
Critical Consciousness Development & Preservation in Black Youth in the Era of Generative AI

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Critical consciousness (CC) is a psychological toolset that empowers Black youth, as well as youth from other marginalized groups. It consists of three components: awareness of the historical context that shapes the present, belief in one's own power to affect their social and political circumstances, and the habit of taking action to mitigate oppression that impacts them. CC is both a process and reflects an orientation that is linked to many positive outcomes, including self-efficacy, academic achievement, and civic engagement. The rising presence of generative AI (genAI) in young people's academic and social lives carries both significant risks and opportunities, which have yet to be thoroughly examined. While the authors reject the narrative pushed by big tech that genAI saturation in education must happen immediately and ubiquitously, they recognize that youth will ultimately use these tools, whether sanctioned by educators and caretakers or not, as well as that digital and technological domains contain opportunities to catalyze CC development. Therefore, it is essential that Black youth develop the capacity to engage genAI through a CC lens in ways that support their cognitive growth while allowing them to harness the technology for their own benefit. This article explores how CC can be cultivated and why it matters, the risks that unguided genAI use poses to young people's mental and cognitive wellbeing, the protective role CC can play, and proposes operational principles that support Black youth using genAI in a way that strengthens their CC.

KEYWORDS: Critical Consciousness, Generative AI, Black Children, Cognitive Offloading, Critical AI Literacy

INTRODUCTION

Development of a critical consciousness¹ psychologically equips Black youth with a protective toolset to mitigate the impacts of oppression. In this article, the authors outline the benefits of and ways to elicit CC, the harm of unguided use of generative AI² to youth's cognitive and psychological wellness and how CC protects against it, as well as introduce a framework of Black youth use of genAI to potentially strengthen CC development. This work is speculative, theorizing an approach based on extant literature, as well as applicable, concluding with principles to enact. The authors note that there are many other alarming issues related to genAI, such as the existential threat of computer intelligence,³ military applications,⁴ labor exploitation,⁵ and environmental racism,⁶ which are out of scope for our present discussion. However, understanding the wider rapidly evolving techno-socio-political trends is vital; while CC was already vital for Black youth within an oppressive US society, its importance is amplified within this context.

The Rise of AI Amidst Increasing Oppression

In many ways, the end of 2025 looked vastly different from the beginning. Remnants of corporate and government equity efforts compelled by the brief national racial reckoning induced by the 2020 police murder of George Floyd still lingered as the new administration transitioned into office. In less than a year's time, most semblance was gone, and in fact, society was (and still is) regressing as the administration dismantles equity protections across

¹ For the remainder of the paper and for simplicity, the article will refer to critical consciousness as CC.

² For the remainder of the paper and for simplicity, the article will refer to generative AI as genAI.

³ Eliezer Yudkowsky, "Pausing AI Developments Isn't Enough. We Need to Shut It All Down," *Time*, March 29, 2023, <https://time.com/6266923/ai-eliezer-yudkowsky-open-letter-not-enough/>.

⁴ Nick Srnicek, "How AI Companies Got Caught Up in US Military Efforts," *Wired*, January 14, 2026, <https://www.wired.com/story/book-excerpt-silicon-empires-nick-srnicek/>.

⁵ Michelle Du and Chinasa T. Okolo, "Reimagining the Future of Data and AI Labor in the Global South," Brookings Institution, October 7, 2025, <https://www.brookings.edu/articles/reimagining-the-future-of-data-and-ai-labor-in-the-global-south/>.

⁶ MediaJustice, *The People Say No: Resisting Data Centers in the South*, Oakland, CA: MediaJustice, 2025, <https://mediajustice.org/resource/the-people-say-no-report/>.

educational, scientific, economic, and governance structures,⁷ in addition to criminalizing immigrants, trampling civil rights,⁸ and reducing consumer and environmental regulation,⁹ thus strengthening the government's preexisting fascist tendencies. A major concern is the federal push to remove all regulation of the US AI industry in the name of American domination¹⁰ and the self-serving placating by big tech¹¹ leaders to the Trump administration.¹² Both the immediate and downhill impact on the lived experience and prospects for Black people¹³ and youth¹⁴ is alarming.

