

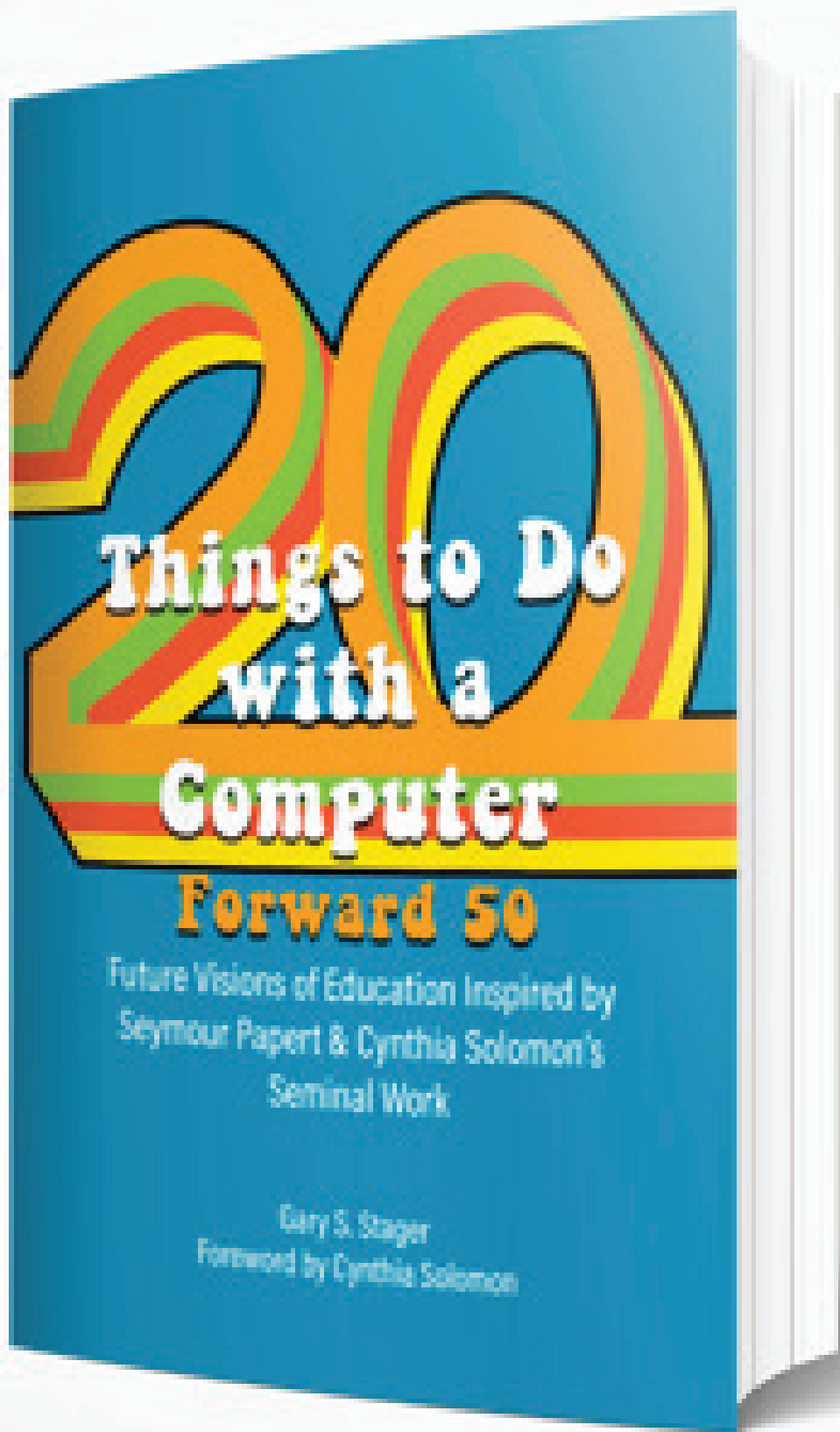


**Intellectual Timidity**

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**Things to Do  
with a  
Computer**

**Forward 50**

Future Visions of Education Inspired by  
Seymour Papert & Cynthia Solomon's  
Seminal Work

Gary S. Stager  
Foreword by Cynthia Solomon

# Intellectual Timidity

*Eleonora Badilla-Saxe*

I don't remember the first time I heard or learned about many important concepts for my life in general, or specifically for me as an educator. But I do remember very clearly when I was inspired by Seymour Papert. I know what and when I learned from him and his collaborators, not only about computers in education but about the future of learning.

And I remember very well the first time I tripped on the idea of intellectual timidity in education in general, and specifically in computers in education. It was in 1990 when I had access to the paper he and Cynthia Solomon wrote in 1971, *Twenty Things to Do with a Computer*. It was many years after it was written and I was already part of the intellectually timid community of education in Costa Rica. It resonated with me very profoundly because I was already feeling very uncomfortable and unsure about the role I should play with colleagues and students.

A couple of years before, personal computers started to be introduced in public elementary rural and inner-city schools throughout the country. It was a politically revolutionary decision of a small developing country in a time when the few computers were found in education in first world countries were placed in mostly private high schools.

It was a radical and risky decision for Costa Rica, and as the major newspaper put it, we were in good hands, with the advice of Seymour Papert and his team from the MIT Media Lab.



*IN GOOD HANDS*

*Minister of Education Francisco A. Pacheco, Seymour Papert, and children.  
La Nación front page, February 1989.*

We were proud to be pioneers in introducing computers in education in the elementary educational system of our country, in public rural and inner-city schools.

