

Read, read against the dying of the light: the case for actuaries as readers in a post-literate society

By Pamela Hellig

Presented at the Actuarial Society of South Africa's 2026 Convention
Cape Town International Convention Centre, 7–8 October 2026

ABSTRACT

The ability and appetite to read effectively are beneficial, if not essential, to thriving as an actuary and to many productive pursuits of human society in general. Reading, *inter alia*:

- supports a wide range of cognitive functions, including stronger memory, better concentration, and a slower rate of mental decline,
- deepens our understanding of human experience by allowing us to inhabit different perspectives, strengthening empathy and interpersonal insight,
- cultivates forms of analytical and structured thinking otherwise impossible to develop, and
- fuels creativity and intellectual innovation by connecting readers to the accumulated knowledge contained in written works and sharpening their ability to evaluate, challenge, and extend that knowledge.

Yet, technological and social shifts – including the advent of smartphones, short-form content, and AI – have contributed to what many describe as a post-literate society. In such a context, the ability to read deeply or write cogently is no longer assumed, nor widely practised. South Africa's well-documented literacy crisis reflects additional historical and structural factors: as of 2021, 81% of grade four learners could not read for meaning in any language, highlighting the scale and urgency of the problem.

This paper examines the implications of a post-literate society for the actuarial profession. It explores how declining literacy – both in the form of illiteracy (inability to read) and aliteracy (ability but unwillingness to read) – threatens critical competencies across the actuarial lifecycle. It also proposes practical measures that educators, employers, institutions, and individuals can take to reinforce reading and writing as essential professional skills.

KEYWORDS

Literacy; actuaries; post-literacy; communication; professionalism; reading; writing

CONTACT DETAILS

Pamela Hellig, University of Johannesburg and Insight Life Solutions

Email: pamelah@insight.co.za

1. INTRODUCTION

What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book because there would be no one who wanted to read one.

Neil Postman, *Amusing Ourselves to Death* (1985)

1.1 It may come as a surprise that reading and writing weren't always wrapped in the aura of virtue they enjoy today. Just as previous generations warned that the telephone would destroy the art of human interaction and purchasing a television set was tantamount to inviting brain rot into one's living room, and the elders of current times lament the youth's addiction to smartphones, and no dinner party conversation in 2026 is complete without the incantation of at least one ominous AI-related prophecy; so too did the philosophers of the day rail against the evil that the new technology of literacy would bring.

1.2 Plato, in circa 370 BCE, quoting Socrates himself in the *Phaedrus*, said about writing: For this invention will produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory. Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them. You have invented an elixir not of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise.

1.3 Writing would erode memory, weaken the mind, place trust in something unnatural and manufactured, and produce false prophets – those who seem to know many things but do not.

1.4 More recently, in the 18th century, when the invention of the printing press hundreds of years prior started to bear fruit in the form of an explosion of mass literacy, many prominent voices spoke out about a contagious disease that was spreading amongst the youth: reading addiction, otherwise known as reading rage, reading fever, reading mania or reading lust. Reading was a corruptive force, distracting the working class from their social and domestic duties (Vogrinčič, 2008).

1.5 Now, with our new millennium just over a quarter of a century old, Socrates and the Industrial Revolutionist naysayers may get what they asked for. We have entered what some refer to as the post-literate era; one in which most in the population can still read and write, but are choosing not to in increasing numbers. Perhaps the difference between the neophobes of today and their historical counterparts is that in modern times we can substantiate our fears with data and research.

1.6 A vast body of literature exists indicating that reading and writing offer significant cognitive and social benefits – benefits which disappear when people trade in books and pens for smartphones and large language models. Being literate makes one more creative, rational, verbally fluent, memorious and, in many definitions of the word, intelligent. These are all characteristics not only beneficial, but essential to actuaries fulfilling their professional obligations and enabling them to serve the public interest into the future.

1.7 This paper traces the history of literacy, reviews the benefits of reading and writing and – conversely – the threats that a post-literate society introduces, presents the argument for actuaries becoming or remaining readers in the face of rising aliteracy and illiteracy, and suggests interventions that may be applied at all stages and in all areas of the actuarial landscape to promote a culture of literacy. Let it be a call to actuaries: hold Huxley's fear at bay and read, read against the dying of the light.

2. FROM ORALITY TO LITERACY TO POST-LITERACY: A HISTORICAL TRAJECTORY

2.1 While reading and writing may, to the literate, feel like innately human abilities, the earliest script dates back only about 5 500 years (Ong, 1982, quoting Diringier 1953; Gelb 1963). Before that, humans lived in oral rather than literate societies. This means that for the overwhelming majority of *homo sapiens'* 300 000 year history, language existed only as sound.

2.2 In his seminal 1982 work, *Orality and Literacy: The Technologizing of the Word*, Walter Ong examines how the shift from oral to written forms of communication has shaped human consciousness, societal structures, and educational systems. He describes this historical shift in four stages: primary orality, the invention and slow diffusion of

writing (chirographic culture), the print revolution, and the ‘secondary orality’ of electronic media. Ong argues that each stage produced a different way of knowing, remembering, and organising thought, not merely a different way of storing words. These stages roughly align with other literature on the topic and are outlined below.

2.3 Stage one: primary orality

2.3.1 A primary oral culture is one that is ‘totally untouched by any knowledge of writing or print’ (Ong, 1982:10) which makes the people in that culture illiterate by definition (Merriam-Webster, 2026). Because, unlike the written word, oral utterance leaves no residue (once a word is spoken it exists only ‘in the potential in certain human beings to tell it’ again (Ong, 1982:11)), knowledge in such cultures has to be organised so that it can be remembered and recalled without external aids. Ong summarises this as ‘you know what you can recall’, explains how mnemonics and formulas are crucial in oral cultures, and argues that ‘restriction of words to sound determines not only modes of expression but also thought processes’ (Ong, 1982:33).

2.3.2 Examples of primary oral cultures range from the Homeric Greeks before the alphabet’s diffusion (pre-eighth century BCE) and the pre-classical Vedic tradition in India to the Xhosa oral poets of southern Africa.

2.3.3 Ong sets out nine characteristics of orally-based thought and expression. These include that oral thought is:

- redundant or ‘copious’ (oral speakers repeat and loop back to ideas because, unlike a writer, they have no fixed text to return to; the mind must keep what has been said in view by restating it);
- conservative or traditionalist (oral societies invest in repeating what has already been learned, since there is no other way to preserve knowledge; intellectual experiment is discouraged and elders are venerated as living repositories of memory);
- close to the human lifeworld (knowledge is expressed through human action and story rather than abstract, decontextualised lists); and
- situational rather than abstract (abstract categories and formal definitions are foreign to oral thought, which reasons instead from concrete, lived situations).

