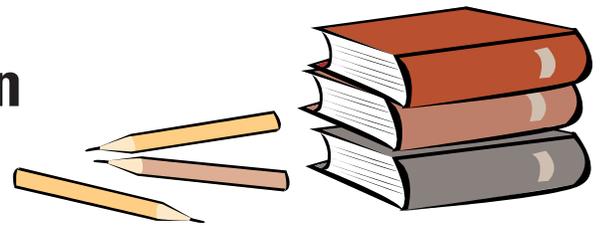


THE EARLY YEARS

Evaluating Montessori Education

Angeline Lillard^{1*} and Nicole Else-Quest²

An analysis of students' academic and social scores compares a Montessori school with other elementary school education programs.



Montessori education is a 100-year-old method of schooling that was first used with impoverished preschool children in Rome. The program continues to grow in popularity. Estimates indicate that more than 5000 schools in the United States—including 300 public schools and some high schools—use the Montessori program. Montessori education is characterized by multi-age classrooms, a special set of educational materials, student-chosen work in long time blocks, collaboration, the absence of grades and tests, and individual and small group instruction in both academic and social skills (1). The effectiveness of some of these elements is supported by research on human learning (2).

We evaluated the social and academic impact of Montessori education. Children were studied near the end of the two most widely implemented levels of Montessori education: primary (3- to 6-year-olds) and elementary (6- to 12-year-olds). The Montessori school we studied [located in Milwaukee, Wisconsin (3)], which served mainly urban minority children, was in its ninth year of operation and was recognized by the U.S. branch of the Association Montessori Internationale (AMI/USA) for its good implementation of Montessori principles (4).

Because it was not feasible to randomly assign children to experimental and control educational groups, we designed our study around the school lottery already in place. Both the experimental and the control group had entered the Montessori school lottery; those who were accepted were assigned to the experimental (Montessori) group, and those who were not accepted were assigned to the control (other education systems) group. This strategy addressed the concern that parents who seek to enroll their child in a Montessori school are different from parents who do not. It is crucial to control for

this potential source of bias, because parents are the dominant influence on child outcomes (5).

Recruitment

We contacted parents of children who had entered the Montessori school lottery in 1997 and 2003 and invited them to be in the study. All families were offered \$100 for participation.

Because the lottery, which was conducted by the school district, was random, the Montessori and control groups should contain similar children. Ninety percent of consenting parents filled out a demographic survey. Parents from the Montessori and control groups had similar average incomes (\$20,000 to \$50,000 per year) at each student age level. This addressed a concern with a retrospective lottery loser design that the final samples might be different for reasons other than the treatment. Another variable, ethnicity, was not surveyed because parent income contributes more to child outcomes than does ethnicity (6). We were also concerned that requesting ethnicity data would reduce participation in this racially divided city.

Overall, 53 control and 59 Montessori students were studied (table S1). The 5-year-old group included 25 control and 30 Montessori children, and the 12-year-old group included 28 control and 29 Montessori children. Gender balance was imperfect, but gender

did not contribute significantly to any of the differences reported here. Children at the Montessori school were drawn from all six classrooms at the primary level and all four at the upper elementary level. The control children were at non-Montessori schools: 27 public inner city schools (40 children) and 12 suburban public, private/voucher, or charter schools (13 children). Many of the public schools had enacted special programs, such as gifted and talented curricula, language immersion, arts, and discovery learning.

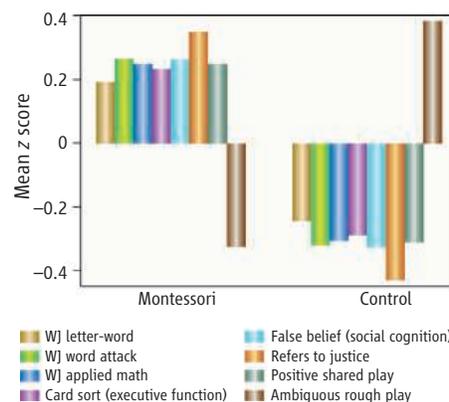
Children in both groups were tested for cognitive/academic and social/behavioral skills that were selected for importance in life, not to examine specific expected effects of Montessori education. Our results revealed significant advantages for the Montessori group over the control group for both age groups.

Results: 5-Year-Olds

Cognitive/Academic Measures. Seven scales were administered from the Woodcock-Johnson (WJ III) Test Battery (7). Significant differences favoring Montessori 5-year-olds were found on three WJ tests measuring academic skills related to school readiness: Letter-Word Identification, Word Attack (phonological decoding ability), and Applied Problems (math skills) (see chart, left). No difference was expected or found on the Picture Vocabulary test (basic vocabulary) because vocabulary is highly related to family background variables (8). Two WJ tests of basic thinking skills—Spatial Reasoning and Concept Formation—also showed no difference.

Five-year-olds were also tested on executive function, thought to be important to success in school. On one such test, children were asked to sort cards by one rule, switch to a new rule, and (if they did well) then switch to a compound rule. Montessori children performed significantly better on this test. A test of children's ability to delay gratification (a treat) did not indicate statistically significant differences.

Social/Behavioral Measures. Children were given five stories about social problems, such as another child hoarding a swing, and were asked how they would solve each problem (9).



Results for 5-year-olds. Montessori students achieved higher scores [converted to average z scores (18)] for both academic and behavioral tests.

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Montessori children were significantly more likely (43% versus 18% of responses) to use a higher level of reasoning by referring to justice or fairness to convince the other child to relinquish the object. Observations at the playground during recess indicated Montessori children were significantly more likely to be involved in positive shared peer play and significantly less likely to be involved in rough play that was ambiguous in intent (such as wrestling without smiling).

The False Belief task was administered to examine children's understanding of the mind (10). Recognition that people represent the world in subjective as well as objective ways is a landmark achievement in social cognition (11). Social negotiation and discussion about mental states leads to this advance in children (12). Whereas 80% (significantly more than chance) of the Montessori 5-year-olds passed, the control children were at chance, with 50% passing.

Results: 12-Year-Olds

Cognitive/Academic Measures. Twelve-year-olds were given 5 minutes to complete a story beginning “___ had the best/worst day at school.” The Montessori students' essays were rated as significantly more creative and as using significantly more sophisticated sentence structures (see chart, below). Control and Montessori essays were similar in spelling, punctuation, and grammar. Unlike the 5-year-olds, the 12-year-olds did not perform differently on the WJ tests. This is surprising, because early reading skills normally predict later reading (13). Either the control group had “caught up” by age 12 to the Montessori children, or the 12-year-old Montessori children were not more advanced in these early reading skills when they were 5. If the latter, one possible explanation is that the 12-year-olds started at the school when it was in its third year. The Montessori method relies on peer teaching and modeling, so those who are in the early classes of a new school lack some advantages relative to those who begin later.

Social/Behavioral Measures.

As a social skills test, 12-year-olds read six stories about social problems (such as not being asked to a party) and were asked to choose among four responses. Montessori 12-year-olds were significantly more likely to choose the posi-

tive assertive response (for example, verbally expressing one's hurt feelings to the host). On a questionnaire regarding their feelings about school, Montessori children indicated having a greater sense of community, responding more positively to items such as, “Students in my class really care about each other” and “Students in this class treat each other with respect.”

Benefits of Montessori Education

On several dimensions, children at a public inner city Montessori school had superior outcomes relative to a sample of Montessori applicants who, because of a random lottery, attended other schools. By the end of kindergarten, the Montessori children performed better on standardized tests of reading and math, engaged in more positive interaction on the playground, and showed more advanced social cognition and executive control. They also showed more concern for fairness and justice. At the end of elementary school, Montessori children wrote more creative essays with more complex sentence structures, selected more positive responses to social dilemmas, and reported feeling more of a sense of community at their school.

These findings were obtained with a lottery loser design that provides control for parental influence. Normally parental influence (both genetic and environmental) dominates over influences such as current or past school and day-care environments. For example, in the large National Institute of Child Health and Human Development (NICHD) study of early child care, correlations between parenting quality and WJ early academic tests had effect sizes comparable to those seen here, whereas school effects were much smaller (5). An evaluation of *Success for All*, considered a highly successful reading intervention, reported a quarter of a standard deviation as its largest effect size (for Word Attack) in a randomized field trial, and stated that it was equal to a 4.69-month advance in reading skills (14). Stronger effects are often found in the first years of pilot programs when researchers are involved in implementation of their own programs (15), termed the “super-realization effect” (16). In our study, the school did not anticipate an evaluation. Especially remarkable outcomes of the Montessori education are the

social effects, which are generally dominated by the home environment (17).

Future research could improve on the research design here by following lottery participants prospectively and by tracking those who drop out and examining their reasons. It would be useful to replicate these findings in different Montessori schools, which can vary widely. The school involved here was affiliated with AMI/USA, which has a traditional and relatively strict implementation. It would also be useful to know whether certain components of Montessori (e.g., the materials or the opportunities for collaborative work) are associated with particular outcomes.

Montessori education has a fundamentally different structure from traditional education. At least when strictly implemented, Montessori education fosters social and academic skills that are equal or superior to those fostered by a pool of other types of schools.