Simultaneously, AI's meteoric rise across society has continued since early 2023 and has reached frightening levels of integration.¹⁵ While the authors believe AI and genAI have useful applications and potential to positively impact society, the technodeterminist notion that AI's inundation within our lives is necessary and benefits humankind greatly and equally is a false master

⁷ ReNika Moore, "Trump's Executive Orders Rolling Back DEI and Accessibility Efforts, Explained," *American Civil Liberties Union*, January 24, 2025, <https://www.aclu.org/news/racial-justice/trumps-executive-orders-rolling-back-dei-and-accessibility-efforts-explained>.

⁸ Anthony D. Romero, "One Year In: Defending the Constitution Under a Second Trump Administration," *American Civil Liberties Union*, January 20, 2026, <https://www.aclu.org/news/civil-liberties/one-year-in-defending-the-constitution-under-a-second-trump-administration>.

⁹ Cathleen Kelly et al., "The Trump Administration's Attack on Environmental Protections Will Increase Cancer-Causing Pollution," *Center for American Progress*, September 15, 2025, <https://www.americanprogress.org/article/the-trump-administrations-attack-on-environmental-protections-will-increase-cancer-causing-pollution/>.

¹⁰ The White House, *America's AI Action Plan*, Washington, D.C.: The White House, July 2025.

¹¹ "Big tech" in this article refers to the largest cloud services companies that together control most of the market. The three largest providers are Google, Microsoft, and Amazon, and others worth noting in the context of genAI are Anthropic and OpenAI.

¹² Brian Barrett, "All the President's Tech CEOs," *Wired*, September 5, 2025, <https://www.wired.com/story/tech-ceos-donald-trump-white-house/>.

¹³ Gbenga Ajilore, "The Republican Agenda's Triple Threat to Black Households' Economic Well-Being," *Center on Budget and Policy Priorities*, August 7, 2025, <https://www.cbpp.org/research/economy/the-republican-agendas-triple-threat-to-black-households-economic-well-being>.

¹⁴ Iyana Moore, "Erasing Opportunity: How Trump's Education Policies Harm Black College Students," *The Education Trust*, March 10, 2025, <https://edtrust.org/blog/erasing-opportunity-how-trumps-education-policies-harm-black-college-students/>.

¹⁵ Matt Burgess, "The Age of the All-Access AI Agent Is Here," *Wired*, December 24, 2025, <https://www.wired.com/story/expired-tired-wired-all-access-ai-agents/>; Mary Madden, Angela Calvin, Alexa Hasse, and Amanda Lenhart, *The Dawn of the AI Era: Teens, Parents, and the Adoption of Generative AI at Home and School* (San Francisco, CA: Common Sense, 2024), 1.

narrative¹⁶ spun by big tech and artificial intelligentsia.¹⁷ The embedded “inevitability” aspect of that narrative is a self-serving digital “manifest destiny” and is part of a larger cybercolonialism;¹⁸ a real inevitability, however, is the accompanying entrenchment of racist repression and oppression of Black and other marginalized people.¹⁹

While this frenetic shift occurs, society has a limited window of opportunity related to youth, the first genAI natives, to proactively prepare them by optimizing their relationship to genAI. A similar opportunity was missed when social media became dominant throughout the early 2000s. Some policymakers and concerned researchers, as well as parents and school administrators, have approached building solutions as AI pragmatists,²⁰ sounding the alarm for creating regulation to mitigate its harms, while simultaneously making room for potential benefits. While the authors take this approach, they also recognize that as long as a US capitalistic and corporation-dominated political economy focused on the bottom-line is driving the technology’s advancement, striking such a balance is likely a losing uphill battle, at best.

CRITICAL CONSCIOUSNESS

The rapid integration of AI into popular digital applications and educational systems comes with alarming developmental dangers, such as diminishment of critical thinking²¹ skills and cognitive development,²² and includes risks specific to Black youth, such as racial identity harm. Development of a critical consciousness equips Black youth with a protective toolset to buffer

¹⁶ Na’ilah Suad Nasir, Cyndy R. Snyder, Niral Shah, and Kihana Miraya Ross. “Racial Storylines and Implications for Learning,” *Human Development* 55, no. 5–6 (2012): 288–291.

¹⁷ Ruha Benjamin, “The New Artificial Intelligentsia,” *Los Angeles Review of Books*, October 18, 2024, <https://lareviewofbooks.org/article/the-new-artificial-intelligentsia/>.

¹⁸ Pinar Tuzcu, “Decoding the Cybaltern: Cybercolonialism and Postcolonial Intellectuals in the Digital Age,” *Postcolonial Studies* 24 (2021) (4): 514–27.

