

ETEC 540 Assignment 2 Script

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Welcome to “The Pencil: Innovation, Creativity and Genius”

A passionate supporter of the pencil may wax on poetically about its simplicity and low cost. They hold it gently, marveling over its design, capabilities, and its impact on our world. They consider the impact that the pencil has had on learning and innovation. And, they recognize that the pencil is also a product of innovation and learning – requiring sophisticated manufacturing and engineering to inexpensively produce a well-designed product at scale. The modern pencil, as a technology is over 450 years old. We don’t know who invented it. We don’t know when it first was used. We’re only able to trace it back to a book that showed a drawing of a pencil in 1565. The pencil, as Burke notes in “The Markings of a New Pencil”:

“...was a remarkable technological innovation when it first emerged in the mid-17th century. Less cumbersome and dirty than a piece of charcoal and far more precise than even the finest tipped brush, the wood-encased graphite could quickly produce writing on a much wider range of materials and made the writing process far less arduous. When the eraser was added in the mid-19th century, the pencil also made the writing process far more revisionary in nature as the products of its markings could now be returned to and altered over and over again” (Burke, 2012, p.121).

Petroski’s book “The Pencil: A History of Design and Circumstance” is an ode to the pencil and engineering that further highlights that the pencil is an amazingly successful technology:

“This ubiquitous and deceptively simple object is something we can all hold in our hands, experiment with, and wonder about. The pencil, like engineering itself, is so familiar as to be a virtually invisible part of our general culture and experience, and it is so common as to be taken up and given away with barely a thought. Although the pencil has been

indispensable, or perhaps because of that, its function is beyond comment and directions for its use are unwritten” (Petroski, 1989, p.x).

The pencil doesn't have a user manual. The pencil can be picked up by a child and put to use immediately. The pencil doesn't crash, need power, a reboot or an upgrade. The pencil is lightweight, is easy to transport and is easily replaced if lost. Yet, the pencil is often overlooked and is indeed, “virtually invisible”. Perhaps this is counter-intuitive, but this invisibility should be celebrated as further proof of the success of the pencil technology. Papert provides an illustrative explanation in “A Critique of Technocentrism”:

“If you went up to a poet who was busy writing his poem and asked what he was doing, you'd be very surprised if he said, ‘I'm using a pencil.’ Of course he's using a pencil, but the pencil has become invisible. It's not there as a separate thing, it's part of his life. It's part of the world. You don't think about it... We've only succeeded when it becomes invisible” (Papert, 1990, p.18).

The naturalness and invisibility of the pencil speaks to its excellence in design and how well-suited it is to how we learn and create. Donald Norman, author of “The Design of Everyday Things”, proclaims that:

“Good design is actually a lot harder to notice than poor design. In part because good designs fit our needs so well that the design is invisible, serving us without drawing attention to itself. Bad design, on the other hand, screams out its inadequacies, making itself very noticeable” (Norman, 2013, p.xi).

The invisibility of the technology can be misconstrued. We do not find books titled “Pencils for Dummies” nor do we find people pursuing a degree in “Pencil Science”. This may lead some to believe that the pencil is in decline; that we have entered an age where we only

need digital technologies. These ghouls eagerly anticipate the demise of the pencil and are at the ready to deliver the eulogy at the pencil's funeral, as Bromley suggests in "Picture a World Without Pens, Pencils, and Paper":

"So, picture a world where pens, pencils, and paper are collector's items, and where every K-16 student will have a laptop or wireless device for reading and writing. We no longer live with generation X... this generation is generation text, and who knows about generation next" (Bromley, 2010, p.99)?

This viewpoint is wrong – the pencil is not going anywhere, there's no need for a funeral, and the pencil is actually more important than ever. As discussed in "The History of the Pencil": "...sales figures for personal computers, tablets and smartphones for 2012 was a meagre 1.162 billion; annual global sales for the pencil reached 16 billion pieces last year, an increase of 7% on the previous year."

The pencil, this old, simple technology has an amazingly large, and growing user base. Do these sales levels only represent some form of "dead-cat bounce?" Or is there significance to these sales volumes? Why is the pencil still prominent today?

The pencil is prominent because it is a critical tool for thinking, creativity and innovation. Stephens, in "Which Communications Revolution is it, Anyway?" helps us to understand why we might have trouble seeing the impact of the pencil: "It takes a long time to realize the potential of a new form of communications - much longer than those who are living through these changes expect" (Stephens, 1998, p.9).