I was, initially, the pedagogical director of the program and very committed to learning about constructionism and the use of computers in education to allow children to program the computer and not the other way around. I participated in workshops with Papert and his team,

and read most of the documents available at the time. It was a whole new vision of education opening to my eyes and mind.

One of the best ways that lead me to understand the powerful ideas underlying constructionism was the opportunity I had to translate many of Seymour Papert's talks into Spanish. I had time alone with him before each talk. He told me the main ideas he would develop during the address and then he spoke and I translated. Or maybe, more accurately, I interpreted into Spanish. That is how I constructed my understanding of his ideas.



*Interpreting Papert into Spanish - 1989*

And that's when I started reading Solomon and Papert's paper *Twenty Things to Do with a Computer*. But on the third paragraph I stopped—*educational timidity*? The simple but profound and powerful idea triggered many questions in my mind. Are we shy in education? Is this why I am so uncomfortable about my role within an educational community? Even my country, Costa Rica—taking a very radical and risky decision to introduce computers into a system—is timid? The next sentence helped me answer my question. Papert and Solomon continued saying that education “seemed remarkably reluctant to use the computers that fails to look very much like something that has been taught in schools during the past centuries.” And I saw, back then, that we were doing exactly that with the bold political decision of introducing computers in education—making them to look very much like we have been doing in our educational system, which by the way, we were very proud of at the time.

I felt even more uncomfortable than before, and now I see why. I was facing cognitive dissonance, trying to deal with conflicting beliefs or ideas. That is, the educational community in my country would be reluctant to accept the use of computers in ways that looked different than what we already have been doing; innovation would be neutralized by the power of the system.

I shared my concerns with Mitchel Resnick, who at the time was a graduate student and Dr. Marilyn Schaffer, visiting researcher, both at the MIT Media Lab, and with Papert himself, amongst other people, like Dr. Alberto Cañas, at the time director of IBM's Latin American Education Research Center, located in Costa Rica.

My understanding from those conversations was that we should take the opportunity to use the computers as Trojan Horses, to bring innovation into schools, and to do so, we must give teachers things to do with them that seemed like traditional schools. But then again I was troubled by the phrase in Solomon and Papert's article, that we would be “using bright new

gadgets to teach the same old stuff in thinly disguised versions of the same old way.”

Anyway, thinking of the computers as Trojan Horses to bring innovation into the educational system gave me hope. So, I went on to review twenty things that could be done with the computers we had.

As Papert and Solomon said, in spite of the computers we had, we should focus on what we could do with them. We did not have a physical turtle, but we had the LogoWriter programming language version and each teacher and student had it installed in floppy disks. The computers were IBM Personal System/2 without a hard disk, one for each pair of students. Compared to today’s available digital technology, it might seem that we didn’t have the resources to transform the computers in education program into a Trojan Horse to bring innovation into the educational system. But looking back little more than thirty years, I think the technology was enough, for the time being. Our main challenge for provoking transformation was the intellectual timidity of our educational community.

Intellectually, we had access to Solomon and Papert’s *Twenty Things to Do with a Computer* and also to what I consider its sequel, Papert’s 1980 book, *Mindstorms: Children, Computers, and Powerful Ideas*.

There were (at least) mathematics, geometry, and biology fundamental concepts underlying the programming of the LogoWriter turtle, that could have been evidenced if serious reflection had followed the implementation. But, as Solomon and Papert had predicted, computers were used to replicate activities that looked “very much like something that has been taught in schools during the past centuries.” They both were right fifty years ago, and their ideas are still valid in 2021; in the midst of the COVID–19 pandemic, computers in education (with exceptions of course) are used to transmit information (this time using streaming), as we have been doing in education for the past centuries.

In the meanwhile, what happened to the Trojan Horses in the educational system in Costa Rica? New and more powerful computers with hard discs, local area networks, access to internet, and cloud computing were gradually introduced. Different versions of Logo from MicroWorlds to Scratch were brought in, as well as programmable bricks to give behaviors to physical creatures (from LEGOLogo to Crickets and Arduinos). And in spite of Papert’s urging to give one computer to each child (OLPC), and although some have been given to a percentage of students, in general computers are kept in laboratories within the schools. Teacher preparation has been a fundamental component of the experience. And as a country we have failed in providing high-speed connection to families, communities, teachers, and students.

So it seems that the Trojan Horses have not yet passed the gates of the educational system. And as the pandemic has proven, in education we were not ready to face the challenges of the world in the twenty-first century.

Why? The short and powerful answer is the idea Solomon and Papert proposed fifty years ago—intellectual timidity of educational systems.

In another sequel to *Twenty Things to Do with a Computer*, Papert elaborates more on the idea of intellectual timidity. In his paper “Why School Reform is Impossible” (1997) he answers the question with a profound statement—because complex systems cannot be formed or reformed—they evolve.

Fifty years after we need to accept that there is a twenty-first thing to do with computers in education. We must provoke change to a complex system; not reform it. In Papert’s words:

*The central issue is analogous to one that has played a central role in theories of biological evolution: How do features of the system whose functions are mutually dependent come into being without a guiding designer? Attempts to change the medium and leave the content (e.g., use computers to teach the same math) or change the content but keep the medium*

*(e.g., National Council of Teachers of Mathematics standards or 'The New Math' performed in the old medium) do not create a new equilibrium—in fact they make a 'camel' in the sense of 'a horse designed by a committee.' (Papert, 1997).*

We have designed camels instead of Trojan Horses in an effort to bring change to education. The time has come to surpass intellectual timidity—to understand how this complex system behaves, and instead of trying to reform it, find the most sensible of its interactive connections and relations to bring the urgent change that is needed.

## References

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