¹⁹ See Ruha Benjamin, *Race After Technology: Abolitionist Tools for the New Jim Code* (Cambridge, UK; Medford, MA: Polity Press, 2019).

²⁰ Ben Shneiderman, “Artificial Intelligence Needs Both Pragmatists and Blue-Sky Visionaries,” *Scientific American*, September 20, 2022, <https://www.scientificamerican.com/article/artificial-intelligence-needs-both-pragmatists-and-blue-sky-visionaries/>.

²¹ For the remainder of the paper and for simplicity, the paper will refer to critical thinking as CT.

²² For the remainder of the paper and for simplicity, the paper will refer to cognitive development as CD.

such impact. In this section, the authors discuss how CC development is elicited and the associated positive socio-emotional outcomes.

CC is a form of perception and reasoning aimed at understanding how oppressive systems are built and structured to maintain hierarchical power and impact one's personal experience.²³ CC is a multidimensional orientation that maintains an active and continuous process of assessment of the manifold and ever-evolving socio-political and historical factors that create and reify detrimental impact on oppressed groups, as well as acting to change it. CC is an acquired, trifold praxis and skillset, in which an individual maintains an awareness of how systemic oppression is maintained (awareness), and utilizes their own agentic power (agency) to enact change that disrupts the systems at large (action).²⁴

Moving from awareness to agency and resulting action requires critical thinking, problem solving, and metacognitive skills, such as strategizing and reflecting.²⁵ Possessing and using CC has been found to positively impact youths' identity development,²⁶ psychosocial wellbeing,²⁷ civic and political engagement,²⁸ and academic outcomes like engagement and performance.²⁹

Eliciting Critical Consciousness Development

In both formal and informal settings, CC can be developed through co-inquiry, a form of learning where teachers act as facilitators, as opposed to "experts," supporting youth as they engage in discourse and investigation, and even learn with them. This could include investigation of race, class, gender,

²³ Alexis Jemal, "Critical Consciousness: A Critique and Critical Analysis of the Literature." *The Urban Review* 49, no. 4 (2017): 602-605.

²⁴ Jemal, "Critical Consciousness," 6-7.

²⁵ Jemal, "Critical Consciousness," 612-614.

²⁶ Kweli Zukeri, "An Exploration of Africana Heritage Engagement and Racial Identity Development in Black High School Students That Participate in African-Centered Programming" (PhD diss., Howard University, 2021), 93-108, ProQuest (29068144).

²⁷ Diemer, "Challenging Racism, Sexism, and Social Injustice," 444-460.

²⁸ Amy E. Heberle, Luke J. Rapa, and Francesca Farago, "Critical Consciousness in Children and Adolescents: A Systematic Review, Critical Assessment, and Recommendations for Future Research," *Psychological Bulletin* 146, no. 6 (2020): 525-551.

²⁹ Gabriel A. Cadenas et al., "Promoting Critical Consciousness, Academic Performance, and Persistence among Graduate Students Experiencing Class-Based Oppression," *Journal of Diversity in Higher Education* 15, no. 1 (2022): 26-36.

and other forms of socio-political marginalization and oppression,³⁰ action-oriented socio-political engagement,³¹ and close readings or examinations of academic scholarship, art, and media.³² Additionally, adult modeling and direct socialization supports CC development.³³ The ideal age to target CC development is adolescence, particularly late adolescence, because the youth have undergone prerequisite emotional and cognitive development to support it.³⁴

Black Adolescent Socialization

Exploring how Black youth are socialized helps illuminate opportunities for CC development and understand Black youth engagement with genAI. Socialization, the social process in which people are formed and informed, operates within multiple ecological planes from micro and relational to macro and systemic.³⁵ Spencer's PVEST model³⁶ encapsulates these ecological planes, including the individual, identity development, and personal experiences and their reciprocal impact on each other for non-white children. Stressors and vulnerabilities from multiple parts of the ecosystem combine to make "net stress experiences,"³⁷ which beget reactionary behavioral strategies and methods of coping that lead to outcomes that influence the next cycle of stressors and vulnerabilities; proactive protective measures are necessary to mitigate negative impact.³⁸

³⁰ Diemer, "Challenging Racism, Sexism, and Social Injustice," 444–460.