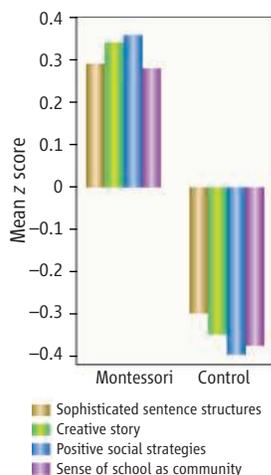
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18. The z-score conversion was used for the graph to give all tests the same metric. A z score sets the mean (in this case of the entire sample) at 0, one standard deviation above the mean at 1.68, and one standard deviation below the mean at -1.68.
19. Funding was provided by the Jacobs and Cantus Foundations and sabbatical fellowships from the Cattell Foundation and the University of Virginia to A.L. J. DeLoache, B. Detmer, L. Ma, A. Pinkham, R. Tai, and J. van Reet provided helpful comments, and E. Turkheimer provided valuable statistical advice. We thank the Milwaukee schools that participated; the children and their families; and A. Hart, T. Nishida, A. Pinkham, J. van Reet, and B. Rosen.

Supporting Online Material

www.sciencemag.org/cgi/content/full/313/5795/1893/DC1

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Results for 12-year-olds.

Students in the Montessori program wrote more sophisticated and creative stories and showed a more developed sense of community and social skills. Scores were converted to average z scores (18).

[Apples vs. Oranges](#)

by [John Snyder](#) | [Montessori Blog](#)



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Montessori teachers and school administrators often hear versions of the following questions from parents who are wondering how well their children are being academically prepared in Montessori programs: *How does the Montessori curriculum compare to traditional curricula? Are Montessori elementary programs usually academically “accelerated” in relation to their traditional counterparts? How do Montessori graduates compare to other students?*

It is difficult, and I think unhelpful, to make blanket statements on these questions, one way or the other. To be sure, there are some [recent scientific studies](#), as well as a hundred years of anecdotal evidence from around the world, that attest to the academic efficacy of the Montessori approach. Dr. Montessori herself famously claimed that graduates of her elementary schools would know as much as the average Italian high school student of her day. But all this should not mislead us into thinking conventionally about what is really a very non-conventional approach to education.

Dr. Montessori’s work was not aimed at creating accelerated learning, better grades, or precocious children. Her desire was to support the development of the whole child, the whole human being – not to isolate certain cognitive powers of the human being and build an educational system based solely on these. Her method of support had mostly to do with removing what she saw as impediments to human development that are common features of conventional educational systems (both in her time and in ours). These included traditional understandings of the role of the adult in the classroom.

Secondarily, Dr. Montessori supported the children’s development by creating some brilliant educational materials designed to dovetail perfectly with the observed cognitive and psychological characteristics of children at various stages of development. Always pragmatic, she would try her ideas out in a number of classrooms, keeping the materials that children loved and used and removing the rest. In some cases, materials made for a certain age were found to be of more interest to children of a different age, and she duly noted that and made adjustments.



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The history of education is littered with the ruins of many, many educational reform movements – all of them seeking to find a better way for children to learn or a better way to shape future society. We were able to celebrate the *centennial* of the Montessori “method” in 2007, even as the worldwide Montessori movement was beginning to achieve unprecedented momentum, because her ideas were based on a lifetime of careful observation of children in real educational settings and not on what seemed right to some educational philosopher or political appointee with this or that academic or political axe to grind.

I was reminded of the importance of this real-world foundation of Montessori at a 2010 lecture by [Professor Dan Willingham](#) of the University of Virginia, a leading researcher into the cognitive science behind learning (and a Montessori dad). Professor Willingham pointed out the qualitative difference between what he as a scientist can observe in an artificial laboratory setting and what Montessori guides can observe daily in the dynamic real world of the prepared environment. Said Willingham, “The Montessori method is way beyond what cognitive science knows. We are slowly catching up.”

So, speaking to the questions with which we began, we do see many children who go farther faster in Montessori than they would have been allowed to do in a school with a lock-step curriculum – even a curriculum for the “gifted and talented.” We see some who do not. *The*

important difference is that even the ones who do “average” academic work – and even those who struggle to do any academic work at all – come out of the process with their psyches, spirits, and moral values intact; with positive attitudes toward any future educational endeavors; and with a feeling of “ownership” that comes only from being supported to educate oneself.

I was recently at a Montessori elementary teachers’ conference in Ohio. During a heated conversation about how much more new academic material Montessori elementary teachers should cover with the children, Laurie Ewart-Krocker, one of the key architects of the prestigious adolescent program at [Hershey Montessori School \(aka “the Farm School”\)](#) stood up to say, “I need to tell you, it’s not about how much material you cover. It’s about how *unimpeded* these children have been in their development. If you [elementary guides] will keep sending us *whole children*, we’ll take care of turning them into great artists, scientists, and so forth.”

Although they wouldn’t think to put it into the same words as Ms. Ewart-Krocker, high schools love Montessori graduates. I have been told by many high school teachers that our former Montessori students are the only ones that will speak up in class or show an active interest in learning. They are never the ones to ask, “Will this be on the exam?” They have “ownership” of their own educations. They are responsible, organized, and helpful. They know how to work with others and how to mediate conflict – two key leadership skills.

A former [Austin Montessori](#) student who was attending a well-respected private high school was told by an instructor that he could skip class because he was ahead of the other students and didn’t need a review session. The boy hesitated for a moment and then asked, “Well, why would I want to do that?”

What the teacher didn’t know is that “rewards” such as getting to skip class would just make no sense to most adolescents nurtured in the Montessori tradition. They would not have been comparing themselves to the rest of the class; they would not expect to be extrinsically rewarded for something excellent that they saw themselves as doing for themselves, not for a teacher; and missing out on possible learning would likely be seen as a punishment, not a reward.



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By means of contrast, I can also think of former students who waited until adolescence to learn to read fluently, to do independent research, to make friends with math or writing, or to find enough inner peace to sustain lasting friendships. When they really needed to do those things, they did them – and that, too, is part of being a former Montessori student.

My point is that all these children – those on the developmental “fast track” and those who were not – were equally well-served by their Montessori experience because they each got exactly what they needed at the time to do their very different work of self-construction. To a Montessorian, success in education is not about how many Montessori graduates are ready for “advanced placement” (although many are), or about how many go on to world-class universities (although a disproportionate number do), but about serving real children as they need to be served.

Sometimes the question is not so much about children’s performance as it is about the relative difficulty and sophistication of the curricula in Montessori and traditional public schools. Funny word, “curriculum.” It comes from the Latin “*currere*,” meaning “to run,” as does its close cousin “course” (in both its noun and verb forms). The metaphor is that of a racecourse laid out ahead of time for all the runners to follow – and may the best man win. If we speak of “curriculum” *with its common meaning*, we are already far, far away from the approach that Maria Montessori worked out for her schools – one about which she never failed to claim, “not I, but the children showed me.” If this traditional race course metaphor is what we mean by “curriculum,” then we would have to say that Montessori education has no “curriculum” at all in the traditional sense – no predefined path through knowledge that all children will follow, no mandatory checklists of lessons, no set of lessons tied to the child’s calendar age (or “grade”), no academic forced marches of any kind.



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Because we may find it difficult to imagine how learning can be structured without a traditional curriculum, to hear that Montessori has none can be alarming. We are all heirs of several thousand years of educational thinking that begins by asking the questions, “What is to be known?” and “What is the structure of that knowledge? How does this fact or skill depend on others?” The natural end product of such questioning is a curriculum – a logically coherent, stepwise plan for leading a student through some culture’s particular answer to “What is to be known?”

Having established the curriculum, the conventional educator may turn to “pragmatic” questions of method, instructional technique, educational setting, measurement, and so forth. Conclusions about these pragmatic issues may (or may not!) be informed by studies of the cognitive, emotional, and social characteristics of the children for whom the curriculum was designed. Curriculum design, then, is one thing; curriculum “implementation” another. *In this common approach, “the children” are an abstraction to be modeled, not a living part of the process.*

Maria Montessori’s big insight – the difference that made all the difference – was to start *not with questions about knowledge*, but with the “question of the child.” This “question of the child” was something that she came back to again and again throughout her long career. In effect, she turned the conventional approach on its head by asking, “What sort of being is this who learns? How does this being naturally exercise its powers of learning? How may we best serve the work of this being?” Only when she thought she had – through observation and experimentation – some insight into these questions was she ready to ask the questions of *what* and *when* – the sorts of question that are traditionally answered in the form of a curriculum.

If Montessori education does not have a linear “curriculum” in the traditional sense, what does it have? A vast, interconnected ecology of human knowledge, precisely and economically

represented, both in its content and in its interconnectedness, in the Montessori materials and the enticing, inspiring key lessons and stories that go along with them – what Dr. Montessori eventually came to call *Cosmic Education*. In such an environment that mirrors concretely the structure of knowledge, children are led by the lessons and materials to explore the interconnections for themselves, both individually and in groups, guided by the teacher who constantly observes and serves their optimal development. Skills develop naturally and deeply, according to the child’s specific blueprint for development.



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While there is no unique, linear path through the field of knowledge, children who are given the full six or seven years of the elementary for their guided explorations forge their own paths through all the disciplines. They get to all the topics that would be in a traditional linear curriculum, but there is a qualitative difference in how they “own” their learning. Nothing has been crammed or forced and immediately forgotten. There is no throw-away learning in the Montessori classroom. Instead, the child has a personal relationship with what they have learned; the knowledge is *theirs*. The result of such unimpeded learning is a young adolescent – a *whole* person, in Ewart-Krocker’s terms – who has acquired the skills, knowledge, and self-confidence necessary for their work in the next stage of life.

