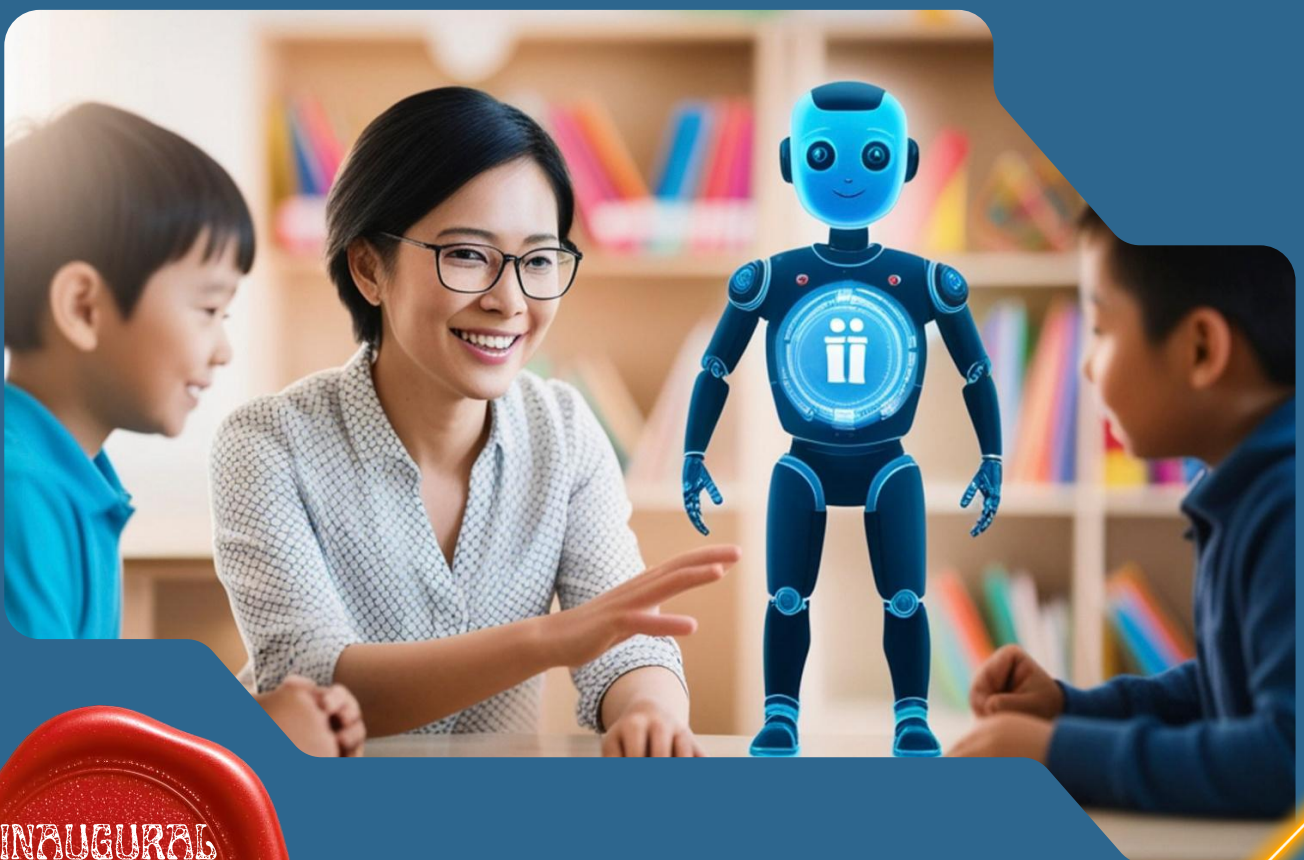




SCCCE *Insight Series*

Character & Citizenship Education (CCE) IN AN AI-MEDIATED WORLD



INAUGURAL
ISSUE

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More Than *Machine-Ready*

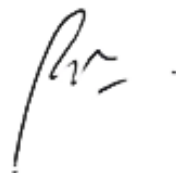
The “Why”, “What” and “How” of Educating for Humanity

Dear Reader,

I am pleased to offer the opening perspectives for the inaugural issue of the SCCCE Insight Series, a new publication platform by the Singapore Centre for Character and Citizenship Education (SCCCE). This series brings together critical reflections from local and global perspectives on emerging issues that matter deeply to Character and Citizenship Education (CCE) today.

In this issue, we turn our collective attention to a critical area: Artificial Intelligence (AI) in education. As AI becomes increasingly integrated into teaching, learning and everyday life, the contributors to this issue invite us to pause and reflect on what this means for us as humans and in education.

Across the articles and conversations, I noticed common threads that emerged, which I summarised through the “why”, “what” and “how” of AI in education. My hope is that this issue will not only inform, but also provoke thoughtful reflection and purposeful action in your own professional practice.



Associate Prof. Chua Bee Leng
Chief Learning & Innovations Officer
National Institute of Education



Why AI in Education Matters Now

“In a world where many aspects of intelligence is now artificial, what is ultimately at stake is our **humanness**.”

AI matters in education today because we are at a decisive moment. The choices we make now, often quietly through everyday pedagogical decisions, will shape whether AI becomes a force that enhances student learning and flourishing, or one that gradually diminishes the very capacities education seeks to cultivate.

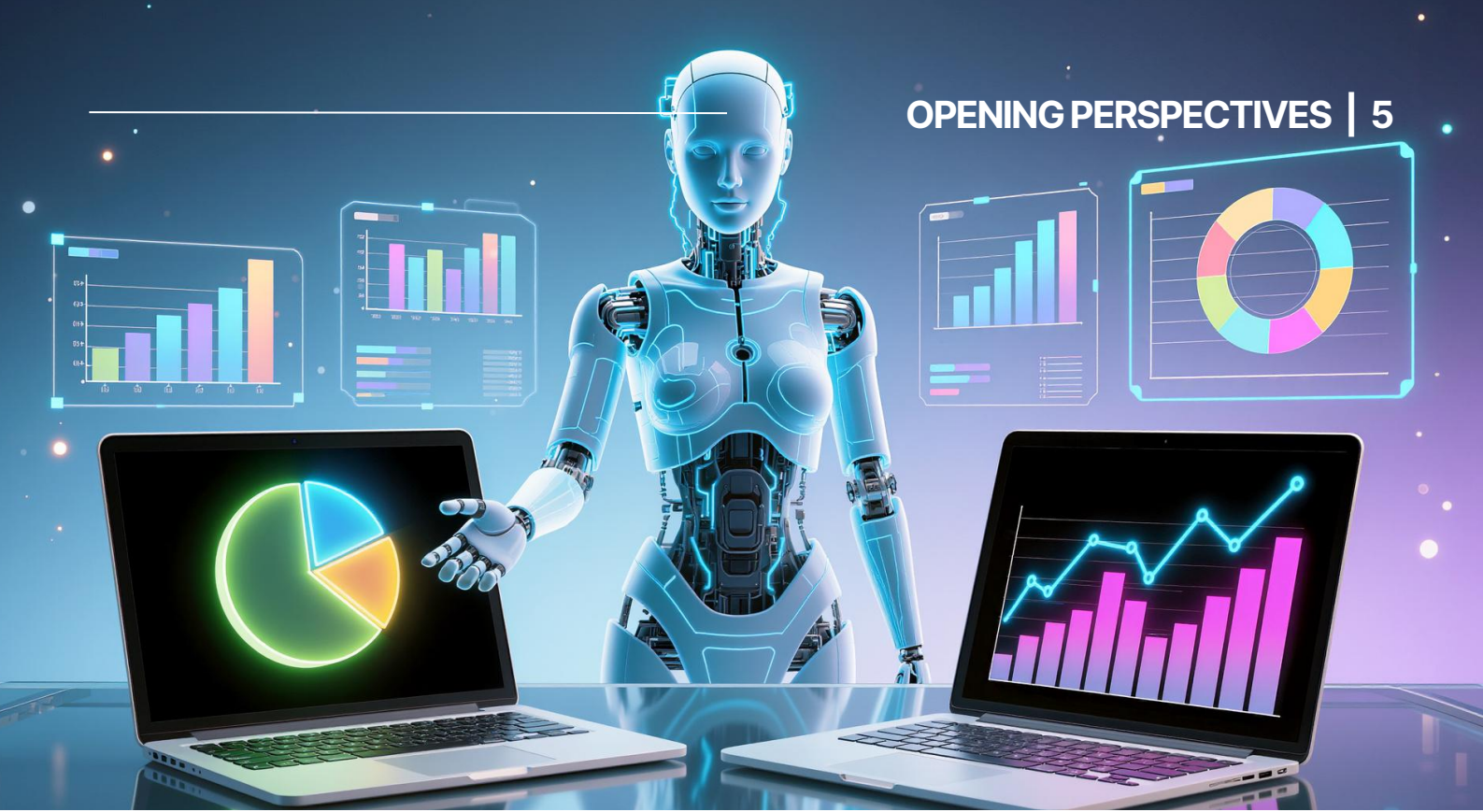
AI is already reshaping curriculum design, teaching methodologies and assessment practices. More importantly, it is becoming an enduring presence in students' lives, influencing how they learn, think and interact with others.