2.4 Stage two: writing restructures consciousness

2.4.1 This stage heralded the birth of literacy. Literacy began with writing: ‘a coded system of visible marks was invented whereby a writer could determine the exact words that the reader would generate from the text’, rather than the use of pictures or semiotic markings (Ong, 1982:83). Ong claims that writing is a technology (in fact, he calls it ‘the most momentous of all human technological inventions’), and like other technologies it enhances human life. Unlike oral speech, which every unimpaired person acquires naturally, writing is an artificial skill. Humans are not hardwired to master reading and writing – these must be consciously and laboriously learned by repurposing regions of

the brain used for speech and object recognition (Wolf, 2007). Yet, once internalised, these skills enable intellectual feats unavailable to purely oral thought, such as sustained linear analysis, abstraction and self-examination.

2.4.2 Key milestones Ong traces in this stage include:

- Development of the world's earliest scripts: Sumerian cuneiform (c.3500 BCE) – generally regarded as among the very earliest scripts, alongside Egyptian hieroglyphics, which emerged in roughly the same period; Minoan or Mycenaean 'Linear B' (1200 BCE); Indus Valley script (3000–2400 BCE); Chinese script (1500 BCE); Mayan script (50 CE); and Aztec script (1400 CE). The alphabet was invented only once, by Semitic peoples around 1500 BCE; every alphabet in use today descends from it.
- Writing producing what Ong, borrowing from ED Hirsch and David Olson, calls 'context-free' or 'autonomous discourse': a text is detached from its author and cannot be interrogated or defended the way a speaker can defend a spoken claim.
- Medieval England shifting from trusting oral witnesses to trusting written charters and writing eventually replacing symbolic acts (such as placing a sword on an altar) as proof of a legal transaction.
- Writing giving rise to a 'grapholect': Ong's term for 'a transdialectal language formed by deep commitment to writing,' such as standard English, which through sustained written use accumulates a vastly larger vocabulary (Ong cites over a million recorded words) than any purely oral dialect could sustain.

2.5 Stage three: the print revolution and mass literacy

2.5.1 For millennia after the first word was written, most of the world's population was illiterate. So while literacy began with writing, it only became a mass phenomenon centuries after the invention of alphabetic letterpress print in Europe, courtesy of Johannes Gutenberg in 1440. Ong regards this invention as a second, distinct technological revolution layered on top of writing.

2.5.2 In England, for example, the dissemination of knowledge through literature ensued and literacy rates increased due to the printing press. Before its invention, only elite members of society (and mostly only the men in that set) could read and buy books (Datta, 2024). This changed during the 16th century: as the printing press was employed to increase book production and decrease their prices, books were made more accessible and affordable to the general public, thus making it easier to become literate (Eisenstein, 1983).

2.5.3 The 18th century was characterised by a 'reading revolution': more people than ever could and did read. Instead of reading the same few books over and over again, people read a larger number of books only once during their lifetimes (Engelsing, 1973; Schiemer, 2010).

2.5.4 Print not only changed reading habits and accessibility, it changed how people thought. As explained by James Marriott (2025):

The world of print is orderly, logical and rational. In books, knowledge is classified, comprehended, connected and put in its place. Books make arguments, propose theses, develop ideas ... [I]t is no accident, that the growth of print culture in the eighteenth century was associated with the growing prestige of reason, hostility to superstition, the birth of capitalism, and the rapid development of science. Other historians have linked the eighteenth century explosion of literacy to the Enlightenment, the birth of human rights, the arrival of democracy and even the beginnings of the industrial revolution.

2.6 Stage four: the ‘secondary orality’ of electronic media and the age of post-literacy

2.6.1 Ong ties his final stage to the rise of electronic media (telephone, radio, television, and sound tape) and classifies it as the product of ‘the electronic transformation of verbal expression.’ He argues that electronic media have not displaced print but built a new layer on top of it, generating what he calls ‘secondary orality’: a group-minded, participatory, formulaic mode of communication that resembles primary orality in feel but, where primary orality applies to cultures totally untouched by any knowledge of writing, secondary orality presupposes and depends on literacy and print for its existence.

2.6.2 The dawn of this era, bought about by the cumulative arrival of broadcast/electronic communication technologies across the late 19th and 20th centuries, was followed by indications that, while reading/writing abilities were generally improving, the demands for sophisticated literacy increased more rapidly than these improvements. In other words, functional literacy – the reading and writing skills needed ‘to meet the demands of one’s job, community and personal goals’ (Kirsch et al., 1993; UNESCO, n.d., 2003, 2017; US Congress, 1991) was decreasing (Mikulecky, 1982).

2.6.3 At the same time (around the 1970s) another phenomenon started to appear in the United States – aliteracy: increasing numbers of capable readers were regularly choosing not to read (Mikulecky, 1978).

2.6.4 Since Ong and Mikulecky were published, the age of secondary orality and aliteracy has exploded. The literary landscape has expanded to include the internet, smartphones, short-form video and, now, generative artificial intelligence (AI). While these technologies have boomed, reading and literacy seem to be imploding around the world, ushering in an era that some describe as ‘post-literacy’ – a term coined by philosopher Marshall McLuhan in 1962. This is a societal condition where the capacity exists but the practice and appreciation of deep reading do not. In late 2024, the Organisation for Economic Co-operation and Development (OECD) released a report showing that literacy skills among adults had largely declined or stagnated over the past decade in most OECD countries. Between 2003 and 2023, reading for pleasure decreased by 3% per year amongst American children (Bone et al., 2025). In her 2024 article for *The Atlantic*, ‘The Elite College Students Who Can’t Read Books’, Rose Horowitz shares numerous anecdotes from educators at universities such as Columbia, Princeton and UC Berkeley, who are unwilling

and/or unable to read at the standard expected of university students. In the UK, the National Literacy Trust found that while children's enjoyment of reading and daily reading habits rose for the first time in five years in 2026 (having reached a 20-year low in 2025) their reading engagement levels remain 'concerningly low' (National Literacy Trust, 2026).