³¹ Roderick J. Watts, Matthew A. Diemer, and Adam M. Voight, "Critical Consciousness: Current Status and Future Directions," *New Directions for Child and Adolescent Development*, no. 134 (Winter 2011): 43–57.

³² Matthew A. Diemer et al., "Critical Consciousness: A Developmental Approach to Addressing Marginalization and Oppression," *Child Development Perspectives* 10, no. 4 (2016): 216–221.

³³ Zukeri, "Exploration of Africana Heritage Engagement," 79–89; Heberle, "Critical Consciousness in Children and Adolescents," 544.

³⁴ Corine P. Tyler et al., "Critical Consciousness in Late Adolescence: Understanding If, How, and Why Youth Act," *Journal of Applied Developmental Psychology* 70 (2020): 2.

³⁵ Urie Bronfenbrenner, "Ecology of the family as a context for human development: Research perspectives," *Developmental Psychology*, (1986) (6): 730–735.

³⁶ M. Cunningham et al., "Spencer's Phenomenological Variant of Ecological Systems Theory (PVEST): Charting Its Origin and Impact," *American Psychologist* 78, no. 4 (2023): 524–34.

³⁷ Tyler, "Critical Consciousness in Late Adolescence," 2.

³⁸ Margaret Beale Spencer et al., "Identity and School Adjustment: Revisiting the 'Acting White' Assumption," *Educational Psychologist* 36, no. 1 (2001): 21–30.

Specific forms of socialization are protective for Black and other non-white children.³⁹ One such form, racial (ethnic) socialization—or the ways in which people are shaped to understand the reality of race—includes instilling positive messages about one’s racial/ethnic group, encouraging cultural heritage engagement, and preparation to deal with bias treatment.⁴⁰ Racial socialization is built from direct and indirect messaging received from parents and family, peers, institutions, and mass media. While parents and immediate family are seen as the primary vessels for early socialization, school environments and other large institutions within an adolescent’s ecology play a major role.⁴¹ Additionally, the advent and proliferation of social and digital media have ushered in a new, influential lever in racial socialization. Youth consume, as well as generate, media that reflects the adages of conventional thought, including hegemonic master narratives that reinforce oppression.⁴² Racial socialization influences racial identity development, which can be intentionally shaped or “fortified” in response to one’s environment.

Africana Heritage Engagement & Racial/Cultural Identity Fortification

CC development may be elicited as a result of ethnic, racial, and/or cultural identity development, which is a process often catalyzed and shaped by experiences of racial injustice and oppression.⁴³ Racial identity and racial belief formation are processes that occur earlier and more intensely for non-white youth because the impact of race is a more salient part of their experiences.⁴⁴ Racial identity is constructed by both external experiences, as well as internal beliefs; and some of the latter is affected by the former.⁴⁵ Racial beliefs can be positively influenced through Africana Heritage Engagement (AHE), which is defined as a “process of immersion with positive and empowering aspects of Africana heritage, which includes learning about

³⁹ Ming-Te Wang et al., “Parental Ethnic-Racial Socialization and Children of Color’s Academic Success: A Meta-Analytic Review,” *Child Development* 91, no. 3 (2020): e528–e544.

⁴⁰ Wang, “Parental Ethnic-Racial Socialization and Children of Color’s Academic Success,” e528–e544.

⁴¹ Bronfenbrenner, “Ecology of the Family as a Context,” 844–850.

⁴² L. Monique Ward and Enrica Bridgewater, “Media Use and the Development of Racial Attitudes Among U.S. Youth,” *Child Development Perspectives* 17, no. 2 (2023): 83–89.

⁴³ Kevin O. Cokely, “Who Am I? The Search for Black Identity,” *The Myth of Black Anti-Intellectualism: A True Psychology of African American Students*, Santa Barbara, CA: Praeger/ABC-CLIO, 2015: 1–4.

⁴⁴ Cokely, “Who Am I? The Search for Black Identity.”

⁴⁵ Cokely, “Who Am I? The Search for Black Identity.”

both historic African achievements and culture of the past millennia to the present; about enslavement of African people with a focus on their resilience; and psychological tools to help people of African descent succeed despite facing obstacles.”⁴⁶ AHE socialization can both elicit CC development and also “fortify” Black adolescent cultural/racial identity, and these processes are interrelated.⁴⁷ CC can be elicited through participation in intervention programs that seek to foster it⁴⁸ or instill related constructs such as AHE. When such programming includes parent and family involvement, as well as modeling from trusted adults, impact will be reinforced.⁴⁹ The more components of a child’s ecosystem that contribute to a “consciousness raising system,” the more their CC development will be supported.⁵⁰

The authors propose that supporting Black adolescent CC development is an ideal approach to protecting them against the harms of genAI’s negative socialization impacts, especially against genAI’s identified racial biases and its potential negative impact on Black racial identity. Practical ways to enact this are presented in the Discussion section.

