

Net, search engines allow users to indulge curiosity – and learn

By FRANK STARMER

SOME weeks ago, my young friend Su Shan – whose father has a Chinatown food court stall which I frequent – had her fifth birthday. A few days after that, I returned to the United States for a work week and my grandson Maxwell's fourth birthday.

What do Su Shan in Singapore and Maxwell in the US have in common, other than similar ages? Both have boundless curiosity.

Their curiosity drives their passion for gaining new understanding and extending their knowledge base. It taught them language by the age of two or three, without a formal teacher.

I share their curiosity. My curiosity drives my passion for understanding and provides the energy to avoid giving up when something is difficult. It brought me and my wife to Singapore two years ago, when I became Associate Dean of Learning, Technologies at Duke-NUS Graduate Medical School here.

Being a worker within the academic community for the past 40 years, I have had many opportunities to observe young learners.

I use the term learner specifically to separate my perspective from that of education – the interaction between teachers and students. Learning is the process of acquiring facts and insights.

It need not be provided by a teacher. What matters is that the learned material becomes the foundation for thinking, creativity and innovation.

In my experience, thinking is mastered more easily by those driven by curiosity, and made more difficult for those with little curiosity.

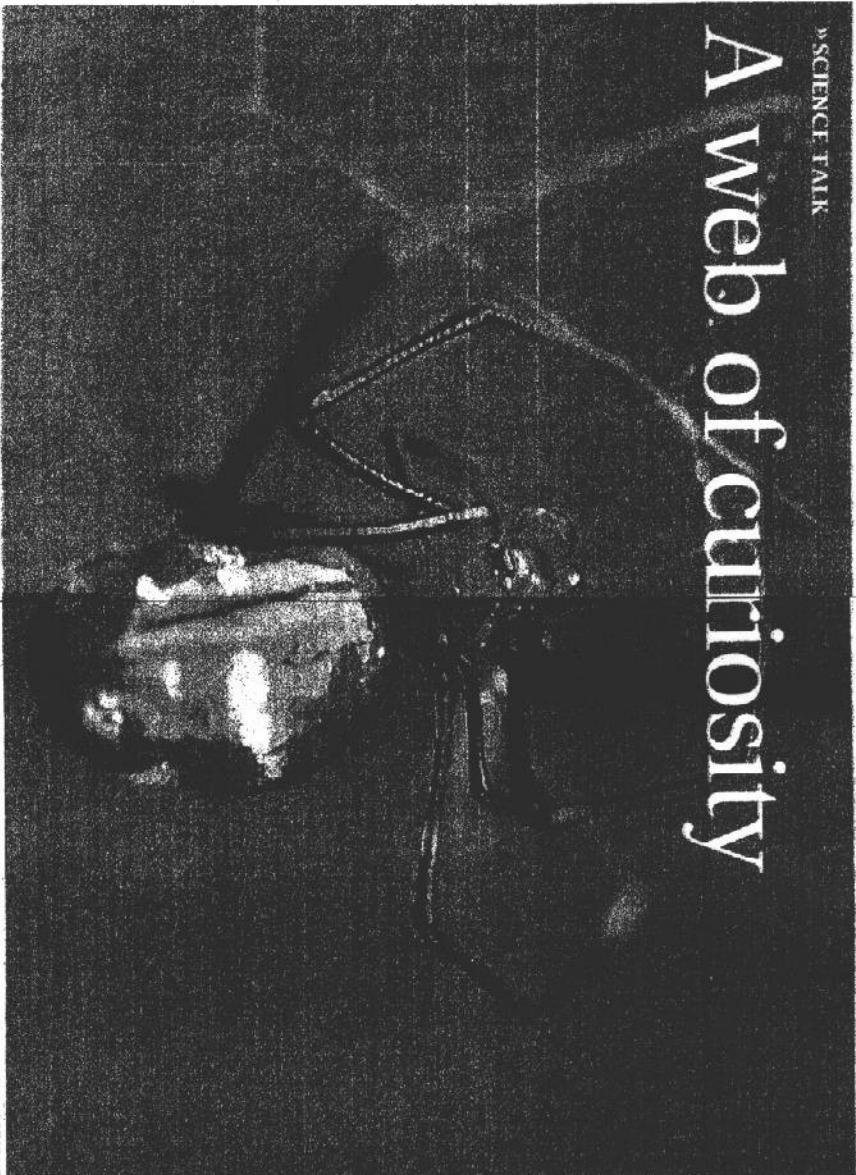
I view formal education with some scepticism. Education can become a one-way street between the educator and the student. Education all too often is reduced to memorisation. And poor memorisers like me will score poorly on standardised tests.

My personal experience, though, is that standardised test scores do not reliably separate those who will make significant contributions to society from those who will not.