2.6.5 The South African literacy crisis

2.6.5.1 The picture in South Africa is even more bleak. In a 2021 Progress in International Reading Literacy Study (PIRLS) study, it was found that 81% of South African grade four learners could not 'provide evidence of basic reading skills at the lowest achievement level, such as retrieving and stating explicitly mentioned detail in the text when reading a literary passage' (Department of Basic Education, 2023). The same study showed that of the 43 countries that participated in the study, South Africa's grade four learners achieved the lowest average reading literacy score.

2.6.5.2 Roughly a third of South African adults read books regularly (more than once a week). Among book readers, the percentage of people who usually take books out from libraries has declined sharply in recent decades: from 48% in 2006 to 24% in 2016 to 17% in 2023 (Polzer-Ngwato et al., 2023).

3. WHY READING MATTERS: THE EVIDENCE BASE

Reading is not just a hobby – it is a practice which has been shown to have numerous cognitive and behavioural benefits. As the rate of reading declines, so do the benefits reaped.

3.1 Deep reading versus skimming versus digital reading

3.1.1 There are notable differences in the value gained from deep reading compared to skim reading. Deep reading refers to the slower, effortful processes behind real comprehension: inference, deduction, analogy, critical analysis, reflection, and insight. Imaging shows this level of comprehension recruits both hemispheres and all four lobes of the brain. It is only via deep reading that one can achieve all the cognitive benefits described below. It takes milliseconds for an expert reader to execute, but years of practice to develop and it depends on sustained attention and time (Wolf & Barzillai, 2009).

3.1.2 Digital and online reading reward different skills from reading books: rapid information processing, multitasking, and quick attention-shifting. These are valuable for activity and efficiency, but they can leave little room for the slower cognitive processes needed for deep reading.

3.2 Cognitive function: memory, concentration, and decline

3.2.1 Reading not only allows the reader to acquire facts, it actually exercises various parts of the brain and changes the way it works. Because reading is not a genetically hard-wired skill, the brain does not have a dedicated 'reading circuit', so it repurposes

existing regions for vision, language, and cognition to build one – what some neuroscientists call the ‘neuronal recycling hypothesis’ (Dehaene et al., 2005). Among the brain regions involved in reading and comprehension are the temporal lobe (responsible for decoding and discriminating sounds of human speech); Broca’s area in the frontal lobe (governing speech production and language comprehension); and the angular and supramarginal gyrus, which link different parts of the brain so that letter shapes can be put together to form words. In addition, there are several important white-matter pathways involved in reading. White matter is a collection of nerve fibres in the brain that help the brain learn and function (Wolf, 2007). It is this plasticity and the repeated use of various functional regions of the brain that have led to different writing systems, producing measurably different brain activation patterns (for example, Chinese readers show extensive activation of visual regions in the occipital areas of the brain while alphabetic reading brains require more processing in the temporal and parietal regions). Novice readers use far more expansive brain regions than experts, who develop streamlined, efficient pathways over years (Wolf & Barzillai, 2009).

3.2.2 The effect of reading on the brain is associated with cognitive benefits such as improved attention span and focus (Sharpe, 2025) and enhanced critical thinking skills (Rachuri, 2024).

3.2.3 Reading also improves memory (Stine-Morrow et al., 2022) and verbal fluency (the cognitive ability to rapidly retrieve words from memory and express them aloud) (Deb & Basu, 2024), both of which are linked to lower rates of cognitive decline in later life.

3.3 Prevention of cognitive decline

3.3.1 Longitudinal studies indicate that older adults who read frequently (at least once per week) have a significantly lower risk of cognitive decline and dementia. Chang et al., in their 2020 study, conducted 6-, 10-, and 14-year follow-ups and found that reading acts as a protective buffer, preserving function regardless of baseline education levels. This protective effect is largely attributed to building cognitive reserve – the brain’s ability to maintain function despite damage or disease (Ferguson, 2026).

3.3.2 Reading stimulates neural pathways and challenges the brain, which may delay the onset of Alzheimer’s symptoms by up to five years. While all reading contributes to mental stimulation, frequent reading of books is often linked to stronger verbal fluency and memory recall compared to passive media consumption. Additionally, shared reading groups not only provide cognitive benefits but also reduce loneliness and depressive symptoms in older adults (Milani et al., 2025).

3.4 Empathy and perspective-taking

Conventional wisdom says that immersing oneself in a book – especially a work of fiction – allows the reader to walk in another person’s shoes. The link between reading

and empathy is backed up by experimental research. The work of Mar et al. (2009) showed that frequent readers of narrative fiction performed better on two different empathy tasks. Frequent readers of expository non-fiction, however, were shown to perform worse.

3.5 Theory of mind

3.5.1 Empathy in the human brain is made possible by another mental process associated with cognitive perspective-taking: ‘Theory of Mind’. This refers to the brain’s innate, evolutionary drive to interpret and speculate about other people’s complex motivations and thought. In her 2006 work, *Why We Read Fiction*, Lisa Zunshine uses evolutionary psychology and cognitive science to argue that we love fiction because it exercises our Theory of Mind.

3.5.2 Zunshine explains that human beings are a highly social species whose survival depended on accurately guessing what others were thinking. Fiction gives us a safe, controlled environment to over-analyse the minds of characters, satisfying this deep-seated cognitive urge.

3.6 Reading and rationality

3.6.1 The post-literate era has been accompanied by a lot of anger in the form of internet trolls, social media bullies, keyboard warriors, radicalisation and polarisation (Biddle et al., 2024). While the link between the rise of these emotional and irrational styles of thinking and the decline in reading may not be immediately obvious, there is evidence to suggest that more reading does cool and rationalise thought and could recapture some of the empathy lost in the modern age.

3.6.2 The explanation for this recalls the neuronal recycling hypothesis – the brain using a combination of repurposed neural networks (its visual, language, attention and memory systems) to read. In her 2026 article, *How reading books regulates your nervous system*, Anne-Laure Le Cunff explains that this process of reading – one that requires a sustained focus on a single stream of information – shifts the nervous system from the sympathetic ‘fight-or-flight’, overstimulated state triggered by the fragmented attention demanded by digital media towards the parasympathetic ‘rest-and-digest’ state. As this happens, measurable physiological changes occur: the heart rate slows, breathing deepens and becomes more regular, and muscle tension decreases.

3.6.3 When reading fiction specifically, an additional effect is observed. The same neural regions are activated as those that would be used when actually having those experiences. ‘This gives rise to “embodied reading” where stories provide practice for real-world scenarios. The brain processes fictional experiences as low-stakes rehearsals for actual life, building neural pathways that can be activated when similar situations arise in real life’ (Le Cunff, 2026).