GENAI ENGAGEMENT

This section reviews the larger context related to Black adolescent experience with text-based genAI with a focus on its impact on writing and learning, as well as literature related to impact on CD, CT, and critical awareness.

GenAI’s Accelerating Integration

AI refers broadly to technology that mimics human intelligence, which is more appropriately categorized as cognitive functioning. It is part of the computer science area of machine learning and requires a vast set of training data to “teach” an AI model to perform predictive, analytical, and/or generative tasks. Narrow AI (NAI) is a machine’s ability to mimic intelligence within one specific function, such as creating content.⁵¹ NAI is deeply integrated

⁴⁶ Zukeri, “Exploration of Africana Heritage Engagement,” xiv.

⁴⁷ Zukeri, “Exploration of Africana Heritage Engagement,” 129-139.

⁴⁸ Heberle, “Critical Consciousness in Children and Adolescents,” 538-541.

⁴⁹ Zukeri, “Exploration of Africana Heritage Engagement,” 78-89.

⁵⁰ Heberle, “Critical Consciousness in Children and Adolescents,” 544.

⁵¹ Kweli Zukeri, “The GenAI Revolution, Ep 1: What is GenAI and Why is it Biased?” HU2U Podcast, Season 2, episode 7.

into the digital social and media systems inundating our daily lives in the modern world. GenAI, a form of NAI, can interact with humans through digital assistants and chatbots and can generate text, code, video, and images, as well as mimic human discourse and conversation; text-based genAI is built on LLMs⁵². Since late 2022, progress in genAI capabilities has rapidly reshaped the technology landscape and affected all industries.⁵³

GenAI in Context

As of late 2025, 67% of adolescents use genAI-based tools sometimes or often.⁵⁴ The most popular medium is chatbots⁵⁵ and the most common purpose is looking up information (59%) and school and homework support (55%).⁵⁶ However, parent reporting indicates they do not possess an accurate perception of how adolescents use it. For example, while only 8% of adolescents report using genAI as companions, 23% of parents believe that adolescents use it as such.⁵⁷ There is also a notable gap between adolescent usage and parent/teacher awareness. In 2024, 46% of adolescents that use genAI for homework support do so without teacher permission.⁵⁸ As of 2024, only 37% of parents whose adolescents reported using genAI were aware that their child was doing so⁵⁹, and 83% of parents reported that their child's school had not provided guidance on genAI use.⁶⁰ Notably, many adolescents are skeptical about genAI tools' abilities and fidelity, most distrusting that technology companies are able to protect them from harm,⁶¹ which is promising as this orientation can be leveraged to strengthen CC.

Risks & Harms

One of this article's foci is the potential for strategic genAI use by Black students to increase CC. However, the authors note that AI and genAI are

⁵² Large language models.

⁵³ Zukeri, "GenAI Revolution."

⁵⁴ Celinda Lake et al., *Generation AI: What Kids and Families Think About AI*, (Common Sense Media, 2026), 5.

⁵⁵ Including both standalone tools and those embedded within search engines

⁵⁶ Lake, *Generation AI*.

⁵⁷ Lake, *Generation AI*.

⁵⁸ Madden, "Dawn of the AI Era," 7.

⁵⁹ Madden, "Dawn of the AI Era," 8.

⁶⁰ Madden, "Dawn of the AI Era," 31.

⁶¹ Calvin et al., *Teens, Trust, and Technology in the Age of AI: Navigating Trust in Online Content*. San Francisco, CA: Common Sense, 2025: 5.

being deployed in a multitude of nefarious ways that result in discriminatory treatment of Black adolescents. For example, school surveillance and behavioral management systems disproportionately falsely flag Black students for cheating or committing other academic and behavioral violations.⁶² More than twice as many Black adolescents (20 percent) report being falsely flagged for AI-generated homework than white adolescents (7 percent).⁶³ Use of genAI-based companion bots within social applications present damaging psychological risks for adolescents,⁶⁴ in addition to adults.⁶⁵

