

Reading research analysis shows...

Print Superior to Digital for Student Comprehension

Dr. John Richard Schrock, our guest columnist, takes digital screen reading to task in this month's *Overnight Lite*.

Print is the superior medium for readers' comprehension. This is the conclusion of comprehensive research on reading on digital screens versus reading on paper.

Published Findings

"Reading From Paper Compared to Screens: A Systematic Review and Meta-Analysis" by Virginia Clinton was published January 13 in the *Journal of Research in Reading*.

A "meta-analysis" is an analysis of previously published research articles and data.

Virginia's conclusions support teacher concerns that have been expressed over the last two decades.

Experienced college professors have observed the erosion of student reading comprehension during this period.

Warning Signs

The first warnings came from graduates of high schools that went "paperless," primarily schools in affluent districts that wanted to impress parents with their "modern way of thinking."

While paperless schools bragged about saving hundreds of thousands of dollars in texts and paper, much of that effort was simply done by shifting the printing to students' home printers.

Tough Choice

When students were asked if they still could read Shakespeare in English classes, the answer was, "Sure, but you can't do that on Trios (the handheld device of that time). We just print the text at home!"

Costly Alternative

Students already recognized the problems of eyestrain and skimming of

digital text. Their schools' bragging was hollow. Rather than saving resources by going online, the schools were actually asking students to spend more time and more money by printing their books on home printers.

The students were theoretically "paperless," but still doing much of their schoolwork at home on paper.

Digital Screens Inferior

This last decade has seen most schools go to the one-to-one computing model (every student on a digital device). This, despite the professional judgement of veteran teachers who know screens are inferior.

Many of Virginia's conclusions are based on the early work of communication scientists like Charles Bigelow, recently retired from Rochester Institute of Technology, and Gordon Legge, originator of MNREAD Acuity Chart and author of *Psychophysics of Reading in Normal and Low Vision*.

Bigelow long ago predicted the need for higher screen resolution to match a printed page. While higher resolutions have been achieved, other questions need to be answered.

Data Needed

For example, why is comprehension higher with a black-and-white "ink" display than it is with a full color backlit display?

Reading is a far more complex task than these one-dimensional screen-versus-print studies address. Additional research on reading factors need to be conducted.

Consolidated Findings

Virginia's research at the University of North Dakota was narrowly focused: "The purpose of this systematic review and meta-analysis is to consolidate the findings on reading performance, reading times and calibration of perform-

ance (metacognition) between reading text from paper compared to screens."

Her findings were clear. There was a statistically important benefit to reading on paper for reading performance, metacognition and efficiency.

Students Reject E-Books

This is no surprise to college students, the majority of whom have clearly rejected e-textbooks. The general public should concur.

Forecasts predicting that print would be abandoned by the year 2015, have totally fizzled. We are still reading books today. And will continue to do so.

Okay for Romance

Screen reading's lower efficiency poses little harm for reading romance novels. But this should cause educators to return to print and think twice concerning computer-based testing and expecting students to comprehend and remember the extensive text that they read on computer screens or other digital devices.

Consider This

We should also reconsider whether the high school diploma and college degree of this era remain equivalent to those credentials back when students read and retained more in print.

More to Come

We can expect the education-technology-industrial complex to gear up its propaganda "journals" to discount this research.

But now we know the correct reply to their marketing phrase: "You can't teach tomorrow's students with today's technology."

That reply is: "Yes you can and print is the way to do it."

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I know, I think too much. But is there another word for thesaurus?



Being on a corporate committee is a lot like professional football. You're well paid, motivated and competitive—and every time you try to run with the ball, 11 people jump all over you.



Not long ago a famous politician was hospitalized under suspicious circumstances. Looking for a scoop, the local newspaper sent a reporter disguised as



a nurse to sneak in and get an interview. The next morning the editor pulled her aside and asked, "So, did you get the story?" "No, I didn't get a chance," the reporter replied. "I was thrown out by a doctor from the other newspaper."



I tried to sue somebody for calling me clumsy, but I dropped the charges.

A seven-year-old boy went with his dad to see a new litter of kittens. On returning home, he breathlessly inform-



ed his mother, "There were two boy kittens and two girl kittens." "How did you know that?" his mother asked. "Daddy picked them up and looked underneath," he replied. "I think it's printed on the bottom."



Nothing works right on my car. The only thing that doesn't make noise is the horn.



The following was discovered in an internal memo from one of our larger county departments: With excessive governmental spending and bloated bureaucratic budgets, we are immediately scaling back to only basic essentials. Therefore, effective immediately, the light at the end of the tunnel will be turned off until further notice.

Nothing keeps a plane on time as well as arriving two minutes late at the airport.



The new Army sentry received strict orders to allow only those with the password beyond his post. When an auto approached in the dark the guard asked, "Who goes there?" "General Smith." "Advance and give the password," instructed the sentry. "I'm a general! I don't need any stupid password!" "I'm new at this, so help me out," said the guard politely. "Am I supposed to shoot you first, or the driver?"



According to science, no one is ever too old to learn a new way to do something dumb.



Retirement: when you're not dead yet but you seem to have all the symptoms.



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