3.6.4 Similar benefits are also experienced by the writer. While social media allow immediate response and many means for bypassing logical argument, there is

a certain detachment between the author of a book and their reader, with the author forced to slow down and rely on reason to build their argument, allowing for a more dispassionate spread of information. This is why Ong (1982) observed that '[m]any, if not all, oral or residually oral cultures strike literates as extraordinarily agonistic in their verbal performance and indeed in their lifestyle. Writing fosters abstractions that disengage knowledge from the arena where human beings struggle with one another. It separates the knower from the known. By keeping knowledge embedded in the human lifeworld, orality situates knowledge within a context of struggle.'

3.7 Analytical and structured thinking

3.7.1 Ong (1982:83) observes that certain levels of complex thinking simply cannot be achieved without writing:

The critical and unique breakthrough into new worlds of knowledge was achieved within human consciousness ... when a coded system of visible marks was invented whereby a writer could determine the exact words that the reader would generate from the text ... With writing or script in this full sense, encoded visible markings engage words fully so that the exquisitely intricate structures and references evolved in sound can be visibly recorded exactly in their specific complexity and, because visibly recorded, can implement production of still more exquisite structures and references, far surpassing the potentials of oral utterance.

3.7.2 The writing down of ideas allows writers to build on the collective thoughts and accumulated knowledge of all who have come before them and develop them further: 'Writing freezes speech and in so doing gives birth to the grammarian, the logician, the rhetorician, the historian, the scientist—all those who must hold language before them so that they can see what it means, where it errs, and where it is leading' (Postman, 1985:12).

3.7.3 Similarly, deep reading allows the reader to internalise information and ideas at a level of complexity that is virtually impossible via oral communication. It serves as the cognitive foundation for complex reasoning by training the brain to process information slowly, critically, and systematically. (Mendoza, 2024). Readers can pause, reread sections, return to earlier passages and meditate on important passages to help them properly understand a book. These techniques are not available to the same extent, if at all, without literacy.

3.8 Creativity and intellectual innovation

3.8.1 The results of a 2012 study of university students indicated that those who spent more time on reading and writing performed significantly better on a creativity test. The study concluded that creativity scores, especially scores of elaboration, were significantly correlated with attitudes toward reading and writing, and the amount of time

spent on reading and writing (Wang, 2012). These results are not surprising. Reading enriches creativity in a number of ways: when reading descriptions of a place or a character, the brain's visual regions construct those images from scratch without external cues. As discussed, deep reading forces different parts of the brain to work together, strengthening the networks responsible for abstract thinking and problem-solving. Reading provides access to the vast collection of knowledge that has been preserved in books and the 'discipline of reading equips [readers] with the analytical tools to interrogate, refine and revolutionise that tradition' (Marriott, 2025).

3.8.2 Horowitch (2026) explains that '[b]ecause writing endures, individuals can temporarily forget what they've written but trust that it won't be lost forever. This frees up the mind to think of new ideas and make new discoveries.' She goes on to quote Elizabeth L. Eisenstein's *The Printing Revolution in Early Modern Europe* (1983) speaking about the invention of printing giving university students increased access to books allowing 'bright undergraduates to reach beyond their teachers' grasp. Gifted students no longer needed to sit at the feet of a given master in order to learn a language or academic skill.' And so, students who read were less likely to defer to traditional authority and more receptive to innovating trends. The converse is also, unfortunately, true: 'Modern students who are unable to read are once more reliant on the authority of their teachers and are less capable of racing ahead, innovating and questioning orthodoxies' (Marriott, 2025).

3.9 Communication skills

Reading helps articulate complex ideas and organise them for clear expression by expanding vocabulary, demonstrating how to structure arguments, developing good grammar and syntax, and providing cognitive patterns for deep thinking.

3.10 Vocabulary expansion

3.10.1 Reading has been shown to improve verbal and written communication skills. In a study of grade five learners, it was found those who were frequent readers were more likely to develop effective vocabulary strategies that enhanced their communication abilities. The significant direct and indirect effects further suggest that reading habits contribute to communication skills both independently and through vocabulary development processes (Pendejito & Loquere, 2026).

3.10.2 People who read widely build larger mental word banks, which directly translate into better spoken and written word choices, and the ability to express ideas (Sapaeva & Xujaniyazova, 2019). Vocabulary knowledge is one of the crucial factors that influences speaking fluency (ibid.).

3.11 Grammar and syntax

3.11.1 It has been established that language acquisition – specifically the mastery of complex grammar and writing style – occurs subconsciously through exposure

to ‘comprehensible input’ rather than conscious rule memorisation and that Free Voluntary Reading (FVR) is the single most effective predictor of grammatical competence (Krashen, 1993). Reading introduces learners to a wider body of language and contexts. Reading helps learners build up better grammar skills because they are repeatedly exposed to patterns of good grammar. As learners develop stronger reading skills, they develop more sophisticated speaking skills (Sapaeva & Xujaniyazova, 2019).

3.11.2 Syntactic awareness (the ability to monitor and manipulate sentence structure) develops hand-in-hand with reading. It proves a reciprocal relationship: as readers decipher complex texts, their brains map syntactic rules, which they then use to predict and comprehend subsequent complex language structures (Martohardjono et al., 2005).

3.12 Foreign language learning

Reading is equally important for foreign language learning and development – specifically development of the ‘speaking’ skill (one of the four language skills, with the others being listening, reading and writing). Integrating speaking and reading skills allows students to express what they have read into authentic speaking practice that improves their fluency (Zhang, 2009). This is relevant for second- or third-language English-speaking professionals (including actuaries) working in fields where the language of business is English.

4. THE POST-LITERATE THREAT AND THE EFFECTS OF INCREASED SCREEN TIME

4.1 If reading has been shown to be beneficial in many ways, does it follow that the dawn of a post-literate era has been and will continue to be detrimental to society?

4.2 More time spent on screens has meant, since the widespread introduction of television in the mid-20th century, less time spent reading. While the secondary orality of the electronic age has cultivated its own set of digital literacy skills, such as reproduction literacy (the ability to create by integrating existing independent pieces of information), information literacy (the ability to evaluate information effectively) (Eshet-Alkalai, 2004), rapid information processing, multitasking, and quick attention-shifting (Stillman, 2018), these skills can crowd out the slower cognitive processes that deep reading demands. This trend of increasing aliteracy and diminished functional literacy seems to pose significant threats to our cognitive, intellectual and emotional capacities.

