Visual Learning -

Why are so many boys fascinated with a blueprint, concentrating on its image at great length, as absorbed as others might be by a captivating novel?

Dear Barry,

My son is in Grade 7 and does poorly in school. Each year becomes more difficult to get him out the door with this year being the worst. With the exception of problem solving in math and gym class, he complains that learning at school is a waste of time and that he'd rather learn on-line or play video games.

We carefully monitor his computer time and certainly limit his exposure to shooter-type games. Mostly, we are encouraged to find that he prefers complex thinking games like *World of Warcraft* where he quickly reached the top level and now spends a lot of time coaching other boys to map out their strategies.

When I talk with him to better understand his dislike of school and why he is underachieving he says there is too much talk, not enough action, and he dismisses most writing assignments as boring. While writing his ideas down has never been easy, he can write when he sets his mind to it.

Have we made a mistake by allowing him to play video games? As a younger boy, he always preferred to draw and tell and now I can see that the computer provides him with rich challenges that are so motivating. But what about school?

Monica, Coquitlam

Dear Monica,

At one time some educators believed that optimal learning occurred when concepts were introduced in a lock-step manner, practiced through drill and repetition, and assessed through written means. Rapid and accurate recall of facts was considered a sign of intelligence; those who excelled at book learning were considered bright and those who learned differently were not. This approach to education did not recognize or value people's varied ways of learning, or what are now referred to as multiple intelligences – see Guideline 62 in ***Boy Smarts*** for more details.

In my wide-ranging discussions with boys, parents and teachers, I have discovered that many boys who dislike conventional learning at school often delight in playing with ideas visually – with Lego, puzzles and computer games, for example. These boys may be fascinated with a project blueprint, concentrating on its image at great length, as absorbed as others might be by a captivating novel.

Visual-spatial learners are capable of rapidly understanding concepts when they can create mental pictures of thoughts and can SEE how ideas are inter-related.

Like DaVinci and Einstein, visual learners who think in pictures may flounder in learning environments that echo with words, words, words. Research has shown that it is common for people who demonstrate above-average talent on the visual-spatial side of their brains to experience some inefficiency with language processing in the left hemisphere of their brains. This inefficiency can take many forms, showing up, for example, as persistent problems with spelling, hesitation with speech, or unusual difficulty with recalling names or with learning foreign languages.

Your son's long-standing attraction to drawing, playing computer games, and working through math problem-solving characterize what is called a visual-spatial learning style; visual-spatial learners prefer to organize information and communicate with others through images, pictures, colors, and maps rather than verbally.

They also typically have a first-rate sense of direction and can easily use maps to find their way around. My guess is that when your son walks out of an elevator he has never been on before, he instinctively knows which way to turn.

Visual-spatial learners are capable of rapidly understanding concepts when they can create mental pictures of thoughts and can SEE how ideas are inter-related. It is quite likely that once your son creates a mental picture of an idea and can SEE how the information fits with what he already knows, learning becomes easy for him, and intrinsically motivating.

Over the years I have discovered that visual-spatial learners dislike step-by-step repetition, which they find counter-productive. Once they get a picture of a concept, repeated practice bores them. It's possible when your son is struggling to find a mental picture of something,

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adults misunderstand his learning process and jump in to remediate with more verbal instruction, more verbal explanation, followed by additional repetition and drill. Often boys like your son get lost as they labor to convert the deluge of words into pictures they can see.

Visual-spatial thinkers may grasp ideas intuitively, almost instantly, without really understanding all aspects of the idea, sometimes even missing steps in logic. They thrive on complex, abstract ideas; they are natural pattern finders and problem solvers. Later on visual thinkers

like your son may get frustrated with the struggle to convert pictures into words, and then transfer them onto paper. When they become overwhelmed by others' excess verbiage, they may feel inadequate, and give up altogether. Boys your son's age hate to look stupid as they try to find their place. In the classroom these boys tend to appear disorganized. They struggle with deadlines, and do poorly on timed tests. Thus it is not surprising that many of these boys gravitate to the digital world of three-dimensional landscapes filled with moving images. Here, as they rapidly process images and complex problems, they feel smart and in control.

