Keeping Pace with the Digital Times

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Throughout history, human beings have been making changes in order to overcome challenges and improve lives. The use of fire for cooking is one ancient example still in use today.

Figure 1: Fire for Cooking Food

The digital revolution is the latest of the most significant and large scale changes. They include the **first industrial revolution** (1784), the **technical or second industrial revolution** (1870), and the **information and telecommunications or the third industrial revolution** (1969), also known as the digital revolution. The trend goes on with increasing speed.

Specifically, the **digital revolution** refers to the advancement of technology from analog electronic and mechanical devices to the digital computing and automation technologies. We are entering the **fourth industrial revolution** (2011) enabling mixing and mutual reinforcement among real and

virtual systems powered by advanced mobile networking, big data and generative AI (artificial intelligence) systems.
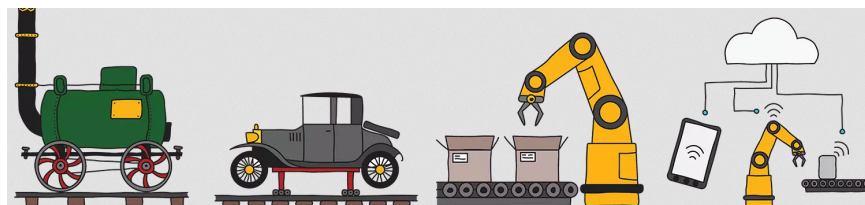

Figure 2: Industrial Revolutions

While these big advances brought great benefits, they also caused many changes in people's lives. Such changes require new understanding, new skills, new training, new ways of conducting business or even daily living. But, most importantly, they require **new ways of thinking**. No wonder keeping pace with the times has always been a great concern for people.

This *Computational Thinking* (CT) blog focuses on keeping pace in the digital age.

Who should be concerned?

Individuals of all ages, professionals, students, and businesses should be concerned with keeping up with the digital age. It's a relevant topic for anyone who interacts with technology and the digital world.

Even *digital natives*, people who grew up in the digital era and took the technologies for granted, need to keep up, because being used to them is not a substitute for understanding or becoming proficient with them.

In short, almost everyone can benefit from keeping up with the digital times.

Why is it important?

Automobiles replaced horse-drown carriages. Is it important to learn how to drive?

As digital technologies change **almost every aspect of our lives**, is it important to keep pace?

Still, let's give some specific reasons:

Figure 3: Learning to Drive

1. Economic Opportunities: Many jobs and careers require digital skills and tech proficiency.

2. Education: Digital literacy is essential for modern education and online learning.

3. Communication: Staying digitally literate enables effective communication in a digital world. On social media platforms, new cultural references are often created. Being aware of the memes help keep our interactions with others "in the present".

4. Empowerment: Digital skills empower individuals to access information and services instantly without regard to distances.

5. Innovation: New ways of thinking, i.e. Computational Thinking, fosters innovation and the ability to adapt to changing technologies.

What specific challenges?

Keeping pace can help us deal with significant challenges presented by the digital age:

- Instant News vs. Traditional Media: The shift from traditional print and broadcast news to online and social media platforms has changed

the way news is disseminated and consumed. Keeping up with rapidly evolving news cycles and verifying information become critical.

- Copyright and Intellectual Property: Digital technology has made it easier to share and reproduce digital content, leading to copyright issues and debates over intellectual property rights. Individuals and businesses must navigate the complexities of copyright laws in the digital age.

- Cybersecurity and Privacy Concerns: The digital age has brought about heightened concerns regarding cybersecurity and personal privacy. Individuals and organizations need to protect sensitive data and guard against cyber threats.

- Digital Divide: While digital technology has become ubiquitous, there is still a digital divide where some individuals and communities lack access to reliable internet and digital resources, creating disparities in education and opportunities.

- Online Learning and Remote Work: The COVID-19 pandemic accelerated the adoption of online learning and remote work. Individuals and institutions had to adapt quickly to these new modes of education and employment.

- E-commerce and Online Shopping: The growth of e-commerce has transformed the retail industry, impacting both brick-and-mortar stores and online businesses. Consumers need to be savvy online shoppers, considering factors like security, pricing, and product quality.

- Social Media and Online Reputation: Maintaining a positive online reputation and managing social media profiles have become essential, as employers, colleges, and individuals often use online platforms to research and evaluate others.

- Digital Marketing and Advertising: Businesses now rely heavily on digital marketing and advertising to reach their target audiences. This includes strategies such as search engine optimization (SEO), social media advertising, and influencer marketing.

- Fake News and Misinformation: The spread of fake news and misinformation on digital platforms has become a significant concern. Critical

thinking and media literacy skills are crucial for distinguishing between reliable and unreliable sources.

- Cloud Computing and Data Storage: Cloud services have revolutionized data storage and accessibility. However, individuals and organizations must consider data security, backup strategies, and compliance with data protection regulations.

- Smart Devices and Internet of Things (IoT): The proliferation of smart devices, from smartphones, smart appliances, to remote home/office video surveillance systems, raises questions about privacy, security, and the potential vulnerabilities of interconnected devices.

- Digital Health and Telemedicine: The digital age has seen advancements in telemedicine and remote healthcare services. Patients and healthcare providers need to adapt to virtual consultations and digital health records.

These issues highlight the multifaceted nature of keeping up with the digital age, encompassing technology, communication, security, privacy, and societal implications. Staying informed and proactive in addressing these challenges is essential for individuals and organizations in the digital era.