4.3 The reverse Flynn effect

The Flynn effect refers to the ‘consistent upward drift in IQ test scores across generations which has been documented to be approximately 3 points per decade’ (Gregoire & Weiss, 2019:245). Recent studies have, however, shown that there may be a reversal of the Flynn effect for some cohorts in certain countries (Dworak et al., 2023).

While there does not appear to be concrete evidence pointing to a single, specific cause, the IQ reversal seems to begin around 2010 – more or less the point at which smartphones started to become ubiquitous.

4.4 Effects of screen time on attention span and memory

4.4.1 Longitudinal and cross-sectional studies consistently link high screen exposure to greater concentration difficulties and inattention. Chew et al. (2025) refer to various studies linking the consumption of short-form videos to impaired attention functions, sustained attention deficit and greater reaction time variance. These studies show how compulsive viewing behaviours can erode the cognitive resources needed for sustaining attention, making it more challenging for subjects to effectively complete tasks at school and work.

4.4.2 Other studies have found that spending excessive time on short-form video platforms leads to difficulty in retaining detailed information (Siddantham et al., 2026).

4.4.3 The volume and immediacy of online information risks creating a ‘deluded’ reader who mistakes access to information for real understanding. Studies show that readers, especially children, often fail to use hyperlinks and on-page supports well, and recall less when text is cluttered with images and animation (Stillman, 2018).

4.5 Effects of screen time on cognitive development

4.5.1 Media multitasking has been found to have a negative impact on executive functioning in teenagers, notably on working memory, inhibition, and the capacity to switch between tasks. Significant links have been found between higher levels of media multitasking and lower scores on standardised mathematics and English tests (Muppalla et al., 2023).

4.5.2 In another study, Hutton et al. (2020) found that an association exists between children’s increased screen-based media use and lower integrity of brain white matter, which supports language and emergent literacy skills.

4.6 Generative AI: a double-edged sword

4.6.1 In the same way that screens and other digital technologies have decimated the time and attention available for deep reading, Generative AI has emerged as an existential threat to the act of writing.

4.6.2 While AI has been shown to improve students’ academic writing skills (providing immediate feedback, grammar correction, vocabulary suggestions, idea generation and text organisation) (Amanda et al., 2026), some early studies indicate that overreliance on AI may limit students’ critical thinking and originality in writing (Kasneci et al., 2023). Intuitively this makes sense, as phrased by Horowitch (2026): ‘Writing is hard because the writer is learning. If AI eliminates the challenge, it also eliminates the learning.’

5. READING-DEPENDENT ACTUARIAL COMPETENCIES

5.1 While the risks of post-literacy threaten society at large, they are particularly pertinent to the actuarial profession.

5.2 Reading may be considered a core competency across the actuarial lifecycle, from study requirements during the education and qualification stage – particularly for the later less technical, more content-rich subjects – to the reading stamina required for reading-heavy tasks (e.g. peer review, technical documentation, scrutinising of policy wording) in an actuary's early career. The empathic and analytical capabilities cultivated by reading become even more important in senior and leadership roles, where actuaries become responsible for stakeholder communication, board reporting and public-interest work.

5.3 To systematically review how reading is not just a beneficial skill for actuaries, but indeed a professional obligation, it is useful to look at how being a proficient reader is a prerequisite to compliance with the Code of Conduct of the Actuarial Society of South Africa (ASSA), referred to in this paper as 'the Code', which governs the professional member base of ASSA. It is the guiding authority on acceptable behaviour for actuaries and is based on the following principles:

- professional accountability to the Actuarial Society of South Africa,
- the demonstration of ethical behaviour, and
- the application of specialist, up-to-date knowledge and expertise (Actuarial Society of South Africa, n.d.-a).

5.4 Based on the above, the principles of professional conduct therefore include:

- a) **Knowledge and expertise:** A member shall perform only those professional services for which the member is competent and appropriately experienced.
- b) **Values and behaviour:** A member shall act honestly, with integrity, competence and due care, and in a manner that fulfils the profession's responsibility to the public.
- c) **Professional accountability:** A member is subject to the professional requirements and oversight of the Society, and shall do nothing that brings the actuarial profession into disrepute.

5.5 According to the Code, '[a]ny material failure to comply with either the principles or the specific requirements for professional conduct will be interpreted as a violation of the Code and may constitute unprofessional or unacceptable conduct'.

5.6 Adequately fulfilling many of the competencies specified in the Code depends heavily on the benefits and capabilities derived from reading. This section draws out examples of such competencies and links them to the benefits of reading described above.

5.7 Knowledge and expertise

5.7.1 *Maintaining up-to-date knowledge*

To maintain ‘up-to-date knowledge of all the actuarial practices and professional standards, as well as the legal and business environment, applicable to their work and their provision of actuarial services’, actuaries need not only to keep abreast of, but to understand and assimilate the relevant legislation, actuarial standards of practice, professional guidance notes, news articles and research. These are tasks that require deep reading – and the cognitive benefits, such as memory retention, that come with it – rather than skimming.

5.7.2 *Innovation*

Furthermore, ‘the Society encourages members to innovate and thereby contribute to new standards of practice.’ Actuaries who are readers benefit from increased creativity. Reading enables innovation in that the reader can build on the collective thought of all those who have come before.

5.7.3 *Communication*

5.7.3.1 ‘Effective and appropriate communication is an essential part of all actuarial services.’

5.7.3.2 Major actuarial professional bodies around the world have long considered communication (reading and writing) a core actuarial competency, evidenced by the inclusion of communication either in their qualification syllabi (e.g. the Institute and Faculty of Actuaries’ CP3: Communications Practice examination (n.d.) and the Actuarial Society of South Africa’s N211: Communications examination (n.d.-b)) or in their official competency frameworks. In fact, the Society of Actuaries lists communication (‘[d]eveloping the listening, writing and speaking skills that are needed to address diverse technical and non-technical audiences in formal and informal settings.’ (n.d.)) as the first of their eight core competencies.

5.7.3.3 This focus on communication has also been reflected informally in the views of working actuaries, as shown in a 2025 online poll conducted by the actuarial platform, ProActuary. Thirty percent of the 513 respondents selected communication skills in response to the question ‘What made you more valuable as an actuary?’, making it the most popular option (Farrell, 2025). This finding indicates that a significant number of actuaries ‘feel that being able to explain and contextualise complex work added more value to their careers than technical know-how alone.’