While many visual-spatial learners can develop their oral skills and even tell wonderfully graphic stories and jokes, their written expression often falls short. While we need to keep helping them to develop their writing skills, we also need to recognize that that their classroom difficulties are often magnified when they are asked to write the words down.

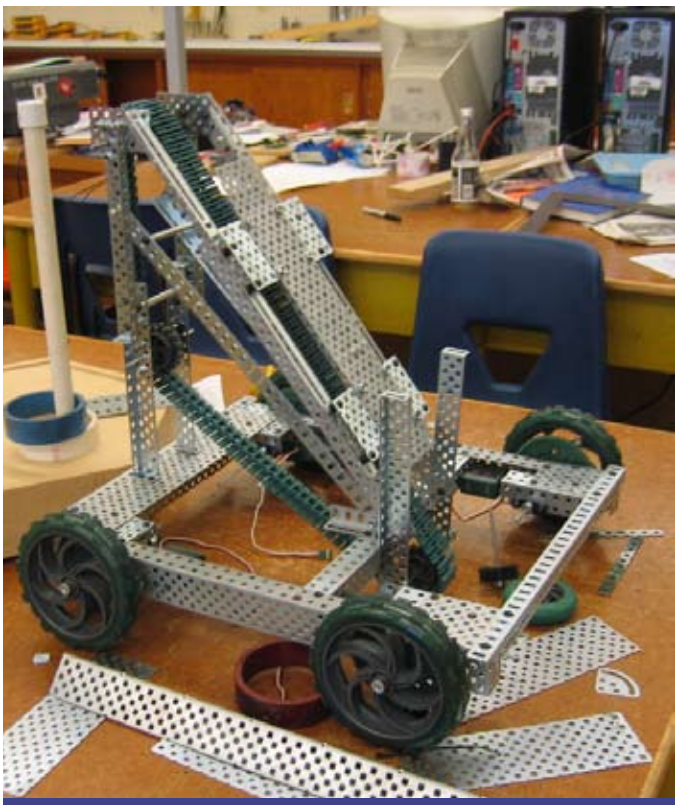
Sometimes, adults mis-read visual-spatial learning styles as behavioural, emotional, or learning disabilities. While I don't want to ignore legitimate learning disabilities such as dyslexia, I do wish to emphasize that when we focus on the presenting concern – a struggle with writing – we can miss the deeper issue – a preference for visual-spatial thinking. Understand that when these boys are not visualizing they are not thinking optimally.

Recently, I learned about a misguided school-based team which sought to have a boy labelled with a severe mental health problem so that he could then receive much more learning support that he currently was receiving with his diagnosis of a written output disorder. The team argued that the boys' increasing display of anxiety in the classroom warranted additional emotional support – counselling for his *low self-esteem*, they claimed.

But more support is not always better. We need to be very thoughtful about the particular boy, and his particular needs.

The boy in question confided that he disliked getting extra help in the classroom or being pulled out of the class to attend a learning-assistance class. He claimed that when an adult sat beside him in the classroom re-explaining instructions, he felt classmates' judgments and ridicule. It is likely that this perception led to increasing stress, expressed as anxiety.

Rather than battering a boy like this with so-called support of the wrong kind, we need to reflect on how we might offer visual-spatial learners opportunities for learning within the comfort of their visual-spatial preference.



Show films, provide demonstrations, and plenty of hands-on learning opportunities.