Unsurprisingly, AI has been viewed as a double-edged sword. On one hand, AI tools such as ChatGPT have been shown to enhance creative and reflective thinking (Deng et al., 2025). On the other hand, an uncritical overreliance on AI has also been

found to risk weakening deep thinking skills, giving rise to what has been described to as “**metacognitive laziness**” (Fan et al., 2025).

In a world where many aspects of intelligence is now artificial, what is ultimately at stake is our humanness. It is not only about how well students can use AI, but about who they are becoming as persons in an AI-mediated world.

In the *Critical Perspectives* article, Professor Tan Oon Seng and Ms Jallene Chua Jia En emphasise this central concern, arguing that while AI can augment learning, it cannot replace what is fundamentally human. How we choose to engage with AI today will determine whether our learning environments are enriched or diminished by it, and whether students are supported to thrive in this new landscape.



What AI is Changing in Education

The scale and speed of AI adoption in education are unprecedented. In the *Synthesis and Insights* article, Associate Professor Suzanne Choo and Ms Hazel Peh highlight how AI use has surged globally over the past year, with even higher uptake observed in Singapore. Educators now have access to a growing ecosystem of AI-driven platforms for content creation and learner data analytics that provide automated feedback and personalised learning.

Within CCE specifically, AI tools have been explored to support social-emotional learning competencies such as empathy, perspective-taking and social interaction, including gamification and virtual reality applications.

At the same time, A/P Choo and Ms Peh suggest that AI brings renewed urgency to the development of citizenship and moral competencies, such as digital citizenship, ethical reasoning and moral discernment.

Additionally, as Prof Tan and Ms Chua argue, human and artificial intelligence operate in fundamentally different ways. The increasing presence of AI does not merely change what students learn but may also reshape neurological processes in how they think and make sense of knowledge and information.

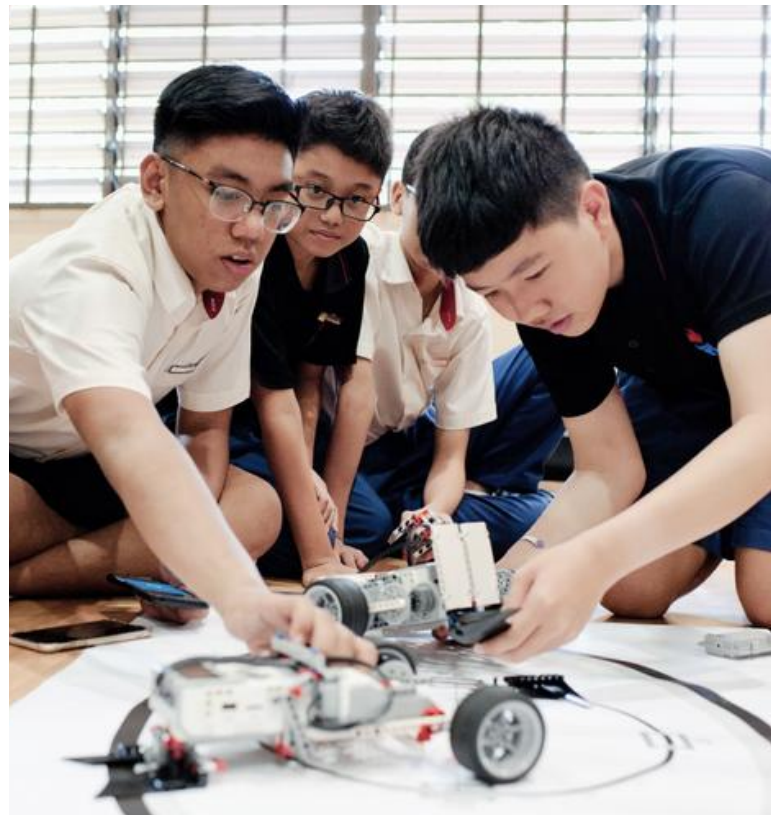
How We Educate for Humanity in an AI-Mediated World

Across the contributions in this issue, several insights emerge on how education can remain deeply human in an AI-mediated world.

Empower Students & Educators with Digital Wisdom

First, there is a shared emphasis on the cultivation of digital wisdom, or ‘cyber wisdom’, the capacity to engage with AI thoughtfully and ethically. Prof Tan and Ms Chua propose two complementary frameworks of digital wisdom: **human-AI awareness**, which emphasises recognising and understanding the risks and limitations of AI, as well as **human-AI thinking**, the forms of human cognitive capacities needed to navigate AI meaningfully.

This call is echoed by Professor Tom Harrison in his *In-Conversation* interview, who explains how his work on cyber wisdom in schools in the UK involves whole-school approaches and reshaping curriculum to support students in thinking through digital challenges, such as impact on well-being. A/P Choo and Ms Peh also emphasise the need to empower students with ethical literacy.



Be Intentional About Character & Learning Processes

Second, the contributors remind us that character in this age cannot be left to chance. As Prof Harrison notes, character must be **caught, taught and sought**. Mr Edwin Khoo’s reflection *Through The Practitioner’s Lens* brings this to life by highlighting what is at risk when learning becomes overly efficient but stripped of struggle and meaning. In an age where AI can bypass effort, who students are and the learning process itself, such as how they persevere, reflect and find meaning, become more important than ever.

Focus on Human Relationships & Ecosystems of Support

Finally, several authors underscore the irreplaceable role of human relationships. Learning is relational, and no technology can substitute for authentic teacher-student connections, peer relationships and a sense of belonging. Building supportive ecosystems, where schools, teachers and parents work in partnership, is therefore pivotal. As Prof Harrison observes, helping students navigate ethical challenges in digital spaces is a shared responsibility, requiring dialogue and collaboration among parents and teachers.

Here, teachers' professional development is essential. Teachers must be supported not only to use AI tools competently, but to act as intentional designers of learning experiences, attending to the **"humans in the loop"** (Tan, Chen & Chua, 2023). Professional development, therefore, must focus on equipping educators to make principled pedagogical decisions. Decisions that do not forget the importance of human dimensions like relationships and connection.

Conclusions

In sum, these contributions affirm that AI brings about both unprecedented opportunities and challenges for us. These force us to confront questions about what we truly value in education.

Staying anchored in character, citizenship and wisdom can help students become not only capable users of AI, but also compassionate and responsible human beings able to flourish in a complex, AI-mediated world.