The pencil as the tool of thinking, creativity and innovation is important as we enter the "Innovation Age". Sawyer, in "The Future of Learning in the Age of Innovation," describes the "Innovation Age" as requiring: "very different citizens from the industrial age that dominated the

globe for over a century: people who maximize their creative potential, people who not only master existing skills and knowledge, but who are capable of creating new skills and knowledge” (Sawyer, 2008, p.1). Sawyer continues: “...analysts emphasize the importance of creativity, innovation, and ingenuity in the knowledge economy; some scholars now refer to today’s economy as a creative economy (Florida, 2002; Howkins, 2001)” (Sawyer, 2008, p.1).

The pencil is the tool that allows all of us to be crazy, to change the world, to have impact. Such tools and thinking should be celebrated, much as they are by Rob Siltanen’s “Think Different” advertising script:

“Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do” (Flashback, 1997).

This ability to create and have an impact does not happen by chance or divine inspiration. In “Launch: Using Design Thinking to Boost Creativity and Bring out the Maker in Every Student”, Spencer and Juliani share:

"Researcher Vera-John Steiner interviewed more than seventy living creative geniuses and analyzed the notebooks of fifty deceased thought-leaders (including Tolstoy, Einstein, etc.). In seeking to understand their work habits, she came across a common trait that completely dismissed the notion of a singular moment of creative inspiration:

'Creativity started with the notebooks' sketches and jottings, and only later resulted in a pure, powerful idea. The one characteristic that all of these creatives shared - whether they were painters, actors, or scientists - was how often they put their early thoughts and inklings out into the world, in sketches, dashed-off phrases and observations, bits of dialogue, and quick prototypes. Instead of arriving in one giant leap, great creations emerged by zigs and zags as their creators engaged over and over again with these externalized images" (Spencer, 2016, p.38).

Genius, learning, iterating, and creating are messy, non-linear, and unpredictable activities where we try out ideas, explore, doodle, change our minds, erase, and cross things out. Could a pen serve the same purpose and fill the need of a pencil as the tool for genius? No, a pen is not a substitute, as Elsberry explains in "The Ultimate Low-Cost Word Processor": "A primary reason is that while the pen emphasizes permanency, pencil markings are transitory. They can be easily erased and written over. Thus, the pencil continues to be the preferred medium for creation and revision. (Elsberry, 1999, p.50)

Petroski further elaborates:

"The pencil, the tool of doodles, stands for thinking and creativity, but at the same time, as the toy of children, it symbolizes spontaneity and immaturity. Yet the pencil's graphite is also the ephemeral medium of thinkers, planners, drafters, architects, and engineers, the medium to be erased, revised, smudged, obliterated, lost— or inked over. Ink, on the other hand, whether in a book or on plans or on a contract, signifies finality and supersedes pencil drafts and sketches" (Petroski, 1989, p.6).

The pencil is an incredibly well-designed technology. But the pencil, as technology alone, does not make us creative geniuses. As Donald Norman explains: "Technology does not

make us smarter. People do not make technology smart. It is the combination of the two, the person plus the artifact, that is smart. Together, with our tools, we are a powerful combination. (Norman, 2013, p.112). This is an important idea to remember as we consider the use of any technology!

One last thing that we should consider is the relationship between the pencil and the computer. There is room for both in our world – and our world needs the capabilities of both. The pencil can serve as a word processor, idea processor, art studio, music studio, task manager, or even a gaming platform. In each of these use cases, the pencil, costing just pennies, supports quick thoughts, drafts, experimentation and exploration. The computer can then help us to share, socialize and produce our creations.

Burke highlights the creative gap that we encounter when we focus only on digital devices:

“A large-scale, nationally representative study sponsored by the Kaiser Family Foundation (Rideout, Foehr, and Roberts 2010) indicates that while children may have the digital devices themselves, they do not necessarily know how to optimally use them creatively nor critically....there is far too little ‘writing’ with these digital devices, creating anew imaginatively, critically, and collaboratively” (Burke, 2012, p.121).

Revisiting Spencer and Juliani, they reinforce that the pencil is the tool of makers, creators and innovators:

“Yes, I want my students to be creative, but I don't have enough materials. Do you know how much that technology and maker equipment cost? My school doesn't have funds for that! isn't a pencil all that's really needed? Consider all of the many things that have been designed using a pencil” (Spencer, 2016, p.15)!

And further highlighting things that a pencil does better than a computer, Elsberry puts forth that: “A wooden pencil also enables you to quietly let off steam when job frustrations build up. What is more satisfying to the psyche than snapping a pencil in two” (Elsberry, 1999, p.51)? Destroying an expensive computer is just going to generate more frustration!

To summarize, the pencil is *the* tool of genius. Where genius is a spark that lives in all of us.

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