So let us also start with the “question of the child” instead of the “question of knowledge” and not worry too much about comparing the Montessori holistic approach to standard curricula. Better to ask “Will my child have all that he or she needs to develop to full potential in this classroom?” Chances are, if the child’s natural drive to learn is stimulated by an educational environment that is always leading children out of the classroom and into exploration of the whole world *and* supported by a home environment that protects the authentic nature of the child from harmful influences, we will get to experience for ourselves Maria Montessori’s own surprise and joy at just how far beyond our “expert” expectations the children can go.

Six to Twelve Years

1. **Seek to understand your child's developmental changes.** Your child from 3 to 6 years of age was interested in absorbing information and asking question "what" in an effort to label new information. Now your child begins to ask much more elaborate, analytical questions: why, where, when and how. He becomes curious about culture, history, animals, botany, geography, and many more topics.

His analytic nature will be accompanied by a growing interest in his peers and wanting to work in groups. Your child in his first stage of development (0 to 6 years of age) was busy creating himself, now your child will be focused on the outside world and his place in the community. This focus on the group will lead to a better understanding of acceptable behavior as defined by cultural norms. This new, moral development will give rise to questions regarding right and wrong, justice, and compassion.

2. **Understand that your child will have a distinctive learning style and approach based on his genetic propensities and his environment.** Your child has a range of capabilities dictated by his genetics that can be influenced by his environment. The smarter the environment, the stronger his skills and abilities. Seek to understand how your child's brain should be functioning from year to year within the systems of learning defined by Levine (2002). Addressing the eight core cognitive functions possessed by every individual, these systems provide the foundation for how and what a person learns:
 - a. **Language.** Sensitivity to spoken and written language including the ability to process the 44 different sounds of the English language
 - b. **Sequential Ordering.** Responsible for carrying out mathematical problem solving and analyzing information and directions (e.g., most instructions and geometry).
 - c. **Spatial Ordering.** This is the ability to visualize patterns and configurations. This is important for math and science as well as picturing images when reading.
 - d. **Motor.** The connections between the brain and various muscles.
 - e. **Social Thinking.** The ability to understand and engage in a cooperative manner with others.
 - f. **Attention control.** The administrative bureau of the brain. It regulates and controls learning and behavior. It directs the distribution of mental energy and causes your child to finish what

child share in the cooking, shopping, gardening, and cleaning. Encourage him to pack his own lunch, keep track of his own belongings, and honor his promises.

13. **Encourage your child's exploration of the world outside of the home and the classroom as he continues to orient himself to his culture and society.** He will gain a growing understanding of what is typical and acceptable behavior in society at large.
14. **Have your child arrange excursions to cultural events and the like.** Schedule outing to concerts, ballets, symphonies, plays, and art exhibits to broaden your child's. exposure.
15. **Involve your child in party/event planning for holidays and birthday celebrations.**
16. **Follow-up on your child's spontaneous interests by arranging trips to the zoo, library, museum, mountains, etc.** It is important to expose your child to a variety of rich experiences.
17. **Encourage social interaction with others in the community through various forms including sports, clubs, and community service.** One activity per week is plenty.
18. **Help your child go into the community to discover it and to experience the satisfaction of providing a service.** Consider opportunities at nursing homes, political offices, conservation centers, theatres, museums, and universities.
19. **Help your child make contact with his role models: painters, musicians, teachers, writers, firefighters, or other professionals.** This will allow your child to better understand his opportunities and possibly find mentors.
20. **Take family vacations that expose your child to different cultures and their unique attributes like food, art, language, and customs.** Study about the culture before you start the vacation.
21. **Create a home library with reference materials covering a wide variety of subjects (e.g., history, biology, geography, outer space, etc.)**
22. **Set up a room with plenty of space for different collections and purchase and provide other tools for research such as bug nets, a microscope, notebooks, and a telescope.** Provide shoe boxes for your child to arrange and group items of interest.

- 32. Provide an emotionally safe home environment where your child feels free to discuss and explore parts of himself without judgment.** Actively listen to your child. This may include repeating part of your child's words or ideas in your response. Have an honest discussion about your child's physical changes through the adolescent maturation process.
- 33. Model and support healthy self-esteem by appreciating your child's difference, helping to develop his strengths, encouraging him to have his own passions, and supporting his "down time" to think.**
- 34. Try to allow your child to follow his own rhythms in regard to eating and sleeping.**
- 35. Know your child's friends and host them frequently.**
- 36. Promote independence in daily life – cooking, cleaning, and caring for others.**
- 37. Encourage entrepreneurship, economic independence, and responsibility in handling money and personal belongings.**
- 38. Encourage your child's connection to a bigger world.** Have him read the newspaper and discuss world events. Among other things, continue to have your child attend cultural events, visit museums, and volunteer. Expect service to others and the community.
- 39. Encourage interest in studying and living abroad.**
- 40. Support weekend retreats with peers and young adult leaders.**

Failure: A Better Teacher Than Success

BY JOHN LONG, HEAD OF SCHOOL

One hundred years ago, Dr. Montessori did not anticipate computers or the Internet, though she was certainly attuned to technological development and the impact it had on the culture. Post Oak and most other Montessori schools do not introduce computers into the classroom until the child is nine years old, not because Montessori was a technophobe (she most definitely was not!), but because the young child learns best through experience in the concrete, tactile reality of the three-dimensional world rather than through two-dimensional simulation of an electronic, virtual reality.

Consider the child's experience of a cube. Does she learn more by seeing a flat, screen image of a cube (actually a two-dimensional hexagon), or by lifting a polished wooden block that measures 10 cm on each side and weighs 50 grams? After observing the way young children learn, Dr. Montessori told us, "Never give more to the mind than you give to the hand."

Furthermore, contemporary brain research demonstrates the truth in Dr. Montessori's dictum that a child constructs himself through his experiences in the environment. Dr. Bruce Perry, an internationally renowned neuroscientist and psychiatrist working in Houston, describes how this self-construction works: a child's experiences change the biology of the brain, reinforcing and strengthening certain neurons through usage while pruning others through disuse. In her book *Failure to Connect*, Dr. Jane Healy discusses the impact of "screen time" on the developing brain and recommends that we delay computer use until children are 9 or 10 years old, a recommendation consistent with our practice here at Post Oak and at many other Montessori schools.

And so it is perfectly understandable to me, though at the same time ironic, that Montessori graduates have been instrumental in the development of landmark Internet resources that have helped to transform our culture. In the past we have mentioned:

- Jeff Bezos, who founded Amazon.com, one of the first major companies to sell goods over the Internet, shaping the face of American commerce;
- Sergey Brin and Larry Page, who founded Google, the search engine that made the Internet more accessible and therefore more useful to a broader public;
- Jimmy Wales, who created Wikipedia, the multi-lingual, Web-based encyclopedia that is written by reader-contributors and challenges many of the

traditional assumptions about authorship, ownership, and information itself.

The November 6 issue of *The New Yorker* offers a profile of Will Wright, another former Montessori student and the developer of *SimCity*, which changed the concept of video games. *SimCity* is a computer simulation game of city-building. The game sparked a new paradigm in computer gaming by creating a game that could neither be won nor lost.

The New Yorker reports, "*SimCity* was slow to catch on, but seventeen years later the game has earned the company two hundred and thirty million dollars. A sizable number of players who first became interested in urban design as a result of the game have gone on to become architects and designers, making *SimCity* arguably the single most influential work of urban-design theory ever created."

The article describes the impact of Montessori education on Will Wright:

"Wright flourished in the local Montessori school, with its emphasis on creativity, problem-solving, and self-motivation. 'Montessori taught me the joy of discovery... It showed you can become interested in pretty complex theories, like Pythagorean theory, say, by playing with blocks. It's all about learning on your terms, rather than a teacher explaining stuff to you. *SimCity* comes right out of Montessori—if you give people this model for building cities, they will abstract from it principles of urban design.'"

Wright then compares his experience in Montessori to traditional education: "The problem with our education system is we've taken this kind of narrow, reductionist, Aristotelian approach to what learning is.... It's not designed for experimenting with complex systems and navigating your way through them in an intuitive way, which is what games teach. It's not really designed for failure, which is also something games teach. I mean, I think that failure is a better teacher than success. Trial and error, reverse-engineering stuff in your mind—all the ways that kids interact with games—that's the kind of thinking schools should be teaching. And I would argue that as the world becomes more complex, and as outcomes become less about success or failure, games are better at preparing you. The education system is going to realize this sooner or later."

I am sometimes asked if, after a hundred years, Montessori education has kept up with the times. What I see is far more dynamic than simply "keeping up." I see Montessori adults who are shaping our times, transforming the way we do business, the way we play, the way we seek information. They are transforming the very media that are reshaping our culture—proof that Montessori prepares children for a lifetime of creative engagement.



The Growing Brain In a Changing World

by Jane M. Healy, Ph.D.

Although I am not a Montessorian, I find that the more I read current research about the developmental trajectory of the growing brain, the more I become aware that Maria Montessori already realized a great deal of what we know now—and she did it without the benefit of scanners, f-MRIs, and complex technologies. How did she do it? She watched children, of course. And she watched them sensitively, intelligently, and with an eye to appreciating how each youngster's pattern of development was unfolding. A very impressive accomplishment and, unfortunately, not one often emulated in today's top-down educational systems!