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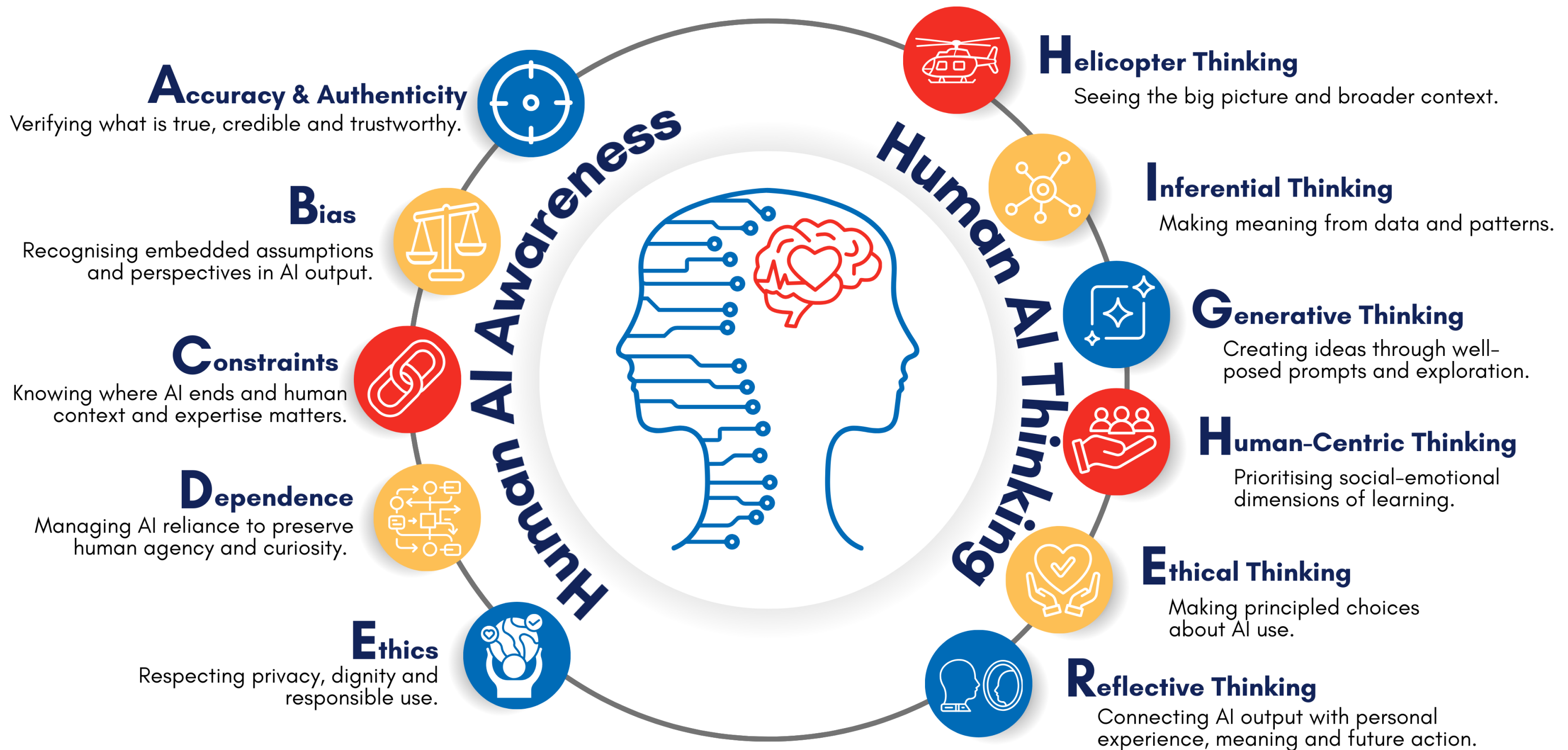
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About the Author

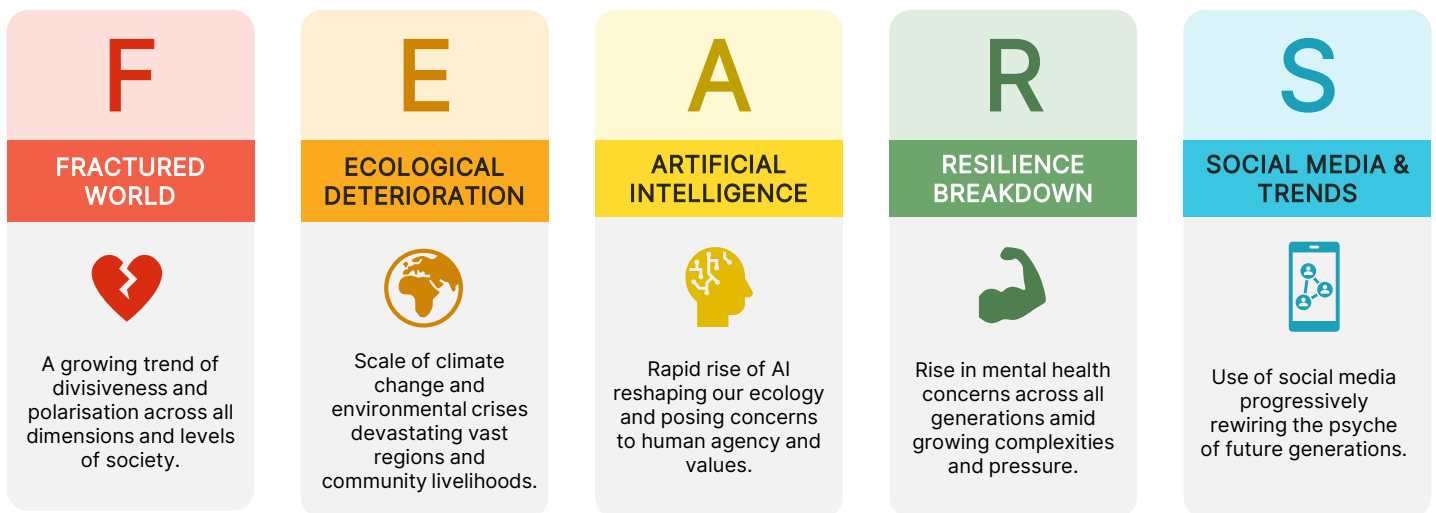


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Backdrop of FEARS in Today's World

Today, we live in a world of FEARS: ongoing, powerful forces that destabilise our lives and challenge humanity every day. As educators, it is important to think about how they impact us and education for generations to come.



Quantum Leap of AI

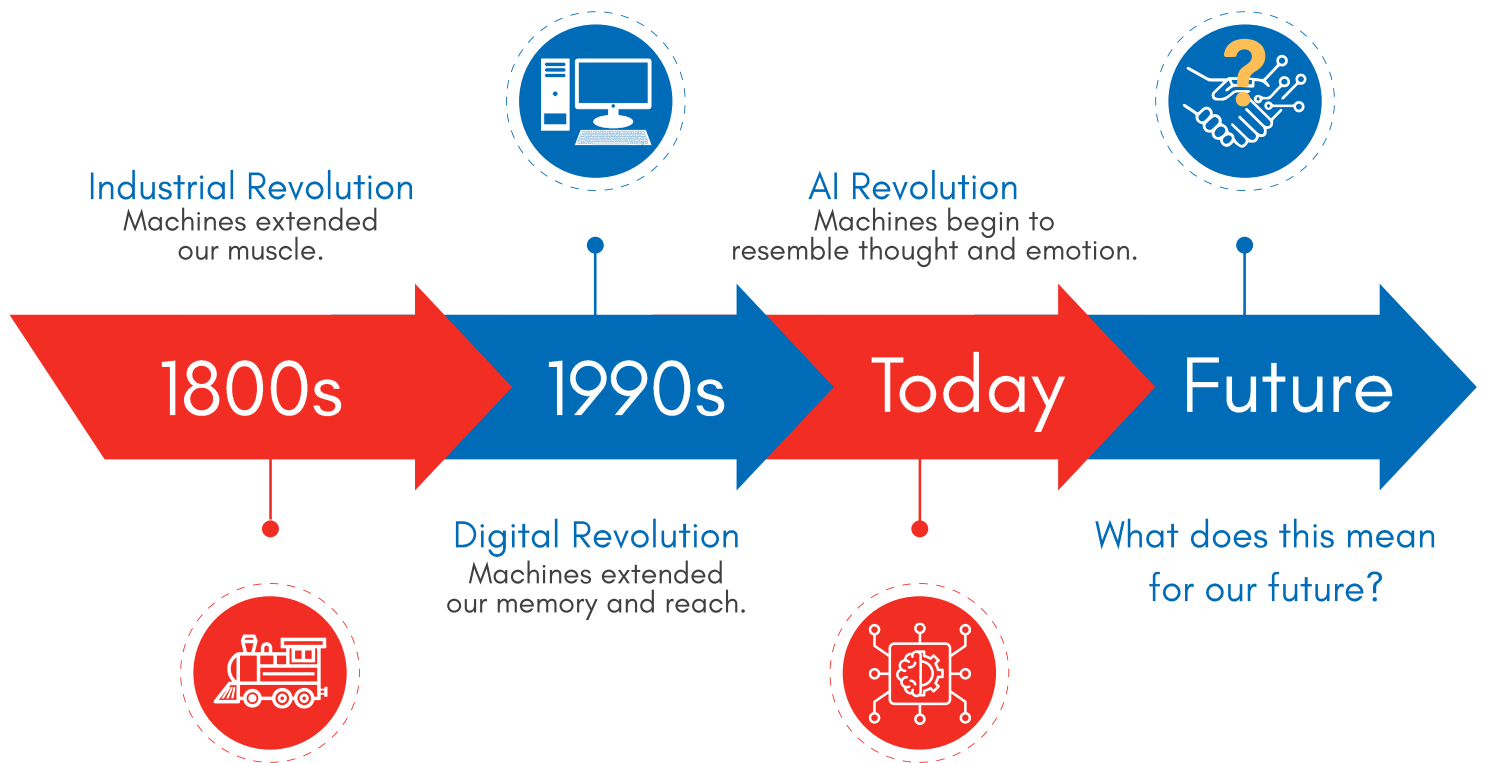
“AI represents a **fundamental restructuring** of the cognitive and social environment in which humans now function.”