GenAI interactions with Black users are shaped by systematic racism, despite efforts to mitigate it on a surface level, which allow LLMs to mask their underlying racism.⁶⁶ Foundational⁶⁷ LLMs are skewed towards a prevailing hegemonic worldview, which frames Black people as inferior; LLMs are anti-Black by default.⁶⁸ LLMs do not interpret nor generate African American Vernacular English (AAVE) as accurately as “standardized” English,⁶⁹ though they demonstrate a working, superficial understanding of it.⁷⁰ However, they do connect a user’s use of AAVE with the associated demographic, i.e. Black people, which is one example of an implicit personalization (IP) cue that

⁶² Elizabeth Warren and Ed Markey, *Constant Surveillance: Implications of Around-the-Clock Online Student Activity Monitoring*, Washington, D.C.: United States Senate, 2022: 5.

⁶³ Madden, “Dawn of the AI Era,” 28.

⁶⁴ American Psychological Association, *Artificial Intelligence and Adolescent Well-being: An APA Health Advisory*, Washington, D.C.: American Psychological Association, 2025: 3.

⁶⁵ American Psychological Association, *APA Health Advisory on the Use of Generative AI Chatbots and Wellness Applications for Mental Health*, Washington, D.C.: American Psychological Association, 2025: 1-5.

⁶⁶ Valentin Hofmann et al., “AI generates covertly racist decisions about people based on their dialect,” *Nature* 633, 2024: 1.

⁶⁷ “Foundational” models are used widely and connect to many digital tools via API to provide the genAI functions, and as such, are becoming highly influential across society.

⁶⁸ Tiera Tanksley, “Employing an Abolitionist, Critical Race Pedagogy in CS: Centering the Voices, Experiences and Technological Innovations of Black Youth,” *Journal of Computer Science Integration* 6, no. 1 (2023): 2.

⁶⁹ This article uses the term “standardized” to refer to mainstream US English to emphasize that this English variety as default/standard for US society is an arbitrary construction reflecting US hegemony and white supremacist ideology.

⁷⁰ Nicholas Deas et al., “Evaluation of African American Language Bias in Natural Language Generation,” in *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing* (Singapore: Association for Computational Linguistics, 2023), 6805–24; Allison Koencke et al., “Racial Disparities in Automated Speech Recognition,” *Proceedings of the National Academy of Sciences* 117, no. 14 (2020): 7684–89; Sarah E. Finch et al., “Finding a Voice: Evaluating African American Dialect Generation for Chatbot Technology,” preprint, submitted January 2025, arXiv:2501.03441.

LLMs use to personalize output. IP cues can improve user experience, but inevitably lead to stereotyping and biased treatment.⁷¹ Studies show that a user's use of AAVE invokes deep bias from LLM chatbots that reflect systemic societal bias, including discriminatory conclusions that Black people deserve harsher criminal sentencing and are not qualified for prestigious jobs.⁷² Additionally, the big tech companies that own and operate LLMs make intentional ideological decisions that allow for greater harm;⁷³ the Trump administration's "anti-woke" stance actively supports this.⁷⁴

Building Critical Awareness of AI

It is essential that Black youth understand the basic intricacies of AI, genAI, and digital technology and the embedded bias and risks within the contexts of their historical development. To that end, it is useful to unpack the pioneering scholarship of Dr. Tiara Tanksley.⁷⁵ Based on her analysis across several publications⁷⁶ of the impacts of several iterations of a five-week summer course she taught for Black adolescents called Race, Abolition and AI that sought to "...prepare students to interrogate the ubiquity of anti-black racism within socio-technical architectures...of AI technologies...", she developed Critical Race Algorithmic Literacy (CRAL), which describes the embodiment of the "...accumulation of historical, cultural and computational sensibilities needed to actively identify and intervene upon anti-black racial logics that are encoded within technological hardware, software and

⁷¹ Zhijing Jin et al., "Implicit Personalization in Language Models: A Systematic Study," In *Findings of the Association for Computational Linguistics: EMNLP 2024*, 12309–25. Miami, FL: Association for Computational Linguistics, 2024: 12312-12317.

⁷² Hofmann, "AI generates covertly racist decisions," 147.

⁷³ Ray Siladitya, "Musk Rails Against 'Woke and Sanctimonious' AI Rivals—Insists 'Grok Must Win'." *Forbes*, February 18, 2026.