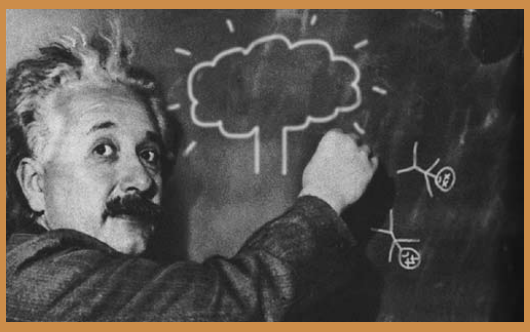
Here are ten very basic suggestions students who think in pictures appreciate:

1. Use mind maps, graphs, systems diagrams, and pictures in place of text.
2. Show films, provide demonstrations, and provide hands-on learning opportunities.
3. Pay attention to color, layout, and spatial organization of assignments.
4. Provide multiple forms of literacy rich in illustrations and visual imagery.
5. Permit them to present their written work with the assistance of a computer.
6. Do not ask them to copy lengthy amounts from the board.
7. Provide succinct written directions.
8. Provide concise oral instructions that are limited to two or three steps.
9. Provide reflection opportunities during discussions for students to integrate ideas and create images of concepts.
10. Discuss learning styles in class to ensure that students understand academic difficul ties may not be due to personal inadequa cies.

Without such adaptations, visual-spatial learners– especially those between Grades 6 and 9 – simply become too stressed-out. They may withdraw all interest in school, refusing to write at all, and immerse themselves in the world of computer games where their visual-spatial style of thinking shines .

In response to your question: "Have we made a mistake by allowing him to play video games?" I suggest that you were wise to facilitate your son's love of visual imagery through video games. Recognize that your son's learning style is highly revered in the adult working world. Adults with strong visual-spatial abilities possess the very active mind's eye needed for strategic planning and big-picture thinking, often required of community leaders and company CEO's.

With more and more successful adults acknowledging that moderate gaming develops technological skills needed in their careers you can take additional comfort knowing that a 2007 study published in the ***Archives of Surgery*** found that surgeons who have a history of playing video games for more than three hours per week may be more accurate than surgeons who have never played video games, with top scorers making 47% fewer errors in their laparoscopy tests. Some doctors even prepare by playing video games before surgery. The study doesn't support overindulging in video games however and also cautions parents that playing video games alone will not increase the chances of their child getting into medical school.



As a parent you might be tempted to worry that recent brain science discoveries indicate that neuroplasticity – the brain's ability to reorganize itself in response to varied stimulation – likely means that playing more video games has led to your son's increased visual competency and love of video games.

Rather than trying to stop this juggernaut, wouldn't we be better off appreciating visual learning styles—and maybe even learning more about understanding, interpreting, and decoding visual images ourselves?

You might even imagine that shutting down his participation in a digital universe could encourage his neuroplasticity to develop around his written output. It is not that simple.

Generally speaking, these boys are more likely to develop their talents with words when we are able to appreciate the strengths of their visual-spatial style.

It might also be worthwhile noting that Einstein himself said that his most important and productive thinking was done by combinatory play with images in his mind. Not surprisingly, when he was later requested to translate his thought-images into conventional words or the signs of mathematics, he'd complain and laboriously struggle with manipulating his visual pictures into words.

Remember too that many of the brightest minds – those of architects, engineers, designers, sculptors, painters, creative scientists, some mathematicians, as well as computer-graphic artists and game designers –often struggled in word-dominated classrooms, especially in their early years.

Realize that the emerging technology in the world today is a visual technology. Just as Socrates once described the limitations of the emerging technology of his time – books – I can't help but wonder whether, in a word-bound culture, we might be blind to the potentialities and merits of emerging visual technologies associated with computers, blind to the power and imagination of *the mind's eye* which Shakespeare's Hamlet saw so vividly.

Today, teachers understand that everyone has their own unique way of learning, and that that the best learning takes place when classroom experiences are enjoyable and relevant to students' lives, interests and experiences.

Computer games, graphics, and visualization technologies are changing the way we experience and process complex information.

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What kind of literacy skills do today's students need to face a rapidly changing and increasing technological world?