Among these FEARS, the focus of this article is the rise of AI and the quantum leap it represents in human history. In many ways, our present moment mimics earlier historical turning points. Across time, major technological revolutions have fundamentally reshaped how humans live, work and learn.

For example, the Industrial Revolution extended human muscle, transforming manual labour and production. The Digital Revolution extended human memory, speed and reach, transforming how information is shared and accessed.

Today, the AI revolution feels different in many ways. Unlike earlier technologies that primarily augmented physical or informational capacities, AI increasingly resembles human functions including cognition and even emotion. It is embedded in nearly every aspect of daily life and industry, in ways more entrenched than previous technologies.

WHEN TOOLS *change us*



Jensen Huang, president and CEO of NVIDIA, likened this shift to changes in physical infrastructure of computing. Advances in accelerated hardware, specialised chips and large-scale AI systems are not merely technical upgrades, but an entire reconfiguration of the machine conditions under which decision-making occurs. From this perspective, AI represents an ecological shift for us: a fundamental restructuring of the cognitive and social environment in which humans now function.

This poses several critical questions for the future: What does it mean for humanity when our tools begin to think or even feel? If machines can process information faster than humans, what makes human thinking unique? When AI makes decisions for us, how do we retain our human agency? And if AI can interact with humans and respond to our emotions, what does it mean for our own emotional growth and the way we relate to one another? AI is powerful and it is here to stay. However, AI is not human, and it **cannot replace what is fundamentally human.**

Addressing fears about AI and employment at several public forums, Jensen Huang said, “You’re not going to lose your job to AI, you’re going to lose your job to someone who uses AI”. We would like to add one crucial word to this statement: **wisely**. Humans who know how to use AI wisely, exercising discernment and responsibility in how it is used, determines if AI enhances or diminishes humanity. This is where CCE becomes pivotal. Education must go beyond teaching the technical know-how of using AI as a tool, to cultivating the character and wisdom needed to use AI, so that humanity continues to lead the way in an AI-mediated world like ours.

AI & Human Flourishing

In CCE, we approach AI education through a deliberate lens that foregrounds character and human flourishing, distinct from how AI can be used technically. The Harvard Human Flourishing Program defines flourishing as, “**a state in which all aspects of a person’s life are good, including the contexts in which that person lives**” (Vanderweele, 2025).

This definition highlights three important features. **First, flourishing is an ideal.** It is something we continually aspire and strive towards rather than something we ever perfectly attain. **Second, flourishing is multidimensional,** encompassing all domains of a person’s life. Different domains of life may be at different states, for example, one may experience strong meaning and purpose in their career while facing challenges in health or relationships. **Third, flourishing is contextual,** including not only the individual’s well-being but also their communities and social environments, because a person both depends on and contributes to the common good of the community itself.

These features are especially important when thinking about AI. Because flourishing is an ideal, our stance toward AI must also be aspirational. Rather than adopting a pessimistic stance that avoids or resists AI completely, CCE should take a constructive and optimistic stance, one that recognises that AI brings risks and limitations, yet is committed to working toward how it can be used in the right ways. The question is not whether AI will or should be part of our future, it already is, but whether we can ride above it in ways that are guided by our human qualities.

Next, because flourishing is multidimensional, AI must be evaluated in terms of how it affects the whole person. In the Singapore context, we focus on five especially salient dimensions illustrated in the table below. AI can influence each of these human dimensions in enabling or harmful ways, depending on whether we use them wisely. We illustrate some possibilities below.

Dimension of Flourishing	How AI Can Diminish Flourishing	How AI Can Enhance Flourishing (When Used Wisely)
Purpose & Spiritual Meaning	Over-reliance on AI for decisions and direction leads to passivity and loss of agency or sense of purpose.	AI can support reflection on purpose, as well as expose us to or free time for purpose-driven pursuits.
Physical	Excessive screen use and digital dependence may disrupt sleep, attention and healthy routines.	AI reduces unnecessary workload, as well as supports health tracking and access to health resources.
Intellectual	Uncritical use of AI weakens independent reasoning, as well as perseverance in thinking efforts.	AI extends inquiry and enables us to work at higher levels of abstraction and creativity.
Relational	AI cannot replace authentic human presence. Over-mediation weakens real-world relationships.	AI helps connect people and relationships across boundaries when used as a bridge rather than a substitute.
Emotional	Superficial AI interactions stunt emotional growth, by displacing self-awareness or empathy for others.	AI supports access to emotional literacy and mental health resources.

Human-Centred AI Education

This orientation towards human flourishing resonates with the idea of human-centred AI (HAI). Insights from learning science suggests that human learning differs fundamentally from how AI processes information. Barbara Oakley, Professor of Engineering at Oakland University and McMaster University, explained that human cognition relies on the interaction of both focused and diffuse modes of thinking. Focused thinking involves deliberate, analytical thinking directed at a specific problem, while diffuse thinking refers to broad and associative thinking that allows ideas to connect across domains, supporting meaning-making. In addition, humans also learn through metaphorical and analogical reasoning, whereby new information is connected to prior knowledge and lived experience.

In contrast, AI systems generate outputs through large-scale pattern recognition often with reduced context and purpose. AI overuse

could therefore rewire our neurocircuitry by reshaping our patterns of attention, thinking and learning.

Recognising these fundamental differences highlights the need for human-centred AI – where AI cannot completely replace how humans think, and humans need to stay centre.

Li Fei Fei, Professor of Computer Science at Stanford University and Co-Director of the Stanford Institute for Human-Centred Artificial Intelligence, has been a leading advocate of HAI. She emphasises that AI should bolster what humans do best, such as creativity, reasoning and abstraction, rather than replace all aspects of human intelligence. It should also enhance human dignity and well-being, as well as support rather than substitute human judgement. Equipping teachers to monitor AI learning processes in education to prevent failure risks, and equipping students with the right understanding and skills to use AI meaningfully has been a crucial global agenda (*UNESCO, 2023*).



Digital Wisdom as the Educational Imperative

Digital wisdom involves both **1) a critical awareness of AI's risks and limitations** and **2) the exercise of higher-order human thinking to guide how AI is used**, as illustrated in our ABCDE and HIGHER frameworks.

Edward Osborne Wilson once observed, “We are drowning in information, while starving for wisdom”. This is even more true in today's world saturated with information and misinformation, available to us at volume and speed like never before.

Navigating this landscape is tricky and requires digital wisdom. The concept of wisdom has philosophical and psychological roots. In Aristotelian thought, wisdom is closely tied to *phronesis*, or practical wisdom, the capacity to discern what is good and to exercise moral judgment in real-world situations (Kroll & Mason, 2021; Kristjánsson, 2015).

In a review of the empirical literature, Jeste *et al.* (2019) conceptualised wisdom as encompassing empathy, prosocial behaviour, emotional regulation, tolerance of diverse perspectives and the ability to recognise and navigate uncertainty and risk. Across these conceptualisations, several core principles emerge and can be applied to the cultivation of digital wisdom. First, there must be a critical awareness of the risks and limitations of AI. Second, human-thinking capacities are required to discern and interpret AI-generated outputs rather than accept them uncritically. Third, social-emotional and moral dimensions of being human cannot be neglected.



Human AI Awareness

The ABCDE Framework supports teachers and students in recognising and reflecting on the risks and limitations of AI, cultivating critical awareness, prudence and ethical use in learning contexts.



Accuracy & Authenticity

AI-generated information may appear fluent and authoritative but it is not always accurate or trustworthy. Learners must be aware that AI outputs require independent checking and source verification.