⁷⁴ The White House, "Preventing Woke AI in the Federal Government," Presidential Actions: Executive Orders, July 23, 2025.

⁷⁵ To the authors' knowledge, Dr. Tanksley's course is the first to educate Black students on the harms of AI, as well as assess and publish the impact.

⁷⁶ Tiera Chante Tanksley, "We're Changing the System With This One': Black Students Using Critical Race Algorithmic Literacies to Subvert and Survive AI-Mediated Racism in School," *English Teaching: Practice & Critique* 23, no. 1 (2024): 36-56; Tanksley et al., "Ethics Is Not Neutral': Understanding Ethical and Responsible AI Design from the Lenses of Black Youth," in *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, 1-20. ACM, 2025; Tanksley, "Employing an Abolitionist, Critical Race Pedagogy in CS: Centering the Voices, Experiences and Technological Innovations of Black Youth," *Journal of Computer Science Integration* 6, no. 1 (2023): 1-16.

infrastructures...”⁷⁷ Once course participants demonstrated adoption of CRAL, they could recognize how technological systems both inside and outside of school impact them, their community, and the environment and society at-large; additionally, they could make informed decisions about their own engagement, or lack thereof, with AI and genAI, as well as challenge its use.⁷⁸

Potential Benefits and Developmental Concerns

Developing the ability to critically analyze and reflect upon information and experiences is a vital part of CD. Clearly, strong cognitive functioning undergirds general human functioning and supports critical awareness capacity, a vital part of CC; thus, the authors must explore genAI use impact on CD. Concern for negative cognitive impact is shared by parents and adolescents: 77 percent of parents and 66 percent of adolescents believe genAI may harm critical skill development.⁷⁹

There are many ways one can use genAI to support their work. It can shift the nature of cognitive engagement from material production to “task stewardship.”⁸⁰ The nature of that stewardship determines how CD is specifically impacted because different types of cognitive processes and their replacement or shifting due to genAI, elicit different components of cognitive functioning.⁸¹ While genAI is used for a myriad of functions, this paper focuses on the ways it can be used to support the writing process since how humans write deeply impacts CD,⁸² thus causing particular concern for the changes in how adolescents write. GenAI writing support can be categorized into four groups: planning and ideation, content generation, amendments and adjustments, and feedback and assessment.⁸³

⁷⁷ Tanksley, “We’re Reimagining the System,” 5.

⁷⁸ Tanksley, “We’re Reimagining the System,” 13.

⁷⁹ Madden, “Dawn of the AI Era,” 38.

⁸⁰ Hao-Ping (Hank) Lee et al., “The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers,” in *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, Association for Computing Machinery, (2025): 15.

⁸¹ Kosmyna, “Your Brain on ChatGPT,” 76.

⁸² Kosmyna, “Your Brain on ChatGPT,” 10.

⁸³ Andrew Jelson et al., “An Empirical Study to Understand How Students Use ChatGPT for Writing Essays,” *ACM Reference Format* 1, no. 1 (2025): 13.

Productivity and Efficiency Gains

The benefits of student genAI use for learning and writing support can be summarized as efficiency and productivity gains. In a US capitalistic political economy focused on the bottom line, these values are romanticized and celebrated. GenAI is a powerful scaffolding tool, increases educational accessibility, is available 24/7, provides immediate feedback, and can personalize educational material, including language translation, context customization, and comprehension levels adjustments.⁸⁴ GenAI tools can reduce cognitive load by automating menial and repetitive tasks that have little to no developmental and learning value, which can free cognitive capacity and time for higher order thinking tasks, such as problem-solving and creativity.⁸⁵ Additionally, genAI use has been found to improve learning performance, which represents demonstrable aspects of student learning such as GPA and test scores, albeit this impact is moderated by a number of contextual and personal factors.⁸⁶ As such, all of these potential benefits can come at great cost without a developmentally protective framework in place.

Diminished Cognitive Development and Perspective Diversity

CD is the long-term building of human mental and information processing capacity, or load. Cognitive load is the limited capacity of simultaneous information processing imposed on working memory.⁸⁷ Cognition requires practice to grow and strengthen. GenAI and other digital information tools allow users to engage in cognitive offloading, i.e. outsourcing internal cognitive processing needed to perform a mental task to a digital tool. Frequent cognitive offloading leads to cognitive debt accumulation, resulting in diminished CD, such as long-term memory retention loss, and thus cognitive atrophy⁸⁸ or “digital dementia.”⁸⁹ Studies have shown such impact

⁸⁴ Bai Long, Xiangfei Liu, and Jiacaan Su, “ChatGPT: The Cognitive Effects on Learning and Memory,” *Brain-X* 1 (2023): 4-6.