I have been devoting a great deal of personal thought to the question of what is happening to children in this pressured, unpeaceful, and mechanistic world we inhabit. My research has focused particularly on the increasingly "mechanistic" aspect of this world of childhood, as youngsters are ever-earlier "plugged into" electronic equipment and toys in an effort to "prepare them for the future" (such nonsense!), make them smarter (likewise nonsense), and, frankly, stay out of the hair of caregivers who have little time, respect, or patience for the critical process of children's development. A colleague in New York recently referred to the parent practices as "product development," and this observation may not be too far off the mark!

Thus my thesis is very simple, and yet all-too-complex: If we allow our children to be raised and educated by machines, we should not be surprised if they grow up without humanity. And it seems to me that the potential for peace in our world springs directly from our own humanity, which is directly related to the ability of the human brain to find peace within itself.

This personal ability to be at peace, both inside and outside, does not develop automatically, but is engendered in the brain by life experiences beginning even before birth, and it is highly dependent on the cultural milieu and value systems which surround it. No argument should exist that we here in the United States live in a culture of violence, when the most popular video game last year, "Grand Theft Auto III," includes scenarios which are too gross to even describe to a polite audience. The fact that this game, and others, are labelled appropriate for adults, does not keep it from being the top-seller in the young teenage market as well.

Not only does research clearly support the fact that such virtual violence engenders violent behaviors and thoughts in many of the young, but it is certainly possible that at least some of the documented "need" to drug many youngsters with powerful anti-psychotic medications (for attention problems, for depression, for antisocial, etc., etc.) stems from rearing environments which are out-of-sync with children's basic needs for a secure, safe, nurturing, and appropriately challenging environment.

Some of you in the room are working with youngsters who are disadvantaged in far more obvious ways, struggling on the other end of the economic scale with, paradoxically, the same core issue, namely, a world that is all too ready to sell out children's developmental needs for more expedient gains. What kind of humanity can we expect of children growing up in a state of appalling and desperate need—especially when a recent statistic indicated that every child in the world could be put into school for what it costs in one year to keep Americans in cosmetics?

The Developmental Roots of Humanity

Where does humanity come from? Current research offers some clues. First of all, the potential for either a peaceful or violent mind appears to be partially genetic—just as a child's temperament comes with the package. Nonetheless, just as bad table manners may run in families, one's capacity for a humane and peace-loving disposition is also physically developed in the brain, particularly in the complex involving the pre-frontal areas of the cortex, by the environments in which children live and are schooled. This most essentially human part of the brain is referred to as "the executive system" and enables us to choose socially and personally constructive and appropriate behaviors. It enables forward planning, inhibition of impulse, socialization, inner thought, and reflection; in short, it is critical for individual self-regulation and, by extension, for cultural stability. Interestingly enough, it is very closely tied to lower systems in the so-called "emotional brain," and may depend on early emotional development for its full fruition.

The Hormone Surge of Middle Childhood

By **NATALIE ANGIER**

VIEWED superficially, the part of youth that the psychologist Jean Piaget called middle childhood looks tame and uneventful, a quiet patch of road on the otherwise hairpin highway to adulthood.

Said to begin around 5 or 6, when toddlerhood has ended and even the most protractedly breast-fed children have been weaned, and to end when the teen years commence, middle childhood certainly lacks the physical flamboyance of the epochs fore and aft: no gotcha cuteness of babydom, no secondary sexual billboards of pubescence.

Yet as new findings from neuroscience, evolutionary biology, paleontology and anthropology make clear, middle childhood is anything but a bland placeholder. To the contrary, it is a time of great cognitive creativity and ambition, when the brain has pretty much reached its adult size and can focus on threading together its private intranet service — on forging, organizing, amplifying and annotating the tens of billions of synaptic connections that allow brain cells and brain domains to communicate.

Subsidizing the deft frenzy of brain maturation is a distinctive endocrinological event called **adrenarche** (a-DREN-ar-kee), when the adrenal glands that sit like tricornered hats atop the kidneys begin pumping out powerful hormones known to affect the brain, most notably the androgen dihydroepiandrosterone, or DHEA. Researchers have only begun to understand adrenarche in any detail, but they see it as a signature feature of middle childhood every bit as important as the more familiar gonadal reveille that follows a few years later.

Middle childhood is when the parts of the brain most closely associated with being human finally come online: our ability to control our impulses, to reason, to focus, to plan for the future.

Young children may know something about death and see monsters lurking under every bed, but only in middle childhood is the brain capable of practicing so-called terror management, of accepting one's inevitable mortality or at least pushing thoughts of it aside.

Other researchers studying the fossil record suggest that a prolonged middle childhood is a fairly recent development in human evolution, a luxury of unfolding that our cousins the Neanderthals did not seem to share. Still others have analyzed attitudes toward middle childhood historically and cross-culturally. The researchers have found that virtually every group examined recognizes middle childhood as a developmental watershed, when children emerge from the shadows of dependency and start taking their place in the wider world.

Much of the new work on middle childhood was described in a [recent special issue of the journal Human Nature](#). As a research topic, “middle childhood has been very much overlooked until recently,” said David Lancy, an anthropologist at Utah State University and a contributor to the special issue. “Which makes it all the more exciting to participate in the field today.”

The anatomy of middle childhood can be subtle. Adult teeth start growing in, allowing children to diversify their diet beyond the mashed potatoes and parentally dissected Salisbury steak stage. The growth of the skeleton, by contrast, slows from the vertiginous pace of early childhood, and though there is a mild growth spurt at age 6 or 7, as well as a bit of chubbing up during the so-called adiposity rebound of middle childhood, much of the remaining skeletal growth awaits the superspurt of puberty.

“Adulthood is defined by being skeletally as well as sexually mature,” said Jennifer Thompson of the University of Nevada, Las Vegas. “A girl may have her first period at 11 or 12, but her pelvis doesn’t finish growing until about the age of 18.”

The 18-year time frame of human juvenility far exceeds that seen in any other great ape, Dr. Thompson said. Chimpanzees, for example, are fully formed by age 12. With her colleague Andrew J. Nelson of the University of Western Ontario, Dr. Thompson analyzed fossil specimens from Neanderthals, *Homo erectus* and other early hominids, and concluded that their growth pattern was more like that of a chimpanzee than a modern human: By age 12 or 14, they had reached adult size.

Life for Neanderthals was nasty and short, Dr. Thompson said, and Neanderthal children had to get big fast, which is why they hurtled through adolescence at the equivalent of today’s chapter-book age. Our extreme form of dilated childhood didn’t appear until the advent of modern *Homo sapiens* roughly 150,000 years ago, Dr. Thompson said, when adults began living long enough to ease pressure on the young to hurry up and breed.

And what an essential luxury item middle childhood has proved to be. “It’s consistent across societies,” Benjamin Campbell, an anthropologist at the University of Wisconsin in Milwaukee said. “In middle childhood, kids start making sense.”

Parental expectations rise accordingly. “Kids can do something now,” said Dr. Campbell, who edited the special issue. “They can do tasks. They have economic value.”

Boys are given goats to herd and messages to deliver. They hunt and fish. Girls weave, haul water, grind corn, chop firewood, serve as part-time mothers to their younger siblings; a serious share of baby care in the world is performed by girls

not yet in their teens.

Workloads and expectations vary substantially from one culture to the next. Karen Kramer and Russell Greaves of Harvard compared the average number of hours that girls in 16 different traditional cultures devoted each day to “subsistence” tasks apart from child care. Girls of the Ariaal pastoralists in northern Kenya worked the hardest, putting in 9.6 hours daily. Agriculturalist girls in Nepal worked 7.5 hours a day.

Then you come to the more laid-back lives of the foragers. The researchers focused on the Pumé, a foraging group in west-central Venezuela, where preadolescent girls do almost nothing. They forage less than an hour a day, significantly less than their brothers, and are very inefficient in what little they do. They prefer hanging out at the campsite. “Pumé girls spend their time socializing, talking and laughing with their friends, beading and resting,” Dr. Kramer said.

But most cultures mark the beginning of middle childhood with some new responsibility. Kwoma children of Papua New Guinea are given their own garden plots to cultivate. Berber girls of northern Africa vie to prove their worth by preparing entire family meals unassisted.

In the Ituri forest of Central Africa, Mbuti boys strive to kill their first “real animal,” for which they will be honored through ritualized facial scarring. And in the United States, children enter elementary school, for which they will be honored through ritualized gold starring.

In middle childhood, the brain is at its peak for learning, organized enough to attempt mastery yet still fluid, elastic, neuronally gymnastic. Children have lost the **clumsiness** of toddlerhood and can become physically gymnastic, too, and start practicing their fine motor skills. And because they are still smaller than adults, they can grow adept at a skill like, say, spear-tossing, without fear of threatening the resident men.

Middle childhood is the time to make sense and make friends. “This is the period when kids move out of the family context and into the neighborhood context,” Dr. Campbell said.

The all-important theory of mind arises: the awareness that other people have minds, plans and desires of their own. Children become obsessed with social groups and divide along gender lines, girls playing with girls, boys with boys. They have an avid appetite for learning the local social rules, whether of games, slang, style or behavior. They are keenly attuned to questions of fairness and justice and instantly notice those grabbing more than their share.

The mental and kinesthetic pliancy of middle childhood can be traced at least in part to adrenarche, researchers said, when signals from the pea-size pituitary at

the base of the brain prod the adrenal glands to unleash their hormonal largess. Adrenal hormones like DHEA are potent antioxidants and neuroprotectants, Dr. Campbell said, and may well be critical to keeping neurons and their dendritic connections youthfully spry.