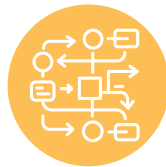
Bias

AI systems reflect the data and assumptions on which they are trained, including cultural, social and ideological biases that may shape outputs in subtle ways. Learners must be aware that AI does not offer neutral or complete perspectives and should question which perspectives and voices are represented.



Constraints

Despite its capabilities, AI lacks contextual understanding and domain-specific expertise especially in complex and specialised situations. Learners must be aware of when AI's outputs exceed its competence and when human insight, professional judgement and lived experience are necessary.



Dependence

Over-reliance on AI risks diminishing learners' agency and curiosity. Learners must be aware of their own AI usage patterns, ensuring that it supports independent thinking and creativity instead of replacing effortful reasoning or problem-solving.



Ethics

The use of AI raises ethical concerns related to privacy and integrity, especially when user data is collected and analysed. Learners must be aware of the ethical implications of how AI systems are designed and governed, including issues surrounding consent and responsible use.

Human AI Thinking

Awareness of risks and limitations must then be paired with higher-order human thinking capacities that act as safeguards against uncritical use. The HIGHER Framework articulates the forms of thinking that support wise engagement with AI.



Helicopter Thinking

The ability to step back, see the big picture and make interdisciplinary connections. Learners use AI outputs as inputs within broader conceptual and real-world contexts rather than treating them as isolated answers.



Human-Centric Thinking

The ability to foreground empathy, relationships, and social-emotional understanding in learning. Learners recognise that meaning-making, care, and interpersonal connection remain central and cannot be delegated to technology.



Inferential Thinking

The ability to draw contextually relevant meaning from information and patterns. Learners interpret and evaluate AI outputs by integrating them with prior knowledge and experience to exercise sound judgement rather than accepting them at face value.



Ethical Thinking

The ability to make principled decisions about how AI is used, guided by values such as fairness, responsibility and respect for human dignity. Learners consider not only what AI can do, but what it should be used for and who may be affected by its use.



Generative Thinking

The ability to explore possibilities and create new ideas with AI as a collaborative tool. Learners move beyond passive information consumption to engage in innovation and creative problem-solving through thoughtful prompting and iteration.



Reflective Thinking

The ability to synthesise past experiences, evaluate learning processes, and connect present actions to future goals and personal values. Learners use reflection to regulate their engagement with AI in ways that support their growth.

Moving Forward: Rethinking Human Development & Educating for Human Creativity

Looking ahead, the rise of AI compels us to fundamentally rethink how human development is understood. Classical developmental theories, such as those proposed by Jean Piaget and Lawrence Kohlberg, were formulated in an era where development was assumed to unfold in relatively linear and predictable stages.

Today's AI-mediated world is radically different. It is fast-changing, uncertain, and shaped by generative technologies that produce outcomes no one can fully anticipate. Human development in such a world is no longer linear, but dynamic and highly contextual.

Preparing young people for an AI-mediated future is not simply a matter of teaching them how to think with AI. The next, deeper challenge is how to cultivate and boost human creativity. Human creativity is inherently non-linear; it thrives on unpredictability and a recombination of disparate ideas for breakthroughs. Human creativity harnesses our human uniqueness. It often depends on lived experiences or imagination to give ideas its nuance and authenticity.

So, as our tools get better and better, what kind of creativity is needed to make use of all the powerful tools available at our disposal? What kind of ecosystems of creative engagement can we create, to allow novel ideas to take flight in appropriate ways and shape the very questions we pursue?

About the Authors



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AI & CCE:

A Synthesis of the Research & Implications for Education

Introduction

Artificial Intelligence (AI) is rapidly reshaping the educational landscape, raising profound questions for educators, parents, policymakers and researchers.

On one hand, AI promises greater efficiency and personalisation in teaching and learning, offering tailored content and instruction that adapts to students' needs and learning pace. Educators are also leveraging AI to automate routine tasks like grading and lesson planning, potentially freeing up time for pedagogical innovation and more meaningful teacher-student interactions. Studies have highlighted how the integration of generative AI fosters collaborative learning ecosystems, where AI tools can serve as partners in education, enriching the learning experience (*Wong & Looi, 2024*).

On the other hand, researchers are also warning of the risks and challenges. Beyond the frequently cited concerns around data

privacy and security, deeper pedagogical challenges and ethical concerns have emerged. These include the erosion of critical thinking skills due to the increased dependence on AI for editing, information retrieval, interpretive and analytical tasks as well as a decline in creativity as AI becomes the main source for idea generation.

Various studies have shown that AI outputs have inherent bias. For example, a study by the Infocomm Media Development Authority, which is part of the Singapore government, found inherent gender, cultural and socioeconomic biases in the LLM models tested (*Yow, 2025*). Various scientists have studied word embeddings in which algorithms in AI learn associations among words in a corpus. Research has shown that these associations can reflect and reproduce racial and other forms of cultural bias (*Caliskan, Bryson, & Narayanan, 2017*).

AI's Growing Presence in Classrooms

“**75%** of educators in Singapore reported using AI to teach or facilitate student learning.”

The use of AI by students has surged globally in the recent years (*Digital Education Council, 2024*). In the United States, a 2024 survey found that 26% of students aged 13 to 17 had used ChatGPT in their school work, double that of the previous year (*Pew Research Center, 2025*).

In Singapore, where digital learning is ubiquitous, a recent survey commissioned by the Channel News Asia reported even higher figures: 84% of secondary school students were using AI tools, like ChatGPT, at least weekly to help them generate homework answers and improve their grades (*Paulo, 2025*).

Educators in Singapore are also among the most active adopters of AI in education, with 75% reported using AI to teach or facilitate student learning in the OECD Teaching and Learning International Survey (TALIS) 2024 Study (*Ministry of Education, Singapore, 2025*).

Beyond using AI for academic tasks, some teenagers are also turning to AI platforms for social interaction and emotional support (*Andoh, 2025*). These trends highlight not only the growing prevalence of AI in education but also raise important questions about its impact on how students think, learn and relate to others. As students increasingly rely on AI to complete assignments, seek advice and even find companionship, educators and policymakers must consider how these activities shape their social-emotional development, moral reasoning and sense of identity, all of which are core concerns at the heart of Character and Citizenship Education (CCE).

Mapping the Gap

To better understand how AI is being discussed in the academic literature in relation to CCE-related fields, a bibliometric analysis of research published between 2022 and 2025 was conducted using the Scopus database.

The search was conducted within article title, abstract, and keywords, using: ((virtue OR moral OR ethic* OR citizen* OR agency OR value* OR character OR civic) AND “artificial intelligence” AND education)). Results were filtered to English language publications within the subject areas of social sciences, arts and humanities, and psychology. Document types included journal articles, book chapters, conference papers, reviews and books.

A bibliometric analysis uses statistical methods to quantitatively analyse publication data to map research trends, identify influential works/authors, understand collaboration patterns, and uncover research gaps in a field, providing a data-driven overview of a discipline's landscape.

The filtered search returned 4,466 records and the top 800 most cited records were exported for closer reading. The analysis examined how often keywords appeared together across this body of work, in a process known as keyword co-occurrence analysis.



Using VOSviewer, the most frequently occurring keywords were mapped to visualise how these ideas cluster in current research. Generic words (e.g., human, teachers, curriculum) were removed before the analysis for clarity.

Figure 1 shows the network map of the dominant conceptual themes in the field. Each colour represents a distinct thematic cluster within current research on AI and education. Notably absent from the keyword landscape are terms central to CCE, such as values, virtues, moral education, citizenship, identity, and relationships. This absence suggests a conceptual gap where deeper civic, moral, and philosophical concerns remain underexplored in the education research.

