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VIEWS & REVIEWS

PERSONAL VIEW

Put down your smartphone and pick up a book

Good clinical decision making requires in depth knowledge that comes from reading information in books rather than on screens, writes **Martin J Tobin**

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Bertrand Russell grumbled in 1924 that "it is impossible to read in America, except on a train, because of the telephone."[1] He continued, "Everyone has a telephone, and it rings all day and most of the night." Given the ubiquity of distractions today, a landline seems almost Arcadian.

As we ponder a difficult passage while reading online, our mind wanders to check our email, or the news, or to buy something new. Rather than being deeply engaged with the written word, we are seduced by the false promise of multitasking. For the first time, distractions have become an integral part of the experience of reading.

Online reading involves a different form of literacy than that of the printed page. The eyes bounce and flicker as they dart promiscuously, searching for nuggets of information and quick wins. It is almost as if people go online to avoid reading in the traditional sense.[2] The instant presentation of expansive information threatens the more demanding task of the formation of in depth knowledge.[3] Literacy—the most empowering achievement of our civilisation—is being replaced by screen savviness.

Sustained, deeply engaged reading of a book requires a greater commitment than that demanded by the screen. Deep reading invites the reader to go beyond the text, setting off intellectual vibrations in the mind. In *On Reading*, Marcel Proust emphasises its generative nature: "We feel quite truly that our wisdom begins where that of the author ends."[4] True knowledge can be found only in the solitude of one's own heart and mind: "we can receive the truth from nobody . . . we must create it ourselves," Proust cautions.

Stretching of the young mind is important, and, once stretched, it never retracts to its original size. Deep reading is indistinguishable from deep thinking. Reading stocks the mind with material for thought: we become what we read.[5] "How many a man has dated a new era in his life from the reading of a book," Thoreau declaimed.[6]

The ability of physicians to solve problems is directly related to the amount of specific knowledge stored in their brains.[7] It is not enough to know where to find information; it needs to be internalised. When a reader seeks a comprehensive understanding of a topic, he or she turns to a book, not to a bundle of articles. The information presented in articles is fragmentary by design and does not delineate the boundaries of a discipline, leaving readers oblivious of major gaps in their knowledge base. Online resources provide abridged and simplified bits of information—the smallest snippet needed to perform a task—which derail the more difficult and time consuming thought processes that deepen the understanding of complex concepts. Physicians who rely on electronic devices short circuit the arduous procedure of memorisation of intricate physiological processes that is necessary for expert clinical reasoning. This consideration is particularly important in acute medicine, where rapid decisions (often in swift succession) demand instant recall. Electronic devices are a godsend for checking dosages of unfamiliar drugs, but such mundane detail should not be confused with complex biological operations that underpin clinical reasoning.

Neuroscientists have been studying the effects of reading on the brain for decades. The brain is infinitely malleable, and reading plays an important part in shaping neuronal circuits and expanding the ways we think. Media not only serve as passive channels of information, they also shape the process of thought.[8] Investigators have found we don't so much read online as quickly scan short passages, bouncing from one site to the next. Reading has taken on a "staccato" quality, rather than performing the heavy lifting of concentration, analysis, and contemplation.

In a recent randomised trial, Mangen and colleagues found that teenagers who read material on a printed page understood the text significantly better than those who read the same material on a screen.[9] The investigators claim that the ability of print readers to "see as well as tactilely feel the spatial extension and physical dimensions" of the entire text contributed to the superior comprehension. Our eyes tell us that words on a screen are identical to those on a piece of paper. But our eyes lie. Cognitive scientists have discovered that reading is not only a

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visual activity, but also a bodily activity. A book is a physical object: you see and feel where a book begins and ends; you feel the texture of its pages. Leafing back and forth through different portions of a book provides a mental map of the entire text, aiding comprehension of relationships and context—and recall. These tactile experiences are almost absent when reading on a screen: only a page (or less) is visible at a time. This perceptible, direct experience contributes to the deeper and longer lasting understanding than when the same text is read on a computer.

When faced with a difficult question, physicians often find the answer using electronic resources. But clinical reasoning depends on asking the apposite question among many contenders—that question which segues into selecting the best choice of therapy rather than less effective alternatives. To think that a smartphone can find the best question is putting the cart before the horse. Skill in clinical reasoning depends on a physician's storehouse of knowledge, the foundation for which is established by deep reading of books rather than scrolling online.

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