Evidence also suggests that the adrenal hormones divert glucose in the brain to foster the maturation of the insula and anterior cingulate cortex, brain regions vital to interpreting social and emotional cues.

In middle childhood, the brain is open for suggestions. What do I need to know? What do I want to know? Well, you could take up piano, chess or juggling, learn another language or how to ski. Or you could go outside and play with your friends. If you learn to play fair, friends will always be there.



Testing Mania: Test Performance is Not a Measure of Learning

By Angeline Lillard, Ph.D.

The Bush administration has laudably put education at the top of its domestic agenda with the No Child Left Behind Act. But the goal of improving learning may well backfire due to how the accountability component of the education act is implemented: highly focal standardized tests. The accountability component of the No Child Left Behind Act calls for all 3rd through 12th grade children to take annual standardized tests in math, reading, and science by the year 2007. Schools whose children fail to meet standards will be held accountable. On the surface this certainly sounds like a positive plan, and many very intelligent people embrace it, but research on the impact of this kind of testing on learning should give us pause.

Research shows that children do not actually learn better when there is an emphasis on test performance, even when those tests are of the everyday sort children routinely take in school. For example, in one study children read a short passage. Some students were told, "After you are finished, I'm going to test you on it. I want you to see how much you can remember. You should work as hard as you can because I'll be grading you on the test to see if you're learning well enough." A second group of students was simply told that they would be asked questions about how much they liked the passage, how difficult they found it, and so on.

It is probably no secret to children taking state accountability exams that they are taking them for the reasons given to the first group, not the second. A typical response to why one has to take Virginia's Standards of Learning test is, "So they can see whether I am ready to go on to the next grade." After reading, all the children in the study were asked to recall as many facts from the passage as they could, and to write an essay describing the main point (for conceptual learning). The same test was administered (by surprise) one week later to examine retention of facts and concepts. The outcome was that the second group of children scored the highest on conceptual learning, indicating better understanding of the passage. In addition, one week later children in the second group remembered almost all of the facts and concepts they had learned initially, suggesting that their initial score was a good measure of lasting learning. The first group memorized more facts initially, but by one week later they had forgotten so many that they recalled no more than did the first group. And their conceptual learning was inferior.

Other studies echo the point. For example, a study in Great Britain examined math performance in two different schools that were similar at the outset in terms of students' math scores and in terms of socioeconomic factors. But over the three years of the study, one school heavily emphasized preparation for standardized tests, while the other school paid little attention to those tests. Teaching methods were suitable different for these ends, with the former school attending to the children's learning of specific mathematic procedures that they would be tested on, and the latter school giving open ended problems which the students were to solve alone or in small groups. The end result was that the children at the second school did better on the standardized tests than did the children at the first school. More importantly, their knowledge of math was flexible and could be applied to new situations they had never before encountered.

Children who had been learning in preparation for tests, in contract, seemed to have "inert" knowledge: they did not know how to apply their learning outside of the very specific context in which they had been taught. These and other studies indicate that learning in preparation for testing is superficial, inflexible and not retained.

Research also suggests that the conditions created by the accountability impair teaching. Under the education act, when students do not do well on the tests, schools and thus teachers will be held accountable, making way for a system of teacher rewards (positive and negative) tied to student performance. Illustrating the negative effects of such systems, in one study, a group of tutors was told they would be given movie tickets if their proteges learned well, and another group of tutors was not offered any reward. Tutoring sessions were videotaped, and tutee learning was later assessed. Although the tutors who were not anticipating rewards spent less time teaching, their students learned more than did the students of other tutors, suggesting teaching is more efficient when its success is not tied to a reward. In addition, the videotapes revealed that when a reward was hinged to student performance, tutors



Testing Mania:

Test Performance is Not a Measure of Learning

showed little positive emotion in their interactions, and they used forms of communication to negatively impact learning, such as criticizing the child as a person. No-reward tutors used more positive approaches. Tutors are of course not teachers, but the results are suggestive. Teachers in low-income neighborhoods face tremendous challenges, and this research suggests that adding the risk of losing their jobs if their disadvantaged students do poorly on a standardized test may not lead to the outcomes we hope for.

The purveyors of standardized tests will note that children perform better on the tests each year, and will take that as evidence that the tests are working to improve learning. But what children will be learning is how to take and do well on those particular tests. Other learning may go out the window. For example, juniors in my high school district no longer do what was once considered one of the hallmarks of their high school career, a major history paper, because there is simply not time with the Standards of Learning tests to prepare for. Is the skill of choosing among multiple choice options (which the accountability exams largely consist of) really what we want children to learn, in lieu of learning to write, to analyze problems, and to develop creative and workable solutions? Teaching to the test leads to learning to the test, and the test our children really need to pass is one of living a meaningful, productive life, not their state's standardized accountability exam.

Even parents who are reasonable pleased with their local elementary school should be very concerned when their child's teacher has to give to such exams energy that might instead be focused on their child's conceptual learning and personal development. Those who are not pleased with the current state of schooling should not mistake that these tests are a panacea; they may be an illusionary fix. Further, as the research described here shows, they may fly against one of the other main components of the No Child Left Behind Act: using scientifically-supported best educational practices. True solutions to the problem of poor learning in schools would come from radical restructuring of schools to align with scientific evidence on how people learn.

Biographic Information

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Computers in the Montessori Home: Guidelines for Decision-Making

By John R. Snyder

Thirty years ago, digital computers were large, complex machines expensive enough to be owned only by businesses, universities, and agencies of government. 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 laptops 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, because so many parents are themselves new to the computer or new to Montessori education, it is 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 7 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 7 learn in ways very different from those of adults and older children. Young children learn primarily through physical movement and by using all their senses to explore the physical environment. Computers restrict both 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,
- 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 Montessorian 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 positive 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.

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.

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. 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 20-30 minute session per day, at most. Longer sessions can be a strain on young eyes, necks, and hands.

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 (www.allianceforchildhood.org).

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MONTESSORI HOMEWORK

Why Homework?

Both a century of Montessori experience and the last thirty years of educational research agree

1. that people learn best when they are learning something that personally interests them and
2. that having some sense of control over one's learning is a prerequisite of personal interest.

Moreover, coercing someone to “learn” something in which they have no personal interest may- while it may seem to work in the short term- have unintended consequences in the long term. The negative emotion that accompanies being coerced to “learn” is likely to remain permanently attached to the subject of the “learning” and may obstruct future attempts to learn that subject. Moreover, repeated experiences of this sort typically lead to passivity in the learner and frequently to the development of a negative self-image with regard to one's ability and fitness to learn a broad range of subjects and skills. These are among the main reasons why Montessorians typically do not give assignments and, in particular, why we do not assign traditional homework.

On the other hand, the freedom to choose one's work and to go as deeply as possible into a few subjects means that the learner may need to spend more time learning in order to get a well-rounded education. The school day is short, and there is simply not enough time for most children to cover all the bases during the school day. For this reason, Elementary guides depend on their parent partners to provide a *rich learning environment* at home where the child can build on the work they began at school. In the absence of traditional homework assignments, it may seem that the parents of Montessori students are not as directly involved in their children's homework as parents of traditionally educated children. On the contrary, Montessori children have more work to do at home than anyone, and their parents must be highly involved and highly resourceful. It's hard work, but good work – just like guiding an Elementary class.

In summary:

1. Homework is **not optional** for Montessori students.
2. We need parents to engage with their children in supporting their education after class hours.
3. The absence of screens and social phone calling on school nights creates the **time** for homework.
4. **Assignments** are not very effective and may be harmful. They are simply a pain to police.
5. A homework list, to which the child and parent may add similar activities, offers the important element of **choice**.

What Homework?

If homework is not assigned reading, worksheets, and projects with deadlines, what is it? We are looking for many opportunities for the children to both consolidate and expand the knowledge they are working with in the classroom. Inevitably, these real world experiences will also spark new questions and other interests which the child will bring back to the classroom, enriching both their own classroom work and that of the other children. We want to foster this sort of “virtuous feedback loop” between school and home to the benefit of both, and to the great benefit of the child.

For learning to be assimilated and integrated, it must be repeated in another setting. It must go from school to home and be recalled, revisited, repeated. Recalling, revisiting, and repeating in the same setting is not as effective.

We are looking not for worksheets and assignments but for *learning as a way of life*, both at home and at school. And, of the two, the home will ultimately have a far greater influence on the child's future way of life than will the school.

In Summary:

1. Things begun or done at school should be **recalled, revisited, and repeated**.
2. The homework idea-list, to which the child's parent may add similar activities, offers the most important element: **CHOICE**.
3. Montessori homework seeks to inculcate **learning as a way of life**.

Guidelines for Home Work

In order to better support learning as a way of life, we are providing the following guidelines for the child's work at home:

1. The child should spend at least **three hours per day** on Montessori homework. Three hours a day of homework allows the child to spend time each day on a **wide variety of activities**: physical exercise, service, intellectual activity, household responsibilities, the arts, etc.
2. At least 30 minutes of that time must be spent **reading**.

Montessori Home Work Ideas

Creative Arts / Construction

- Knit, crochet, spin, weave, sew, quilt, hook rugs, embroider, tie-dye, beadwork, paint, and sculpt.
- Make pottery.
- Learn new art projects by reading in books or taking an art class. Prepare an art project to teach to the class.
- Take weaving classes at our local Art Center.
- Get a good book on tying knots and learn as many knots as you can.