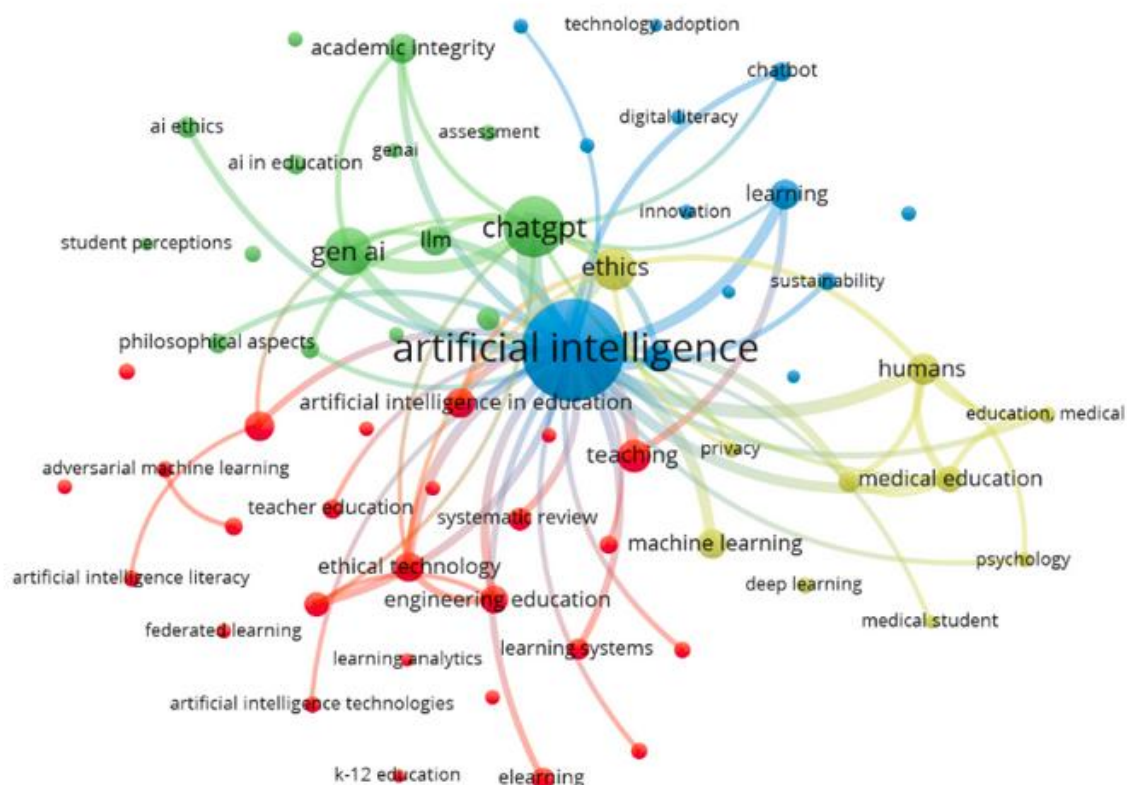
Cluster 1 (Red) includes keywords such as teaching, learning systems, engineering education, and ethical technology. This cluster reflects studies on integrating AI tools into classroom practice and teacher education.

Cluster 2 (Blue) centres on keywords like digital literacy, learning, innovation and technology adoption. It represents research exploring how AI supports learning process, and technology-enabled innovation.

Cluster 3 (Green) highlights recent discussions around LLMs and their educational implications, including keywords like AI ethics and academic integrity.

Cluster 4 (Yellow) reflects the application of AI and ethical considerations in health, psychology and medical training contexts.

Figure 1: Network visualisation of keyword co-occurrences in AI and Education literature (2022-2025). Colours indicate conceptual clusters. Lines show co-occurrence links between keywords.



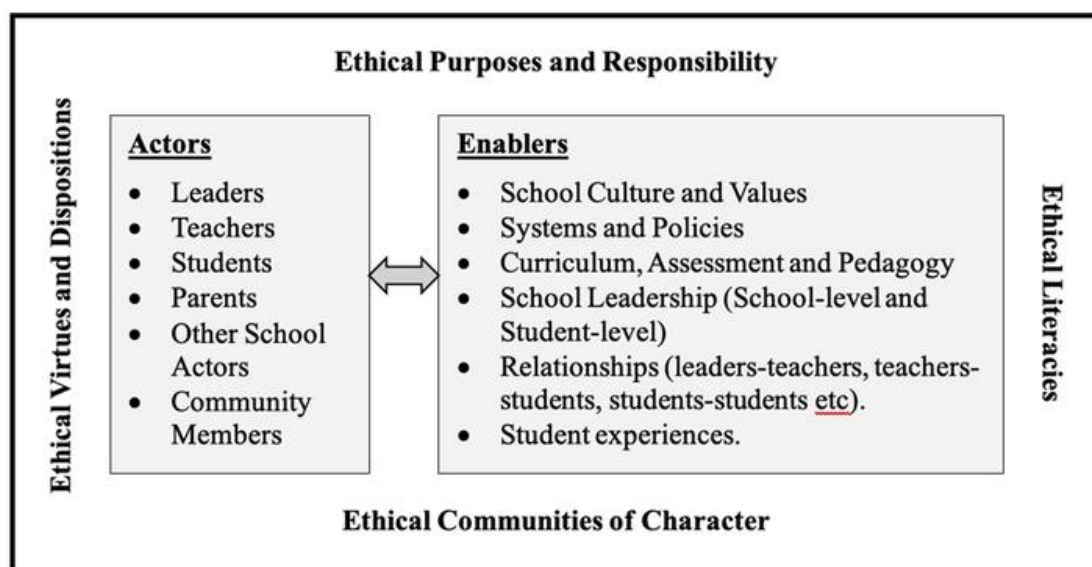
Implications for Education

Return to a Prioritisation of Ethical Values and Purposes

AI use is often driven by instrumental purposes such as acquiring knowledge, finding effective solutions to problems, or efficiently organizing ideas. Conversely, there is a need to prioritise its ethical purpose. This represents a higher end which goes beyond self-interest and corporate interests. Today, the concept of human flourishing has once again regained popularity in the field of education. Contemporary conceptions view flourishing as connected to the exercising of virtues (intellectual, moral, civic, performative) (*Jubilee Centre for Character and Virtues, 2022*) and to holistic human development (character and virtues, happiness and life satisfaction, physical and mental health, meaning and purpose, close social relationships) (*VanderWeele, 2017*).

Drawing from Eastern philosophies, other views of flourishing emphasise other-centric virtues that transcend self-interests to support the flourishing of others in society and the world (*Choo, 2024; Tu, 2024*).

To support the flourishing of students, schools should establish an ethical ecosystem where every member of the school community (school leadership, teachers, students, parents, etc.) plays a part in supporting ethical purposes and responsibility, ethical literacies, ethical virtues and dispositions and ethical communities of character (*Choo et al., 2025*).





Invest Time & Space for Development of Human Relationships

Even as AI tools, including AI-based social companions, appear to possess human-like intelligence, the relationships people form with them differ fundamentally from those with other humans. Thus, it is important for educators to emphasize authentic and deep human connections. This includes the development of friendships, teacher-student relationships and a sense of belonging within the community.

Choo (2025) argues that education should prioritise the holistic development of human intelligences as artificial intelligence continues to advance. This includes cognitive intelligence (IQ), emotional intelligence (EQ), cultural intelligence (CQ) and spiritual intelligence (SQ). Curriculum should move from an over-focus on STEM to STEAM to STREAMS of learning (Science, Technology, Reading, Engineering, Arts, Math and Spirituality).

In relation to the last domain, spirituality goes beyond institutionalised religion to denote a deep connection beyond the material, beyond machine and beyond the self. It strives towards a connectedness to nature, other human beings and for some, with the divine. Spiritual-humanistic education may encompass mindfulness, unstructured play, care for nature, and philosophy inquiry into existential questions of being, purpose and identity.

In classrooms, time and space should be given for collaborative learning opportunities that allow students to learn with and from one another. This goes beyond simply grouping students together; it involves creating spaces for dialogue, debates and discussions, so that students can actively co-construct knowledge (*Choo et al., 2025*). Even if AI tools are used as part of the process, such opportunities allow students to practise listening, build trust and take responsibility for others within a shared learning community.