5.7.3.4 Being an active reader not only allows the actuary to better understand written communication and documentation from their stakeholders, but it also has been shown to improve speaking and writing – essential communication and language skills. Poor writing is often a downstream symptom of poor reading and actuaries who don’t read widely and well tend to write less clearly for non-technical audiences (boards, regulators, members).

5.8 Values and ethical behaviour

5.8.1 *Integrity, competence and care*

5.8.1.1 'A member must act honestly, with integrity, competence and due care, and in a manner that fulfils the profession's responsibility to the public and upholds the reputation of the actuarial profession.'

5.8.1.2 Reading has been shown to foster empathy, which supports the ability to act with honesty, integrity and care. Being a practised writer can allow the actuary to construct arguments and engage in discussion in a calm and rational way, supporting their ability to act competently.

5.8.2 *Consideration of implications for all parties*

5.8.2.1 'In fulfilling assignments, members must consider the likely implications of their recommendations for all parties that are likely to be materially affected, and also draw the attention of their clients to such implications.'

5.8.2.2 The requirement relies on actuaries being able to read contracts and literature thoroughly and with professional judgement, which requires deep reading. They are also required to read situations and precedent with nuance, which can be seen as an extension of textual literacy to 'situational literacy'.

5.8.3 *Constructive disagreement*

5.8.3.1 'Differences of opinion among members may arise, especially in choices of assumptions and methods. Discussions of such differences between members, or in observations made by a member on the work of another member, must be conducted objectively and with courtesy and respect. This does not prevent constructive criticism where this is properly motivated and justifiable.'

5.8.3.2 The abilities to stay empathetic, logical and rational are essential to the skill of being able to address differences in a courteous way. The communication skills nurtured through reading and writing can also help to articulate differences of opinion in a constructive way.

5.9 Professional accountability

5.9.1 *Continuous professional development and participation*

5.9.1.1 'The Society serves the public interest through its actuarial education and continuing professional development programmes, and by developing and enforcing standards ... Members are encouraged to motivate improvements in regulation and participate in relevant policy debates, especially through the structures of the Society.'

5.9.1.2 Keeping up to date with industry and personal developments (as mandated by continuous professional development requirements) and being able to comment on professional matters require frequent review of relevant literature. To do this effectively, members need to deeply read primary sources, not only the executive summaries.

6. PRACTICAL RECOMMENDATIONS

6.1 Little imagination is needed to identify some of the many risks associated with actuaries who do not develop and exercise an ability to read deeply. Misreading or superficially reading policy wording, treaty terms, or legislation may lead to pricing, reserving and reporting errors. An over-reliance on AI-generated materials – be those summaries of technical papers or standards or the outsourcing of written communication to AI – could lead to misunderstandings and the loss of material detail or nuance. There are also the more human but no less damaging consequences of the erosion of the empathic dimension of actuarial work (in areas such as benefit design or claims philosophy) as aliteracy reduces exposure to varied human perspectives.

6.2 This paper therefore suggests a multifaceted approach to stave off illiteracy and aliteracy in actuaries: practical interventions for each constituent group within the actuarial ecosystem.

6.3 Educators and academic institutions

6.3.1 Undergraduate actuarial science degrees from accredited universities in South Africa generally focus on the technical, problem-set-based skills required to be granted exemption from the foundation technical and intermediate technical examinations in the ASSA qualification roadmap. While fourth year or honours students are often exposed to reading- and writing-intensive modules (e.g. in their fourth year/honours actuarial research projects and Professional Communication module), universities could consider building more components exercising these skills into their actuarial science curricula from first year. Examples could include more case studies and essay-style assignments. This would not only produce a richer university-level education, but could also narrow the functional literacy gap that may be carried over from deficiencies in the basic education system. These components could include deep analysis of case studies, study of primary literature and long-form writing assessments.

6.3.2 At a more holistic level, universities – beyond the actuarial science departments – could consider partnering with basic education literacy interventions as part of their transformation agendas.

6.4 Employers

6.4.1 Employers could encourage and incentivise the development of reading and writing skills for actuaries at all stages of development. For junior actuaries and students still writing exams, employers might consider building reading and writing review into their graduate or trainee programmes by offering mentored technical writing.

6.4.2 A reading culture could be fostered to benefit all the actuaries – and their clients – at an employer. Initiatives such as journal clubs, mandatory peer review of reports and production of research papers for publication could not only hone reading stamina,

but also explicitly support actuaries in complying with the ASSA Code of Conduct. If appropriate, some key performance indicators might be linked to reading and writing skills, such as involvement in peer review.

6.4.3 As part of their AI policies, employers might instruct that AI tools be used as supplements to, not substitutes for, reading primary standards and research or writing reports and emails.

6.5 The profession (ASSA)

6.5.1 The ASSA qualification route incorporates several activities which presuppose and develop reading, writing and communication skills: the later subjects (i.e. Actuarial Risk Management, Normative Skills, Fellowship Principles and Fellowship Applications) and the work-based learning requirements. To support students writing these examinations, ASSA might consider offering training programmes specifically focusing on literacy skills which might help students clear these hurdles more quickly (the average pass rate of the N211 Communications examination, for example, is around 29% based on the six most recent sittings for which results were available on the ASSA website).

6.5.2 For qualified actuaries, there may be ways to explicitly credit wide reading and writing as part of continuous professional development (CPD) requirements.

6.5.3 ASSA leadership could consider naming literacy/communication as a pillar in 'future of the profession' skills frameworks, not folded silently into 'soft skills'. This kind of focus could inspire the ASSA membership base to focus on their literacy skills as a key tool in remaining relevant.

6.6 Individual actuaries

6.6.1 Actuaries who see the value in reading can try to deliberately incorporate reading into their work and personal lives. They might decide to schedule deep-reading time and start reading beyond technical material (e.g. fiction and long-form journalism) to build empathy and reading stamina, not just technical expertise.

6.6.2 They might also be mindful of their own AI usage and distinguish between using AI to accelerate and improve reading and writing (e.g. by triaging relevant sections within a longer piece or asking AI to suggest improvements to a draft email) versus replacing the act of reading and writing altogether.