- Work with a knowledgeable adult to build a fence, a doghouse, a bike ramp, a bookcase, a bench, etc.
- Find an adult who has a lot of tools and likes to build or repair things. Learn the names of all the tools the adult has. Learn to write the names as well as say them.
- Learn what each tool is used for.
- Learn photography – how to take a really good picture.
- Learn how to operate a video camera. Make your own movies. Document a week in the life of your family using a cam-coder or camera. Write a paragraph about each family member and what they are currently up to. Mail the package to your grandparents or some other relative or friend who would like to receive the update.

- Practice your musical instrument or learn new songs to sing. If possible, take private music lessons on your musical instrument.
- Learn a new song to teach the class. Bring a copy of the words when you teach it to us.
- Learn to dance.
- Get a copy of *Curve Stitching* by Jon Millington and work your way from front to back.
- You'll be ready to invent your own curve stitching designs next year!
- Visit one of the art museums in town. Visit the gift shop after you've toured the museum.
- Buy postcards of your favorite works, and try to copy them at home with colored pencils or watercolors.
- Go to symphony concerts and concerts of folk music from other countries.
- See a play or take an acting class.

Language / Words / Literature

- Schedule a weekly trip to the public library. Plan to spend at least an hour looking through books, looking up things in the catalog, reading magazines, etc.
- Take regular trips to the bookstore.
- Read books from the Terra/Nova Reading List or try to read all the Newbery award books. Keep a list of the books and the number of pages you read in each. Write a description of a friend, a friend's house, a pet, a favorite place, a vacation spot, etc.
- Interview your family and relatives. Start a family newsletter.
- Enter an essay, story, or poetry contest. Submit your work to magazines that publish student work. Stone Soup is a one resource.
- Practice telling stories. At the library, look for books of folktales from around the world. Pick a few to learn by heart. Tell them to your classmates.
- Find a newspaper article you want to read and discuss with your family. Set aside a family reading time. Everybody reads whatever he or she wants in the same room. Start small: perhaps for 15 minutes after dinner. Gradually increase the time.
- Have a read-aloud time. One person could read while the others clean up from dinner or do some other simple task. Family members take turns being the reader.
- At the bookstore, look for books of crossword puzzles, anagrams, and other word games. Keep a book of word puzzles in the car to work on whenever you are riding around.
- Play great board games such as Scrabble, Up-Words, Boggle, or Word Thief.
- Write with your family. Start a family journal. In the journal, keep lists of things to around the house, descriptions of special events such as hosting houseguests, notes about phone calls to family friends and relatives, anything you want to record from your everyday life. See Peter Stillman's book *Families Writing* for more ideas and inspiration.
- Listen to books on tape while driving around on errands or on vacation.
- Read and write poetry. Memorize a poem a week.
- Choose a story to practice reading aloud. Practice the pronunciations of all the words.
- Try giving each character a different voice when you read. Try to use your voice to make the story more interesting to your audience.
- Put on some calming music (Bach, Mozart, Satie, Gregorian chant are nice) and practice making the most beautiful cursive or italic letters you can.
- Instead of phoning, write letters to your friends and relatives. Try starting a round robin letter to your friends or relatives. First, make up a list of 3 – 5 people and their addresses; put your name and address last on the list. Write a letter to the first person on the list, and enclose a copy of the list of addresses. The person you wrote to writes a letter and sends it, your original letter,

and the list of addresses to the next person on the list, and so forth. Eventually, all the letters will come back to you!

- Write a review of a book you read or a movie you saw. Tell the basic idea of the book or movie and what you liked and didn't like about it. What did the author do well? What did they not do so well?
- Learn to touch-type (that is type without looking at the keys or your fingers).

Math / Numbers / Geometry

- Comparison shop: figuring price per pound, calling various stores, etc. When you shop at the grocery store, take along a pad and pencil; keep a running total of the cost of items you buy. Check your answer against the cash register receipt you get when you pay for your items.
- Read *The Number Devil* by H. M. Enzensberger. This an especially good book for people who have not yet learned to love math, but those who have will enjoy the book, too. Every Upper El student should read this book.
- Keep statistics. Graph when you go to bed, how many pages you read each day, how far you walk each day, how many ounces of water you drink per day, how often you have friends over, how long it takes you to eat breakfast, how many meters per day you swim, how fast you can jog around the block, how many multiplication facts you can do in a minute, etc.
- Measure things around the house and calculate their surface area and volume. Take trips to the park, etc., to measure things there.
Help with the family budget. Record the family expenditures for a week. Help your parents write the checks when they pay the bills (they'll have to sign the checks).
- Play good "thinking" games such as chess. Learn how to notate chess games. Learn to play chess by mail with your friends (that's where you mail your moves back and forth on post cards or in letters).
- Make up math problems for yourself to work. Consider making a "Math Workout" for yourself once a week.
- Work on memorizing all your multiplication, division, addition, and subtraction facts.
- Once you've mastered your math facts, work on speed.

Nature / Plants / Animals

- Whenever you travel to a new city, visit the local zoo and aquarium or the local natural history museum.
- Before you travel to another part of the country or to a different country, read about the biomes there. Read about their climate, animals, and plants. While you're there, look for things you read about.
- Go camping with your family or friends.
- Learn more about nutrition. Visit www.hsph.harvard.edu/nutritionsource/pyramids.html to learn about the Harvard Food Pyramid. For a week, keep a journal of what you eat. See if you are in balance with the Harvard Food Pyramid. Pick one or two things you can do to start moving your diet closer to the recommendations of the pyramid.
- Make a botany map of your back yard. Place each plant in its place on the map and label each plant with its common name and scientific name. (You might need some help from a library book or a knowledgeable adult gardener.)
- Go berry picking on a local farm such as Impossible Acres
- Visit Woodland Veterinary Hospital and inquire about their VSI: Veterinary Science Investigation classes.

- Visit the Bohart Entomology Museum at UC Davis.
- Visit the UC Davis Botanical Conservatory
- Visit the UC Davis arboretum. Walk around and find some interesting plants to sketch, research and report on.

History / Geography

- Help plan the family vacation or an outing. Research the landmarks, geography, culture, special attractions of the area you'll be visiting. Map out the route you'll take.
- Make a map of your house and gardens. Make a detailed map of your room.
- Study world religions. Pick a religion you don't know much about. Read about it in books you check out from the public library. See if you can find a local group that practices that religion. Plan with your parents to visit their church, temple, synagogue, mosque, or other place of worship. Good religions to start with: Baha'i, Buddhism, Christianity (Catholic, Orthodox, Protestant), Hinduism, Islam, Judaism, Sikhism, and Unitarianism.
- Visit the California History Museum in Sacramento
- Visit the Crocker Art Museum
- The website at <http://www.kryo.com/dinek/histlink.htm> links to scores of other sites on ancient civilizations.
- Pick a continent you'd like to know more about. (If you can't decide, work on Europe first.) Using an atlas, make flash cards of all the countries in that continent. On one side of the card have the country's name; on the other side, the country's capitol city.
- Memorize all the countries and capitols in that continent, and then do the same for another continent.
- Interview someone from another country. Ask them about their country's history, landmarks, cities, agriculture, industries, religions, festivals, form of government, famous scientists, famous artists and writers, etc. Ask them for permission to tape the interview. From the tape, make notes. From the notes, write a summary of what you learned about the person's country.

Science

- Check out Explorit in Davis.
- Learn the stories of the constellations. Find someone with a telescope and study the stars.
- At the library, look through the children's books on science. Choose one that has experiments you can do at home, such as the books by Janice Van Cleave. Try some experiments at home with your parents.
- Try some of the activities from the San Francisco Exploratorium website: www.exploratorium.edu/explore/handson.html
- Explore the *Life on Earth* site at the University of California – Berkeley. www.ucmp.berkeley.edu/exhibits/historyoflife.php. This is pretty advanced stuff, but, boy, is it cool!

Sports / Exercise

- Play on a team. Practice a sport or physical skill.
- Hike, bike, skate, swim, walk, go caving, climb, canoe, golf, snorkel, run, do gymnastics, play basketball...
- Spend as much time outdoors as possible.

- Work on developing the habit of drinking enough water each day. To find the minimum amount of water your body needs to avoid dehydration, use the following formula: *(your body weight in pounds ÷ 10) × 2 = minimum ounces of water you need each day* You'll need to drink more than that if you are exercising in the heat.
- Download a free book of cooperative games at freechild.org/gamesguide.pdf. Try these with your friends.
- Check out the rock climbing places in Sacramento.
- Play hockey or skate at an indoor sports center.

Community Service / Activism

- Keep a scrapbook of newspaper articles on issues you care about in the community or world. Write letters to elected officials (congresspersons, senators, the President, city councilors, etc.) expressing your opinions about issues you've read about.
- Teach lessons of something you're skilled at.
- Babysit younger children
- Help a parent who has work to do at home. Be a Mother's Helper.
- Participate in an environmental clean up. This might be as simple as going to the park with your family or friends and filling up a big trash bag with all the trash you can pick up. Save recyclable bottles and plastic in a separate bag to recycle later.
- Help younger children learn to do something they want to do.
- Visit an elder. Look for opportunities to assist the elderly. Some children call out bingo at a retirement home every other week.
- Volunteer at a local animal shelter or zoo. Does a Raptor Center need help? How about local County Animal Shelter?
- Volunteer at Meals on Wheels.
- Offer to help neighbors with pet sitting, picking up their newspaper when they're out of town, etc.