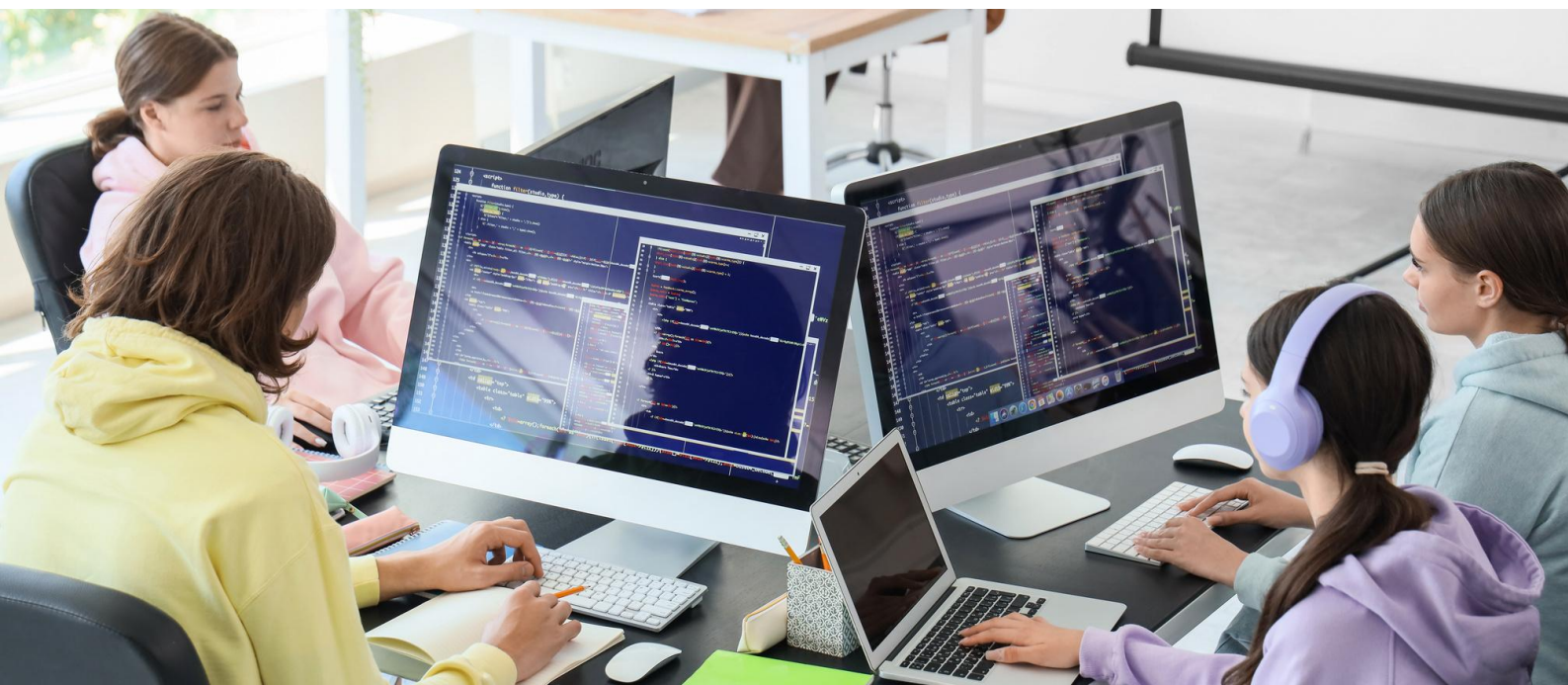
At the same time, educators should also guide students to critically reflect on their relationships with AI, including how AI tools fit into their learning and relationships, as well as how these might shape their expectations and interactions with others. Educators can help students recognise both the benefits and the boundaries of these relationships, reinforcing the importance of empathy, reciprocity and genuine human connection in an increasingly digital world.

Empower Students with Ethical Literacy & Digital Citizenship Competencies

As AI tools become increasingly a part of teaching and learning, schools need to move beyond technical proficiency toward ethical literacy. This involves guiding students not only on how to use AI effectively, but also

when not to use it and how to question its outputs and assumptions.

Educators therefore play an important role in guiding students to critically evaluate AI-generated output and recognise which perspectives may be amplified or marginalised through these systems. Beyond recognising when AI responses may carry implicit biases students must also develop the self-reflexivity to acknowledge their own assumptions and limits of their own interpretations, even when using AI. It is equally vital that educators help students understand that they are still responsible for the ideas they put out, or their actions, even if they were AI-informed.



To foster ethical literacy, *Choo, Wong, Peh & Chua (2025)* suggest that educators need to help students develop the following:

- **Epistemic humility:** recognising the limits of what AI “knows” and the provisional nature of its outputs.
- **Values sensitivity:** noticing when AI responses carry implicit assumptions, cultural biases, or problematic framings.
- **Critical literacy:** capacity to discern contradictions, gaps, assumptions as well as hidden motivations and ideological underpinnings.
- **Self-reflexivity:** recognising one’s own biases and preconceived assumptions of others as well as the limits of one’s interpretations even with the use of AI.
- **Reflective judgment:** making deliberate choices about when and how to use AI, and when not to.
- **Responsibility attribution:** understanding that reliance on AI does not absolve the user of accountability and AI-users need to emphasise integrity and transparency at all stages of the learning process.

Scholars have also begun to examine how AI shapes students’ ethical reasoning and civic dispositions. As AI becomes more embedded in students’ lives, there is a growing consensus that digital competence must extend beyond the technicalities, to include moral discernment and civic responsibility. *Harrison & Polizzi (2021)* highlight the importance of digital citizenship education in this AI-mediated age, and the need to intentionally cultivate cyber-wisdom, defined as the capacity to make wise and ethical decisions online.

Building on this, *Harrison & Polizzi (2022)* further posit that digital education should explicitly support the development of character traits and dispositions like compassion, wisdom and honesty. These virtues, they argue, are essential for helping students navigate morally ambiguous situations that are amplified by AI, such as the use of generative tools to deceive, or engaging with AI curated content (e.g. deepfakes) that distorts truth and civic discourse.

Conclusions

The task of education is not to insulate our students from generative AI, but to enhance their capacities to use AI wisely towards ethical purposes. Students must be guided to use AI critically and responsibly, by learning to recognise biases, questioning its assumptions and reflect on how it shapes their values, choices, and relationships with others.

At the same time, schools must also continue to nurture authentic human connections, as the development of friendships, empathy, and a sense of belonging remain essential if students are to reap the benefits of AI while mitigating the social risks it brings. More work is also needed to understand how AI is reshaping what and how we teach CCE, and how CCE can evolve to support students flourish in this changing landscape. This would be crucial to ensuring that education continues to develop compassionate and responsible citizens in an AI-mediated world.

About the Authors



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Developing Wisdom for the Digital Age

An interview with Professor Tom Harrison

*Director, Jubilee Centre for Character and Virtues
Deputy Pro-Vice-Chancellor (Education), University of Birmingham*



Professor Tom Harrison is the Director of the Jubilee Centre for Characters and Virtues, and the Deputy Pro-Vice-Chancellor at the University of Birmingham. He has done extensive work on character education and how schools could cultivate values and virtues in explicit and intentional ways.

In this interview, Professor Harrison shares his insights on one of his specialist interest areas: how we can cultivate character so that children can flourish in the digital age. The interview is summarised in this article. Scan the QR code above for the full interview.

How is the digital world fundamentally changing the way children are developing in terms of character and citizenship?

The digital world is an incredibly complex place for our children. I just look at my own children – they are interacting in very different spaces, and with people whose identities may be unknown and unclear. The internet and smartphones enable them to communicate with others very quickly across time and space, and communicate in different ways through platforms such as social media. The playground they are in now is perhaps more challenging than the ones that many of us grew up in as it is full of moral obstacles. We are looking at how the affordances of digital technology impact children's ethical reasoning and behaviour.

What is cyber wisdom?

Cyber wisdom (or digital wisdom) comes from the Aristotelian concept of phronesis or practical wisdom, which is the ability to do the right thing at the right time in the right amount. I apply that to the digital age, which is about how people can make good decisions online, especially when no one is watching.

My work in cyber wisdom overlaps with Singapore's focus on cyber wellness in that both are striving towards helping children and young people thrive in the modern world. Both look at whole-school approaches as well as a taught curriculum that helps children think through digital challenges that affect their well-being, and more broadly, how they behave in society.

In light of the changes brought about by the digital world, how can we approach the development of virtues of students?

In many ways, it does not matter if we are developing character specifically for the digital age or just developing character more broadly. Research suggests that many children interact or behave differently in online spaces to what they call, in-real-life (IRL) spaces. But ultimately, the goal is the same: enabling children to flourish, thrive and contribute to the world they are in.

We are looking at how you can make character education more intentional. In particular, we talk about character caught and what you can do around the school ethos and culture, school leadership and prioritisation of virtues and values.