When should one get started?

It is crucial to start as soon as possible, especially in today's rapidly evolving digital landscape. Starting early helps individuals develop digital literacy skills that are essential in education, careers, and daily living. Each step taken makes it easier and more enjoyable to move forward.

We are not getting any younger. Every day we put off doing at least something to keep up, we are just going to be left further and further behind.

How to proceed?

How can we keep up with the digital age effectively? We can read online articles and tutorials on relevant topics, subscribe to technology news and blogs, participate in digital literacy programs, engage in lifelong learning and skill development, practice safe and responsible online behavior, stay curious and open to new technologies and trends.

Figure 4: Sense of Urgency

Here's a priority list of specific topics with which to get started.These topics provide a foundational understanding of key aspects of the digital world:

Figure 5: One thing at a time

1. *Digital Literacy*: Understanding the basics of computer hardware, software, and operating systems. Familiarity with common digital terms and concepts.

2. *Internet Fundamentals*: How the internet works, including concepts like IP addresses, domains, and DNS. Effective use of Web browsers, search engines, and online resources.

3. *Cybersecurity Basics*: How to protect personal information online. Recognizing and avoiding common online threats like phishing and malware.

4. *Social Media and Online Presence*: Creating and managing social media profiles. Understanding digital etiquette and privacy settings.

5. *Email Communication*: Effective email communication and organization. How to recognize and handle spam and phishing emails.

6. *Productivity Tools*: Proficiency with office suite software (e.g., Microsoft Office, Google Workspace). Time management and task organization using digital tools.

7. *Cloud Computing*: Understanding cloud storage and file sharing. Familiarity with cloud-based productivity and collaboration tools.

8. *Digital Communication*: Messaging apps, video conferencing, and online meetings. Proper digital communication etiquette.

9. *Online Safety and Privacy*: Privacy settings on social media and online accounts. Two-factor authentication and password management.

10. *Digital Content Creation*: Efficient creation of documents in digital forms such as formatted text, spread sheets, presentation slides, basic graphics and multimedia editing/creation (e.g., creating and editing images and videos). Blogging, podcasting, or vlogging for content creation.

11. *Online Learning Resources*: Accessing online courses and educational platforms. Lifelong learning and skill development.

12. *E-commerce and Online Shopping*: Safe online shopping practices. Understanding online payment methods.

13. *Mobile Devices and Apps*: Basics of smartphone operation and app installation. Mobile device security and app permissions.

14. *Data Management and Backup*: Regular data backups and data recovery options. File organization and storage management.

15. *Digital Citizenship and Ethics*: Responsible online behavior and digital citizenship. Awareness of digital rights and responsibilities.

16. *Emerging Technologies*: Stay informed about emerging technologies like artificial intelligence, blockchain, and virtual reality.

17. *Accessibility and Inclusivity*: Understanding digital accessibility for people with disabilities. Designing and using technology with inclusivity in mind.

18. *Sustainability in the Digital Age*: Consider the environmental impact of digital choices and practices.

19. *Digital Detox Strategies*: Strategies for managing screen time and digital well-being.

20. *Legal and Copyright Awareness*: Understanding online copyright and intellectual property rights.

Pick a few from these foundational topics to get started. Perhaps choose one or two related to immediate and practical use such as ordering online, email, texting, smartphone and smart TV, Internet service providers (ISP), home WIFI and networking.

As you become more comfortable and knowledgeable, you can explore more areas of interest. If you get started, you'll catch up in time. Remember that the digital age is constantly evolving, so continuous learning and adaptation are essential for staying current, while inaction can leave you farther behind.

Where to get help?

Resources for keeping up with the digital age are widely available online and offline. These resources include video courses, educational websites, libraries, technology workshops, and digital literacy programs in schools and communities.

To get started in a hurry, I'd recommend my new book "*Becoming a Computational Thinker: Success in the Digital Age*" that was published in January 2024. It is a wonderful tool for people of all ages to get started. Here is the book's website: `computize.org/CTer`.

The book contains 30 articles. No prior digital literacy is required. Each article is illustrated with plenty of pictures and drawings to make it easy to read. The contents are down to earth, easily relatable to folks in all walks of life and to their daily lives. Article-end crossword puzzles add fun for readers.
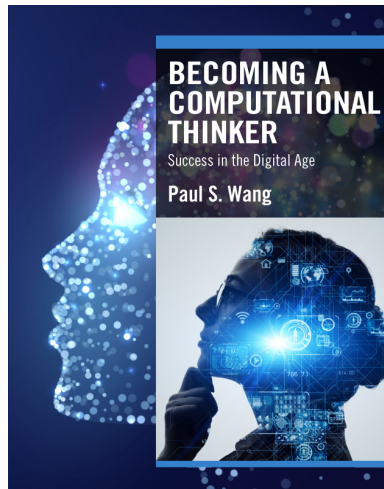
Figure 6: A Book to Begin

By starting with this book, you not only can keep up but also gain a new way of thinking, namely *Computational Thinking*, useful everyday, everywhere.

Finally

Keeping pace with changes, big and small, is a constant concern for all people. When big changes such as the industrial revolutions happen the challenges become significant. People need new skills, new knowledge, new training, new way of doing things and new ways of thinking.

Keeping pace is a constant struggle lest one gets left further behind. But we also need to pace ourselves and choose the important areas where our efforts will pay the most dividends. It is true that no one can know and do everything. As long as we keep learning new and useful things, that is all we can do.