Household Service

- Help out more with the household chores since you have more time at home. Learn to do some new things such as washing clothes, ironing, folding laundry, polishing furniture, vacuuming, mowing the lawn (if your parents agree). Work alongside another family member whenever possible.
- Cook together with your family. It can be more fun than cooking by yourself.
- Be responsible for one or two meals per week. Plan the menu with your parent(s). Make a shopping list. Do the shopping. Cook the meal with your parent(s). Try not to use a microwave oven when you cook!

Adapted from Austin Montessori, 2009

9-12 Reading List

(Descriptions are from Amazon and author websites)

Alcott, Louisa May *Little Women* 472 pages 10+

Alcott's semi-autobiographical classic, set in Boston during and just after the Civil War, follows the four March sisters as they struggle to overcome poverty and grow into proper young ladies. Meg, the oldest, is pretty but swayed by material temptations; Jo is a good-hearted tomboy and writer; Beth is a shy, sweet music lover; and Amy, the youngest, is a little selfish but very social and elegant. Even as the girls bicker like all siblings, they keep their loving home together as they wait for their father to return from the war.

Auchter, Mary Jane *Ashes of Roses* 256 pages 12+

Sixteen-year-old Rose Nolan and her family are grateful to have finally reached America, the great land of opportunity. Their happiness is shattered when part of their family is forced to return to Ireland. Rose wants to succeed and stays in New York with her younger sister Maureen. The sisters struggle to survive and barely do so by working at the Triangle Shirtwaist Factory. Then, just as Rose is forming friendships and settling in, a devastating fire forces her, Maureen, and their friends to fight for their lives. Surrounded by pain, tragedy, and ashes, Rose wonders if there's anything left for her in this great land of America.

Babbitt, Natalie *Goody Hall* 192 pages

An out-of-work actor, Hercules Feltwright, stumbles into a job tutoring Willet Goody, the only child of a widow living in a large, lonely house. Willet quickly involves his tutor in the search to discover the truth about his father. The mystery unfolds with the discovery of hidden treasure, a gypsy séance, and the frightening exploration of the tomb of Midas Goody.

Baker, Betty *Walk the World's Rim* 254 pages

A 14-year old Indian joins Cabeza de Vaca's 16th-century expedition through the Southwest. A vivid portrait of Mexican life and the harsh conditions of a primitive Indian tribe.

Beatty, Patricia *Charlie Skedaddle* 186 pages 10+

Fighting is important to Charley Quinn, 12, a street-tough New York Bowery Boy who runs away from his Irish-Catholic home to join the Union forces in Virginia. But war proves much more horrible than he'd thought so terrible, in fact, that he deserts, giving himself the disparaging name "Skedaddle." Afterward, Charley takes refuge in the mountains with Granny Bent, a midwife with her own secret loyalties. This well-crafted, somewhat episodic novel makes the point that fighting brings honor, and cowardice, shame.

Blair, Susan Barry *Adventures on the High Seas* 88 pages

A young girl and her family set out for the adventure opportunity of a lifetime. It's an exciting story about a family's life onboard a 38-foot sailboat and their many experiences along the way. They embark on a year-long voyage beginning in England with proposed stops in Spain, the Canary Islands, the Caribbean and Bermuda. Nothing ever goes as planned and their journey detours to Africa and later to America where they eventually settled.

Blos, Joan *A Gathering of Days* 144 pages

The journal of a fourteen-year-old girl, kept the last year she lived on the family farm, records daily events in her small New Hampshire town, her father's remarriage, and the death of her best friend. Received the 1980 Newberry Award.

Blyton, Enid *The Enchanted Wood* 213 pages

Jo, Bessie and Fanny move to the country and find an Enchanted Wood right on their doorstep! And in the wood stands the magic Faraway Tree, and in that tree live the magical characters that soon become their new friends - Moon-Face, Silky the fairy, and Saucepan Man. Together they visit the strange lands (the Roundabout Land, the Land of Ice and Snow, Toyland and the Land of Take What You Want!) which lie at the top of the tree and have the most exciting adventures - and narrow escapes!

Tim and Sam's father. With the war soon raging, Tim know he'll have to make a choice -- between the Revolutionaries and the Redcoats . . . and between his brother and his father.

Conrad, Patricia *Stonewords: A Ghost Story* 130 pages 10+

Zoe was overjoyed to find a playmate already in residence when she came to live in her grandparents' old house. The girls shared everything, toys, a playhouse, even the same name--everything except time: Zoe Louise is a visitor from another century. As Zoe grows up she begins to wonder about Zoe Louise's strange behavior. She follows her back in time to learn the terrible truth--that only she can prevent her soulmate's untimely death.

Cowley, Marjorie *Dar and the Spear Thrower* 128 pages

On the verge of the ceremony that will initiate him into manhood, young Dar, a Cro-Magnon boy, faces the conflicts in his life: his demanding uncle who has no tolerance for his nephew's desire to carve, his grandmother's growing frailty, and his own fears. When he wanders farther than usual one day to check some snares, he meets a man from a different tribe. The man, Toreg, has a device that enhances the distance he can throw his spear. Determined to trade for it, Dar leaves his tribe and begins a journey that will change life for his entire clan.

Cushman, Karen *Catherine, Called Birdy* 176 pages

Catherine one day hopes to become a painter, a Crusader, a peddler, a minstrel, a monk, a wart charmer . . . anything besides being sold like a cheese to the highest bidder. Winner of the Newbery Honor award.

Dahl, Roald *Matilda* 240 pages

Matilda is a little girl who is far too good to be true. At age five-and-a-half she's knocking off double-digit multiplication problems and blitz-reading Dickens. Even more remarkably, her classmates love her even though she's a super-nerd and the teacher's pet. But everything is not perfect in Matilda's world. For starters she has two of the most idiotic, self-centered parents who ever lived. Then there's the large, busty nightmare of a school principal, Mrs. ("The") Trunchbull, a former hammer-throwing champion who flings children at will and is approximately as sympathetic as a bulldozer. Fortunately for Matilda, she has the inner resources to deal with such annoyances: astonishing intelligence, saintly patience, and an innate predilection for revenge.

DeAngeli, Marguerite *The Door in the Wall* 128 pages 10+

This Newbery Medal winning story, set in medieval times, is about a boy who learns his own strength when he saves the castle and discovers there is more than one way to serve his king.

DeFelice, Cynthia *Weasel* 128 pages

A ruthless villain known as Weasel commits unspeakable atrocities in the frontier wilderness. When 12-year-old Nathan's family is victimized, the boy is determined to avenge the wrongs on his own. A masterfully told, riveting tale sure to inspire strong discussion about moral choices.

DeJong, Meindert *Shadrach* 192 pages

Even after Davie had had the little black rabbit, Shadrach, for several weeks, it was still almost unbelievable. Every morning when Davie woke up it was a miracle all over again -- there in his grandfather's barn sat a wriggle black rabbit, and it was *his*. David had never been happier...until the day Shadrach slipped through the stats of his hutch and disappeared.

DiCamillo, Kate *Because of Winn Dixie* 192 pages

Because of Winn-Dixie, a big, ugly, happy dog, 10-year-old Opal learns 10 things about her long-gone mother from her preacher father. Because of Winn-Dixie, Opal makes new friends among the somewhat unusual residents of her new hometown, Naomi, Florida. Because of Winn-Dixie, Opal begins to find her place in the world and let go of some of the sadness left by her mother's abandonment seven years earlier. With her newly adopted, goofy pooch at her side, Opal explores her bittersweet world and learns to listen to other people's lives.

Field, Rachel *Calico Bush* 224 pages 10+

In 1743, thirteen-year-old Marguerite Ledoux travels to Maine as the indentured servant of a family that regards her as little better than the Indians that threaten them, but her strength, quick thinking and courage surprise them all.

Giff, Patricia Reilly *Lily's Crossing* 208 pages

When Lily meets Albert, a refugee from Hungary, during the summer of 1944, they begin a special friendship. However, Lily and Albert have both told lies, and Lily has told a lie that may cost Albert his life.

Gray, Elizabeth J. *Adam of the Road* 320 pages

Eleven-year-old Adam loved to travel throughout thirteenth century England with his father, a wandering minstrel, and his dog, Nick. But when Nick is stolen and his father disappears, Adam suddenly finds himself alone. He searches the same roads he traveled with his father, meeting various people along the way. But will Adam ever find his father and dog and end his desperate search?

Hesse, Karen *Letters from Rifka* 176 pages 10+

Rifka knows nothing about America when she flees from Russia with her family in 1919. But she dreams she will at last be safe from the Russian soldiers and their harsh treatment of the Jews in the new country. Throughout her journey, Rifka carries with her a cherished volume of poetry by Alexander Pushkin. In it, she records her observations and experiences in the form of letters to her beloved cousin she has left behind. Strong-hearted and determined, Rifka must endure a great deal: humiliating examinations by doctors and soldiers, deadly typhus, separation from all she has ever known and loved, murderous storms at sea—and as if this is not enough, the loss of her glorious golden hair. And even if she does make it to America, she's not sure America will have her.

Horvath, Polly *Everything on a Waffle* 176 pages 10+

Primrose Squarp simply knows her parents did not perish at sea during a terrible storm, but try convincing the other residents of Coal Harbour on that score. For all practical purposes, at least for the time being, Primrose is an orphan, and there's no great clamoring of prospective adopters. The town council is able to locate a relative, Uncle Jack, who reluctantly takes Primrose into his care. Primrose does warm up to living with him and in his home, despite the eerie noises resembling a hockey game that haunt her in the night. But true sanctuary can always be found at a restaurant called The Girl in the Swing, where everything—including lasagna—is served on a waffle, and where the proprietor, Miss Bowzer, offers a willing ear, as well as sage advice. Through a mixture of eccentric humor and probing philosophy, Primrose's search for peace and understanding is a most memorable one.