7. CONCLUSION

Reading – specifically deep, long-form reading – adds value far beyond being an enjoyable pastime. It is an essential skill in enabling actuaries to work with and demonstrate professionalism, ethical behaviour and technical expertise. Reading and writing prevent cognitive decline, improve memory retention, encourage creativity and innovation, and nurture interpersonal and communication skills. There are numerous avenues via which the actuarial community may further embed literacy into their professional lives – this

paper has suggested a few of them. Ironically, it is the honing of these (seemingly) ancient skills that may keep actuaries relevant in a digital, post-literate age.

REFERENCES

- Actuarial Society of South Africa (n.d.-a). Code of Conduct. Available at: <https://www.actuarialsociety.org.za/professional-resources-and-conduct/> (Accessed: 28 July 2026)
- Actuarial Society of South Africa (n.d.-b). Qualification Roadmap. Available at: <https://www.actuarialsociety.org.za/qualification-roadmap/> (Accessed: 28 July 2026)
- Amanda, V, Darmayanti, Y, Zahra, R, Ningsih, AR, Muafi, K & Oktarisna, R (2026). The Effect of ChatGPT-Assisted Writing on EFL Students' Academic Writing Skills. *Journal of English Language and Education*, 11(3), 726–736
- Biddle, K, Ekdale, B, High, AC, Stoldt, R & Maragh-Lloyd, R (2024). Beyond 'Lulz' and 'keyboard warriors': exploring the relationship between trolling and radicalization. *Information, Communication & Society*, 27(16), 2817–2833
- Bone, JK, Bu, F, Sonke, JK & Fancourt, D (2025). The decline in reading for pleasure over 20 years of the American Time Use Survey. *iScience*, 28(9), art. 113288
- Chang, Y, Wu, I & Hsiung, C (2020). Reading activity prevents long-term decline in cognitive function in older people: evidence from a 14-year longitudinal study. *International Psychogeriatrics*, 33, 63–74
- Chew, DT, Gay, JG, Than, H & Ko, ZQ (2025). Effects of Consuming Short-Form Videos on Young Adults' Fine Motor Skills. Introduction to Research Methods (RSCH 202) course project, Embry-Riddle Aeronautical University
- Datta, S (2024). The Effect of the Printing Press on Elizabethan Literature. North South University
- Deb, P & Basu, A (2024). The role of verbal fluency as a variable in reading and comprehension skills in Bengali. *Journal of Psycholinguistic Research*, 53(1)
- Dehaene, S, Duhamel, J-R, Hauser, MD & Rizzolatti, G (eds.) (2005). *From Monkey Brain to Human Brain: A Fyssen Foundation Symposium*. MIT Press, Cambridge, MA
- Department of Basic Education (2023). PIRLS 2021: South African Main Report. Department of Basic Education: Pretoria
- Diringer, D (1953). *The Alphabet: A Key to the History of Mankind*. Philosophical Library, New York (2nd edn)
- Dworak, EM, Revelle, W & Condon, DM (2023). Looking for Flynn effects in a recent online U.S. adult sample: Examining shifts within the SAPA Project. *Intelligence*, 98, art. 101734
- Eisenstein, EL (1983). *The Printing Revolution in Early Modern Europe*. Cambridge University Press, Cambridge/New York
- Engelsing, R (1973). *Analphabetentum und Lektüre: Zur Sozialgeschichte des Lesens in Deutschland zwischen feudaler und industrieller Gesellschaft*. J.B. Metzler, Stuttgart, 53–68

- Eshet-Alkalai, Y (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93–106
- Farrell, M (2025). Beyond the Numbers: Actuaries Rank Communication Skills as Top Value Driver. ProActuary. Available at: <https://proactuary.com/actuarial-communication-skills/> (Accessed: 28 July 2026)
- Ferguson, S (2026). Can Reading Books Actually Help You Live Longer? What the Research Says. verywellmind. Available at: <https://www.verywellmind.com/can-reading-books-help-you-live-longer-12019819> (Accessed: 28 July 2026)
- Gelb, IJ (1963). *A Study of Writing*. University of Chicago Press, Chicago. (rev edn. Originally published as *A Study of Writing: The Foundations of Grammatology* (1952))
- Gregoire, J & Weiss, LG (2019). *WISC-V*, 2nd edn. Academic Press
- Horowitch, R (2024). The elite college students who can't read books. *The Atlantic*. Available at: <https://www.theatlantic.com/magazine/archive/2024/11/the-elite-college-students-who-cant-read-books/679945/> (Accessed: 28 July 2026)
- Horowitch, R (2026). The end of reading is here. *The Atlantic*, August. Available at: <https://www.theatlantic.com/magazine/2026/08/reading-crisis-postliterate-age/687618/> (Accessed: 28 July 2026)
- Hutton JS, Dudley J, Horowitz-Kraus T, DeWitt T & Holland SK (2020). Associations Between Screen-Based Media Use and Brain White Matter Integrity in Preschool-Aged Children. *JAMA Pediatr*, 174(1):e193869
- Institute and Faculty of Actuaries (n.d.). Communications Practice (CP3). Available at: <https://actuaries.org.uk/communications-practice-cp3/> (Accessed: 28 July 2026)
- Kasneci, E, Seßler, K, Küchemann, S, Bannert, M, Dementieva, D, Fischer, F, Gasser, U, Groh, G, Günnemann, S, Hüllermeier, E, Krusche, S, Kutyniok, G, Michaeli, T, Nerdel, C, Pfeffer, J, Poquet, O, Sailer, M, Schmidt, A, Seidel, T, Stadler, M, Weller, J, Kuhn, J & Kasneci, G (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, art. 102274
- Kirsch, IS, Jungeblut, A, Jenkins, L & Kolstad, A (1993). Adult Literacy in America: A First Look at the Findings of the National Adult Literacy Survey. National Center for Education Statistics (NCES 93-275), Washington, DC
- Krashen, S (1993). We learn to write by reading, but writing can make you smarter. *Ilha do Desterro*, 29, 27–38
- Le Cunff, A-L (2026). How reading books regulates your nervous system. *Big Think*. Available at: <https://bigthink.com/mind-behavior/how-reading-books-regulates-your-nervous-system/> (Accessed: 28 July 2026)
- Mar, RA, Oatley, K & Peterson, JB (2009). Exploring the link between reading fiction and empathy: ruling out individual differences and examining outcomes. *Communications*, 34(4), 407–428