We talk about character taught, which is about bringing character education squarely into the core and co-curricular spaces, as well as the development and use of pedagogical approaches, methodologies and strategies to enable the teaching and learning of character.

Lastly, and most importantly, we talk about character sought, which is concerned with the students' ability to seek opportunities to develop and grow their own character and reflect on it. That is what we should be looking for – character building that comes authentically and autonomously from within.

How do we influence students towards “character sought” amidst the other sources of influence they are receiving from the digital world?

It is a real challenge. Digital technologies often engross students in all sorts of behaviours and activities that might not be considered to be good for character development. But in my conversations with children, many are very interested in questions of character and morality online.

They want to talk about whether they think their friends are acting with compassion or kindness, whether they are acting with honesty and integrity online. The fact that they are interested in these areas means that we have a good opportunity to engage them in activities and programmes that get them to really think about the ethical dilemmas that they face day in, day out. At the same time, it is not a simple thing to do.

We have to really recognise the challenges of what it means to live in the digital age, and through good lesson design, scaffolding, and guidance, encourage students to think in more ethical ways in their interactions.

What are some things that parents can do, and how can schools and parents work together to support our students in the digital world?

Schools and parents absolutely have to work together on this agenda. Helping children develop character and digital wisdom is not just the responsibility of schools and teachers. If anything, it is much, much more the responsibilities of parents, who are the primary architects of their children's character.

There are shared challenges and issues that parents and teachers are both wrestling with, such as cyberbullying, or the way children are communicating online, or the way children are using technologies such as ChatGPT in unethical ways.

Hence, teachers and parents need to come together to discuss and think about the challenges. At the Jubilee Centre, we have set up workshops where parents and teachers discuss ethical challenges in the digital age together. They learn different perspectives and work together to think about solutions, and in the process, develop a united approach to these challenges.

Given that the digital world is fast-changing and unpredictable, what is one thing we need to rethink about character and citizenship education?

Sometimes, people dismiss character by describing it as a “non-cognitive skill”. I think they do that to separate character from the kind of cognitive abilities we develop in the academic subjects. However, character is deeply cognitive. It is about the decisions, judgments and discernments we make. What we really need to do increasingly is to encourage children to take more time to think about the ethical judgments and discernments they are making before they act, which is paradoxical to how the digital world functions.

What are some areas that future research could look into in terms of character and citizenship education in the digital world?

There is a huge amount of research that we need to do in this area. We are really behind the curve in knowing how digital technologies are impacting children and young people in aspects such as their well-being and character development. Digital technologies are also changing very quickly, and it is very hard for researchers to keep up to ensure that we have the latest insights to be shared with educators and teachers to inform what needs to be done in the classroom.

But I think more importantly, we need to do more work in the interventions and pedagogical approaches that help children and young people think about the challenges of the digital age through an ethical lens, and make it more likely that they will adapt their behaviours in digital spaces. To achieve this, we will need to focus more on professional development for educators to give them the confidence that they can educate through a character lens.



CCE in the Age of AI:

Reclaim the Process, *Restore Hope*

“If I, as an educator, feel this kind of hollowness, what more of our students?”

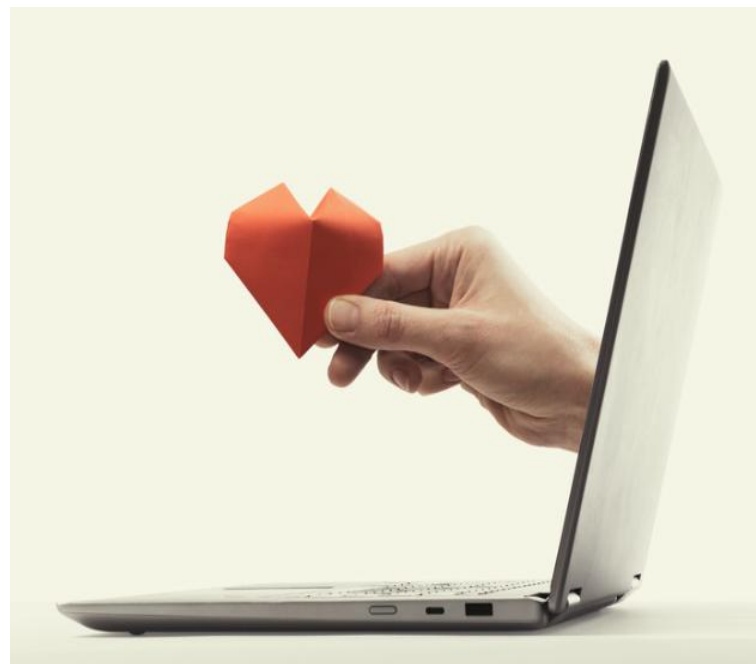
Not too long ago, I asked ChatGPT to help me write this article. It did. The response was articulate, well-structured, and surprisingly insightful - better than what I could have drafted myself.

But, my heart sank.

What I had expected to be an empowering experience, one that allowed me to refine and elevate my own thinking, turned into something truncated. Yes, the words were all there, and they sounded like what I would want to say. But I hadn't truly assimilated many of the ideas written down. I had understood them in my mind, but they hadn't reached my heart.

And in that sense, I hadn't truly grown. I had simply fed the machine my idea and let it do the hard part. In doing so, I robbed myself of the process.

I did not feel the profound satisfaction of growth - of knowing that I had produced something beautiful myself and had become slightly better through the effort. This experience stayed with me. I found myself wondering: "If I, as an educator, feel this kind of hollowness, what more of our students?"





What is the Assignment for?

A student today approaches assignments with vastly different motivations and under vastly different constraints. Consider these personas:



Personas	The high-achiever	The persevering learner	The overwhelmed student	The disconnected learner	The curious learner
Characteristic	Already knows the content and just wants to be done	Struggles but tries their best	Juggles work, home, or responsibilities	Does not see the relevance of the task	Wants to explore
Relationship with AI	AI saves time	AI feels like a lifeline	AI is necessary	AI is a ticket out	AI might be a partner, not a proxy

When an assignment is framed purely as a means to an end, whether grades, approval, or efficiency, AI becomes the obvious choice. Why wrestle with a blank page when GenAI can fill it in seconds? Over the past year, many have reminded us that education has never been just about the product, but about the process, the fumbling, the revising, the figuring-it-out-for-yourself.

But what is at risk now is the fundamental question of whether the process - painful, messy, and uncertain - is still worth the effort. How can each of these personas retain the belief that their effort leads somewhere worthwhile? How do we help them see that even when AI can do the work faster and better, it is still worth it to learn, to think, and to try?

Questions, Not Answers

I don't have answers, but I hope I can offer some questions that we, as educators, need to struggle with as we think about how to help our students become the kind of people we hope for them to be.

How do we accept and appreciate travail?

How do we teach students that struggle isn't a sign of weakness, but of growth? That choosing the difficult path, especially when an easier one is available, can be an act of strength, not foolishness?

How do we help students learn to wait?

How do we make visible the value of slow learning in a fast-paced world? What would it take to help a 15-year-old say, "I could have let AI do this, but let me struggle with it myself first"?

How do we raise students who stand firm?

When they know others might take shortcuts and still succeed, how do we help them hold to their convictions? What would give them the clarity and courage to say, "Even if no one else sees, I know what kind of person I want to be"?

And what about us?

Would we choose the hard way if we knew our choice to take the easy path would never be found out? If an AI could write this article better than me, would I still write it myself? And if someone asked me, "Why bother? ", what would I say, and would I answer with conviction?

Keeping Hope Afloat

Perhaps it's time to let the questions do the heavy lifting in our CCE classrooms. To teach not by offering ready answers, but by together with our students into honest, even uncomfortable, reflection. Because that, too, is learning.

Angela Duckworth, Professor of Psychology and author of *Grit: The Power of Passion and Perseverance*, recently shared: ***"In the age of AI, there is a paradox. Students need their teachers more, not less. Why? Because students need teachers to get them to do hard things now that are good for them later."***

I find this quote deeply moving. This has probably been the job of teachers since teachers existed - but there might never have been a time when our students needed this more.

We, teachers, need to take up the mission of keeping this tough but necessary learning process alive.



P.S. I did eventually run my thoughts through ChatGPT - but not before ruminating, digesting, and assimilating my learning. I must thank ChatGPT for the language glow-up. Always amazed at how it can let ideas come forth with such clarity!

About the Author



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