Kalashnikov, N. *The Defender* 138 pages

One man in Siberia has the courage to protect the endangered wild rams that share his mountain peak.

Kelly, Eric P. *The Trumpeter of Krakow* 224 pages 10+

There was something about the Great Tarnov Crystal....Wise men spoke of it in hushed tones. Others were ready to kill for it. Now a murderous Tartar chief is bent on possessing it. But young Joseph Charnetski was bound by an ancient oath to protect the jewel at all costs. When Joseph and his family seek refuge in medieval Krakow, they are caught up in the plots and intrigues of alchemists, hypnotists, and a dark messenger of evil. Will Joseph be able to protect the crystal, and the city, from the plundering Tartars?

Kelly, Jacqueline *The Evolution of Calpurnia Tate* 444 pages 10+

Twelve-year-old Calpurnia (the only girl of seven siblings) is interested in science rather than cooking and sewing. She would much rather spend her time exploring the river with her grandfather, a naturalist and a loner, who has given her a copy of *The Origin of the Species*. The results are humorous when Callie's mother attempts to prepare her for her place in society by giving her cooking and knitting lessons in contrast to her natural tendencies to be outside studying grasshoppers and other phenomena of nature. Will Callie ever learn those hideous domestic skills in time for her debut? Is the plant that she and her grandfather discovered actually a new species?

Pennac, Daniel *Eye of the Wolf* 112 pages

Born worlds apart: a wolf from the Far North and a boy from Yellow Africa...The wolf has lost nearly everything on his journey to the zoo, including an eye and his beloved pack. The boy too has lost much and seen many terrible things. They stand eye-to-eye on either side of the wolf's enclosure and, slowly, each makes his own extraordinary story known to the other...Master storyteller Daniel Pennac weaves a tale that is magical, mysterious and utterly unforgettable. Look into the Eye of the Wolf and you will be captivated.

Pitt, Paul *Racing the Sun* 150 pages

Brandon, 12, is happily ensconced in UGA (Underachieving Goof-offs of America) with his best friend Ham, content to live the middle-class life his father has carved out for his family. Then Brandon's Navajo grandfather comes to live with them, bringing his smoky smell, his chants and his ample dignity and charm. His very presence disrupts the family, reminding them of reservation life, but Brandon is drawn to him. Their gentle, loving bond, based on Brandon's learning "the important things" from his grandfather, changes the boy in believable, positive ways.

Preus, Margi *Heart of a Samurai* 336 pages 10+

In 1841 a Japanese fishing vessel sinks. Its crew is forced to swim to a small, unknown island, where they are rescued by a passing American ship. Japan's borders remain closed to all Western nations, so the crew sets off to America, learning English on the way. Manjiro, a 14-year-old boy, is curious and eager to learn everything he can about this new culture. Eventually the captain adopts Manjiro and takes him to his home in New England. The boy lives there for some time and then heads to San Francisco to pan for gold. After many years, he makes it back to Japan, only to be imprisoned as an outsider. With his hard-won knowledge of the West, Manjiro is in a unique position to persuade the emperor to ease open the boundaries around Japan; he may even achieve his unlikely dream of becoming a samurai.

Rankin, Louise *Daughter of the Mountains* 192 pages

Momo has always wanted a Lhasa terrier—a dog like the ones the Tibetan Buddhist priests hold sacred in their temples. When a trader brings Pempa to her parents' teahouse, Momo's dream comes true. Then a band of robbers steals the valuable dog, and to recover him, Momo must make a dangerous journey she may not survive. A Newbery Honor Book.

Raskin, Ellen *The Westing Game* 192 pages 10+

When an eccentric millionaire dies mysteriously, sixteen very unlikely people are gathered together for the reading of the will...and what a will it is!

Rawls, Wilson *Where the Red Fern Grows* 208 pages 10+

Billy and his precious coonhound pups romp relentlessly through the Ozarks, trying to "tree" the elusive raccoon. In time, the inseparable trio wins the coveted gold cup in the annual coon-hunt contest, captures the wily ghost coon, and bravely fights with a mountain lion. When the victory over the mountain lion turns to tragedy, Billy grieves, but learns the beautiful old Native American legend of the sacred red fern that grows over the graves of his dogs.

Reisman, Michael *Simon Bloom, The Gravity Keeper* 320 pages

Sixth-grader Simon Bloom can't believe his luck when he finds a book that enables him to control the laws of physics. By simply reciting the formulas it contains, he can cancel gravity to fly around his bedroom, or decrease friction so he can slide down the street as if he were on Rollerblades. When two thugs with evil intentions come after Simon, he must use the formulas to save himself and the book from falling into their hands.

Richter, Conrad *The Light in the Forest* 128 pages 12+

Though reared as a Lenni Lenape Indian, fifteen-year-old True Son, once called John Camera Butler, was ordered back to the white man. It was impossible for True Son to believe that his people were white and not Indian. He had learned to hate the white man. And now he learned to hate his new father, his new house, his new family. He hated the name John Butler. Where did he belong now--and where could he go?

Perhaps the best-loved nineteenth-century American novel, Mark Twain's tale of boyhood adventure overflows with comedy, warmth, and slapstick energy. It brings to life an array of irresistible characters—the awesomely self-confident Tom, his best buddy Huck Finn, indulgent Aunt Polly, and the lovely, beguiling Becky—as well as such unforgettable incidents as whitewashing a fence, swearing an oath in blood, and getting lost in a dark and labyrinthine cave. Below Tom Sawyer's sunny surface lurk hints of a darker reality, of youthful innocence and naïveté confronting the cruelty, hypocrisy, and foolishness of the adult world—a theme that would become more pronounced in Twain's *Adventures of Huckleberry Finn*.

The Citadel. It stands unconquered, the last great summit of the Alps. Only one man has ever dared to approach the top, and that man died in his pursuit. He was Josef Matt, Rudi Matt's father. At sixteen, Rudi is determined to pay tribute to the man he never knew, and complete the quest that claimed his father's life. And so, taking his father's red shirt as a flag, he heads off to face the earth's most challenging peak. But before Rudi can reach the top, he must pass through the forbidden Fortress, the gaping chasm in the high reaches of the Citadel where his father met his end. Rudi has followed Josef's footsteps as far as they will take him. Now he must search deep within himself to find the strength for the final ascent to the summit -- to plant his banner in the sky.

Like the rest of his family, Louis is a trumpeter swan. But unlike his four brothers and sisters, Louis can't trumpet joyfully. In fact, he can't even make a sound. And since he can't trumpet his love, the beautiful swan Serena pays absolutely no attention to him. Louis tries everything he can think of to win Serena's affection—he even goes to school to learn to read and write. But nothing seems to work. Then his father steals him a real brass trumpet. Is a musical instrument the key to winning Louis his love?

It's 1735. Forrest Harper's life inside the Tower of London consists of three ways to pass the time: chores, chores, and more chores. His only friends are the spirited ravens he tends with his father. So when vicious Scottish Rebels are captured, Forrest can't wait to prove himself by standing guard. If only Forrest's prisoner hadn't turned out to be the noble and daring Maddy. And if only Maddy wasn't about to be executed. . . . Now, as Forrest chooses between friendship and family, safety and escape, he and Maddy must flee, somehow navigating the cold, dank corridors of the Tower.

A mysterious rowboat transports five adventurous kids back in time to the eve of the Battle at Trenton where they experience the American Revolution. Through encounters with Hessian soldiers, revolutionaries, and even George Washington himself, Matthew, Quentin, Hooter, Tony, and Katie watch history unfold before their eyes as they see first-hand, the grim realities of war and the cost of freedom.

Some of My Favorite Websites

Reading Resources

www.ala.org/alsc/compubs/booklists

Association for Library Service to Children. Various booklists including how to build a home library, summer reading lists, tween award books, graphic novels, resources for dealing with tragedy. For children up to about 8th grade or 14 years old.

www.ala.org/yalsa/booklistsawards/booklists

Young Adult Library Services Association (YALSA). They select the best books and media for teens. Movies, graphic novels, audiobooks, fiction, reluctant readers, reader's choice. Keep in mind, this site is for teens and the content will reflect that. This is only of rthe most advanced, mature elementary children.

Goodreads.com

Just clicking on the Children's tab I found many new books I'd like to introduce to our classroom! Check it out!

Media Resource

www.commonensemedia.org

Reviews and advice about movies, books, apps, websites, TV and music with children in mind. I always consult this site when a new movie comes out that my kids want to see and I am unsure if they should or if I have questions about a book.

Typing

There are hundreds of free, online typing programs. However, as with everything else online, you have no control over the content of the advertisements. Software program reviews for a typing program can be found at

www.typing-for-kids-software-review.toptenreviews.com

The best reviewed software is \$14.99.

Just Cool

www.Freerice.com

Vocabulary “test” that’s fun to do together. For every correct answer, ten grains of rice are donated to people in need.

www.greatergood.berkeley.edu

Just found out about this from a friend. After checking it out, I know I’ll be spending more time here!

Montessori

www.montessori-ami.org

Association Montessori Internationale. Our school and teachers are members.

www.mariamontessori.com

Great articles, videos by Sergey Brin, Dr. Stephen Hughes, Wendy and Matt!, links to other Montessori sites.