violence is softened by presenting it as “good guys versus bad guys” or “monsters fighting monsters.” Even non-violent software can have questionable content. For example, at the end of one popular game, a bikini-clad girl runs in from the side of the screen and gives the winning character (always male) an adoring kiss. What messages is this game sending about gender equality and human dignity? Suffice it to say, parents need to review software before giving it to children and make conscious choices about what is acceptable in their family and in the larger school community.

Whether you know it or not, you are in competition for your young person's heart and mind with some very savvy, well-funded, and ruthless competitors. Dave Arnold, one of the lead developers and writers for the violent videogame *Call of Duty*, recently spoke openly about the videogame industry's approach, which he proudly described as “brainwashing” (Eidelson “Call of Duty”). He states, “When we have a new product that has elements that we're not sure how people will respond to, what do we do as a corporation? We market it, and we market it as much as we can—so that whether people like it or not, we do all the things we can to essentially brainwash people into liking it before it actually comes out.”

If adult members of the family choose to play violent or sexually suggestive computer games, it is very important to do it when the children are asleep or not in the house. Earphones will keep children in their beds or playrooms from hearing the gunfire, explosions, screams, profanity, war cries, and other disturbing sounds that go along with most violent games.

4. Does this software ultimately increase or decrease my child's creativity and natural self-expression? Most adult computer users have found that they can do things well on the computer that they could not do by hand—at least not in the available time. It is easy to assume that what is wonderful for us will also be wonderful for our children. Not necessarily. For example, desktop publishing tools are a boon to the writer or the small business owner; they even appear to

have played a part in the democratization of Eastern Europe. However, in the hands of a child struggling to master cursive handwriting or conventional spelling, they may become a way of avoiding the difficulties of mastery. Computer graphics tools have opened up a whole new range of possibilities for modern visual artists. Yet, will the child who makes complex, fantastic digital collages from images captured from the Internet be more motivated or less motivated to master the classic art of drawing a human face with paper and pencil? The general principle here is an important one: Walk before you run. Our children will have plenty of time as adults to use sophisticated software to do all sorts of amazing things. Childhood is for laying the groundwork of creativity by training the eye, the hand, the ear—using simple, time-tested tools specifically designed for each. Although they are not the first generation to have tried, our children are the first generation to actually have the option of leaving the basics of craft to automation; so far, the aesthetic results are not promising.

Some computer software can be viewed as a surrogate for adult expertise. For example, a good chess program can teach a child far more about chess strategy and tactics than most of us personally can. There are musical ear training and music theory programs that can tutor a child (or an adult) almost as well as the average music teacher. For adolescents, access to the Internet can open up the world in a very effective and exciting way. In the right social context, and with ongoing parental observation and monitoring, these sorts of application can be a positive addition to the home learning environment.

Most importantly, the computer should be used as a tool to accomplish some purpose greater than the use itself. For example, older children who are fluent readers and writers of cursive, can use the word processing capabilities of the computer to explore different ways of composing a story; or they can use music software to learn how to write a fugue or harmonize a melody. The computer is ideally suited to powerfully present information that is naturally organized into a hierarchy with many layers, for example, biological taxonomy at the Tree of Life Project (tolweb.org).

What must be avoided at all costs is the use of the computer as an open-ended entertainment device. The child should sit down at the computer with a clear purpose and plan, not with the question, “I wonder what I can find to do on the computer to amuse myself?” As an open-ended entertainment device, the computer has a remarkable ability to become an addiction; as a purposeful tool, it does not. Children who use the computer as a tool may become “addicted” to writing stories or composing music or exploring fractal geometry, but they will not become addicted to “using the computer.” Nevertheless, even goal-directed computer use should be restricted to one twenty to thirty minute session per day, at most. Longer sessions can strain on young eyes, necks, and hands.

Finally, if you have read this far and are still feeling that such a conservative approach to children’s use of computers and related devices is just very out of touch with the mainstream—after all, aren’t today’s children “digital natives,” different from previous generations?—you can take some comfort in knowing that Steve Jobs raised his children this way. When asked by a New York Times journalist, “So, your kids must love the iPad?” he replied, “They haven’t used it. We limit how much technology our kids use at home.”

If you would like to read more extensively on the effects of computer use on children and families, an excellent place to start is the report “Fools Gold: A Critical Look at Computers in Childhood,” available online from the Alliance for Childhood (allianceforchildhood.org). ❖