I was never bothered by average scores on an examination because I knew that when I faced a problem that was interesting, I could almost always find or synthesise a solution.

SCIENCE TALK

A web of curiosity



TINY WONDER: The body of the *Argyrodes* is so polished you can see your reflection in it. The photograph was taken near Queensway Secondary School.

Test scores measured those class-acquired resources available for thinking but did not measure my ability to quickly acquire new concepts outside the classroom.

When I was growing up in the farmlands of North Carolina, education was "just-in-case" learning – to be mastered just in case I needed it at some future time.

I have several friends who are superb memorisers and at the same time have made significant contributions to society. They have realised that the purpose of the examination is to achieve a high score and nothing more.

Thus, they do not feel guilty studying intensively for several days prior to an exam, achieve a high score and then forget most of what they supposedly learnt.

For poor memorisers, the Internet and search engines have made a difference. Now I can find needed material with sufficient speed. Having never learnt it is not a serious disadvantage.

Learning is a well-known biological process. Learning requires repetition and it is the repetition that causes changes in our brains that result in memory.

Forgetting is also a well-known biological process but is rarely discussed, specifically in educational circles. We know what it is like to forget when learnt information is rarely used. We deal with forgetting in different ways, ranging from writing notes to ourselves to asking a friend to remind us.

The fast pace of today's society demands that we find a way to deal with information overload. Realising that the forgetting process can be avoided when using Google and the Internet gives us new freedom in problem-solving.

More specifically, we are in the middle of an Internet revolution which brings new resources to the learner's table, the forgetter's table, and to problem solving: an almost immediate access to information and concepts.

This revolution is paving the way to move from "just-in-case" learning to "just-in-time" learning.

The Internet levels the information access playing field such that the information available to a world-class researcher is also available to young learners in remote villages. It also levels the social playing field.

While living in the US before moving to Singapore, as a hobby and my grandkids' project, I tracked the building of a cable stay bridge (<http://ravenbridge.net>) and then the removal of two older truss bridges (<http://oldcooperri.verbridge.org>).

I received e-mail from children of the workers, from the Governor of South Carolina, from engineers within the US Department of Transportation and from staff of several international firms (Skanska, Freyssinet, T.Y. Lynn, Dyro, Nobe).

What I experienced was that the Internet sufficiently depersonalises question-asking, such that one's curiosity was amplified. A very unexpected feature of the Internet is not enough.

Search engines such as Google are to the Internet what the card catalogue was to the print library. Google + Internet = a personal memory extender and learning enabler.

With Google and the Internet, I can forget about the forgetting process. By avoiding learning or memorising material rarely used, I have more time for thinking and chasing my curiosity.

What I see within my university world is a radical shift from education to learning.

Education requires someone to determine what is essential for a group of learners. Efficiency demands that educators direct their class to the middle of the group – leaving both extremes (the fast-

learners and the slow learners) either bored or lost.

Google and the Internet bring a new tool to the educator – a tool for enabling individualising learning while at the same time encouraging curiosity.

There is little bridge building going on in Singapore and I needed to find another outlet for my curiosity when we moved here.

Several years ago, I watched a large golden silk spider in our garden in the US. I observed what I would call remarkably intelligent behaviour. I was curious about a spider's weaving, capturing and processing of dinner, as well as reproduction.

Over time, I built a web page to share my curiosity with my 12 grandkids, aged 18 months to 10 years old (http://frank11ab.us/spider_2002).

Moving to Singapore, I found spiders in playgrounds and vacant fields, but the colours of insects here are much more striking than those in our US garden. I built a new web page (http://frank11ab.us/photo_essays/singapore.php) to share what I found with my grandkids in the US.

But I also had a secret agenda: childish curiosity can be alive and productive in a granddaddy of 65.

Looking at not only my grandchildren but all children, I see that the same curiosity-exhilarating process that I faced in primary and secondary school 50 years ago is still alive and well in both the US and Singapore.

Where are the demonstrators that it is okay to be curious and ask questions at any age?

Part of the motivation for my photo adventures, specifically with spiders, is to demonstrate the unexpected surprises associated with chasing one's curiosity.

Do unexpected surprises happen while chasing curiosity? For me, some of my spider video was shown in a Discovery Channel programme "Superhero Science", and in May, some of my building photos were part of a programme "Risk Takers", shown on the Discovery High Definition channel. The Australian Broadcasting Company used a few of my spider photos in a programme too.

In each case, "discovery" about my work was the result of Google and the Internet.

The bottom line is that learning can be fun.

I want to find ways to restore the joy of learning that I see in Su Shan and Maxwell, and find ways to rekindle the joy of learning in graduates of our educational systems.

The writer is Associate Dean of Learning Technologies at Duke-NUS Graduate Medical School, and an avid photographer and spider enthusiast.