- Marriott, J (2025). The dawn of the post-literate society. *Cultural Capital*. Available at: <https://jmarriott.substack.com/p/the-dawn-of-the-post-literate-society-aa1> (Accessed: 4 September 2026)
- Martohardjono, G, Otheguy, R, Gabriele, A, de Goeas-Malone, M, Szupica-Pyrzanowski, M, Troseth, E, Rivero, S & Schutzman, Z (2005). The role of syntax in reading comprehension: a study of bilingual readers. In Cohen, J, McAlister, KT, Rolstad, K & MacSwan, J (eds.) *ISB4: Proceedings of the 4th International Symposium on Bilingualism*. Cascadilla Press, Somerville, MA, 1522–1544
- McLuhan, M (1962). *The Gutenberg Galaxy: The Making of Typographic Man*. University of Toronto Press, Toronto
- Mendoza, K (2024). Deep reading is a lost skill – how can parents help?. *Oxford Learning*. Available at: <https://oxfordlearning.com/deep-reading-is-a-lost-skill-how-can-parents-help/> (Accessed: 28 July 2026)
- Merriam-Webster (2026). Illiteracy. *Merriam-Webster.com Dictionary*. Available at: <https://www.merriam-webster.com/dictionary/illiteracy> (Accessed: 28 July 2026)
- Mikulecky, L (1978). Aliteracy and a Changing View of Reading Goals. Paper presented at the Annual Meeting of the International Reading Association, Houston, TX. ERIC ED157052
- Mikulecky, L (1982). Job Literacy: The Relationship between School Preparation and Workplace Actuality. *Reading Research Quarterly*, 17(3), 400–419
- Milani, C, Biagi, C, Palmieri, E, Rosi, C, Buresta, D, Iocca, F, Wetzell Cabrera, F, Zanobini, P, Lorini, C & Bonaccorsi, G (2025). Shared reading interventions to promote psychosocial well-being in older adults: a systematic review. *Health Promotion International*, 40(2), daaf036
- Muppalla, SK, Vuppalapati, S, Reddy Pulliahgaru, A & Sreenivasulu, H (2023). Effects of Excessive Screen Time on Child Development: An Updated Review and Strategies for Management. *Cureus*, 15(6), e40608
- National Literacy Trust (2026). Our latest research shows modest rise in children's reading engagement, but levels remain low. Available at: <https://literacytrust.org.uk/news/our-latest-research-shows-modest-rise-in-childrens-reading-engagement-but-levels-remain-low/> (Accessed: 28 July 2026)
- OECD (2024). Adult Skills in Literacy and Numeracy Declining or Stagnating in Most OECD Countries. OECD, Paris. Available at: <https://www.oecd.org/en/about/news/press-releases/2024/12/adult-skills-in-literacy-and-numeracy-declining-or-stagnating-in-most-oecd-countries.html> (Accessed: 28 July 2026)
- Ong, WJ (1982). *Orality and Literacy: The Technologizing of the Word*. Methuen, London/New York (2nd edn, Routledge, 2002)
- Pendejito, RN & Loquere, ML (2026). Reading habits and communication skills mediated by vocabulary learning strategies of Grade 5 public school learners: bases for action plan. *International Journal of Research and Innovation in Social Science*, 10(26), 3432–3439

- Plato (1973). *Phaedrus and Letters VII and VIII*, trans. with introductions by Walter Hamilton. Penguin Books, Harmondsworth
- Polzer-Ngwato, T, Shilakoe, L, Morse, K & Huston, K (2023). National Reading Survey 2023 Findings Report. Nal'ibali Trust. Available at: <https://www.readingbarometersa.org/content/national-reading-survey-2023-findings-report> (Accessed: 28 July 2026)
- Postman, N (1985). *Amusing Ourselves to Death*. Penguin Books, New York
- Rachuri, R (2024). Reading books: an effective tool for enhancing critical thinking skills among English language learners. *ShodhKosh: Journal of Visual and Performing Arts*, 5(6), 1909–1918
- Sapaeva, FN & Xujaniyazova, GY (2019). Impact of extensive reading to develop speaking skills. *European Journal of Research and Reflection in Educational Sciences*, 7(12), 269–272
- Schiemer, A (2010). *Die älteste Zeitung der Welt, 1703–1779*. Wiener Zeitung. (Link no longer live; accessed March 2010.)
- Sharpe, S (2025). Does reading improve memory? University of Phoenix Blog. Available at: <https://www.phoenix.edu/blog/does-reading-improve-memory.html> (Accessed: 28 July 2026)
- Siddantham, S, Sridhar, P & Thota, V (2026). Impact of Short-Form Video Content on Attention Span and Memory Retention. SSRN working paper
- Society of Actuaries (n.d.). Competency Framework for Actuaries. Available at: <https://www.soa.org/professional-development/competency-framework/> (Accessed: 28 July 2026)
- Stillman, J (2018). How Skim Reading From Screens Is Rewiring Your Brain (It's Not Good). Inc.com. Available at: <https://www.inc.com/jessica-stillman/skim-reading-from-screens-is-doing-scary-thing-to-your-brain-according-to-neuroscience.html> (Accessed: 28 July 2026)
- Stine-Morrow, EAL, McCall, GS, Manavbasi, I, Ng, S, Llano, DA & Barbey, AK (2022). The effects of sustained literacy engagement on cognition and sentence processing among older adults. *Frontiers in Psychology*, 13, art. 923795
- UNESCO (n.d.). Literacy. Available at: <https://www.unesco.org/en/literacy> (Accessed: 28 July 2026)
- UNESCO (2003). Literacy, a UNESCO Perspective. UNESCO, Paris
- UNESCO (2017). Reading the Past, Writing the Future: Fifty Years of Promoting Literacy. UNESCO, Paris
- United States Congress (1991). National Literacy Act of 1991, Public Law 102-73. US Government Printing Office, Washington, DC
- Vogrinčič, A (2008). The novel-reading panic in 18th-century in England: An outline of an early moral media panic. *Medijska istraživanja*, 14(2), 53–69
- Wang, AY (2012). Exploring the relationship of creative thinking to reading and writing. *Thinking Skills and Creativity*, 7(1), 38–47
- Wolf, M (2007). *Proust and the Squid: The Story and Science of the Reading Brain*. Harper, New York
- Wolf, M & Barzillai, M (2009). The Importance of Deep Reading. *Educational Leadership*, 66(6)

Zhang, Y (2009). Reading to speak: integrating oral communication skills. *English Teaching Forum*, 47(1), 32–34

Zunshine, L (2006). *Why We Read Fiction: Theory of Mind and the Novel*. Ohio State University Press, Columbus, OH