⁸⁵ Michael Gerlich, “AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking,” *Societies* 15, no. 1 (2025): 5-6.

⁸⁶ Jin Wang and Wenxiang Fan, “The Effect of ChatGPT on Students’ Learning Performance, Learning Perception, and Higher-Order Thinking: Insights from a Meta-Analysis,” *Humanities & Social Sciences Communications* 12, no. 1 (2025): 1.

⁸⁷ Kosmyrna, “Your Brain on ChatGPT,” 13.

⁸⁸ Kosmyrna, “Your Brain on ChatGPT,” 137-139.

⁸⁹ Mathura Shanmugasundaram and Arunkumar Tamilarasu, “The Impact of Digital Technology, Social Media, and Artificial Intelligence on Cognitive Functions: A Review,” *Frontiers in Cognition* 2 (2023): 1203077: 3-4.

using a variety of methods, including using EEGs to demonstrate changes to neural activity,⁹⁰ human and LLM essay analysis,⁹¹ and both quantitative⁹² and qualitative⁹³ analyses.

Additionally, unique individual perspective diminishes when over relying on genAI to generate content and complete higher order thinking tasks; the aggregate impact is “mechanized convergence,” a narrowing of ideas into a more homogenous worldview reflective of the US cultural hegemony within genAI’s underlying data and structure.⁹⁴ This is especially concerning for Black people, as a truthful and self-determined historical narrative has always been suppressed in the US; a phenomenon that is likely increasing.⁹⁵ Overreliance on genAI to produce work also leads to diminished recall ability⁹⁶ and a narrowing of creative ideas.⁹⁷

Critical Thinking

CT and CC go hand in hand, as the critical awareness and analysis skills that CC requires are undergirded by CT capacity. Thus, protecting CT development must be addressed when supporting Black adolescent CC development. CT is a critical orientation of cognitive processing and is considered a hallmark of CD.⁹⁸ The APA Delphi panel defined it as “...purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is

⁹⁰ Kosmyrna, “Your Brain on ChatGPT,” 83.

⁹¹ Kosmyrna, “Your Brain on ChatGPT,” 83.

⁹² Gerlich, “AI Tools in Society,” 1.

⁹³ Hao-Ping (Hank) Lee et al., “The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers,” In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (CHI ‘25). New York: Association for Computing Machinery, (2025): 1.

⁹⁴ Lee, “The Impact of Generative AI on Critical Thinking,” 2.

⁹⁵ Brenda Álvarez, “Across the Nation, Teachers Rally to Defend Truth in Education,” *NEA Today*, June 9, 2025, <https://www.nea.org/nea-today/all-news-articles/across-nation-teachers-rally-defend-truth-education>.

⁹⁶ Nataliya Kosmyrna et al., “Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task,” Pre-print, submitted June 10, 2025: 138.

⁹⁷ Anil R. Doshi and Oliver P. Hauser, “Generative AI Enhances Individual Creativity but Reduces the Collective Diversity of Novel Content,” *Science Advances* 10, no. 28 (July 12, 2024): 1-2, <https://www.science.org/doi/10.1126/sciadv.adn5290>.

⁹⁸ Eric C. Schoute and Patricia A. Alexander, “A Critical Analysis of Critical Thinking Interventions in Higher Education,” *Review of Educational Research* (2025): 2, <https://doi.org/10.3102/00346543251352539>.

based.”⁹⁹ A user’s confidence in genAI’s ability decreases their CT enactment within genAI use, and higher self-confidence is associated with increased CT enactment during genAI engagement.¹⁰⁰

DISCUSSION: CATALYZING CRITICAL CONSCIOUSNESS WITH GENAI ENGAGEMENT

GenAI integration into digital tools used to support cognitive processing presents major risks to various aspects of Black adolescent learning and CT development. Educators, parents, and students alike are concerned. Parents are generally unaware of their children’s use of genAI, and as such are largely not discussing it, which increases likelihood for risks/harms to take effect. Many schools provide no guidance on genAI or ban its use altogether. This is shortsighted, as it leaves youth at the whims of profit-driven big tech and other influences with no interest in their wellbeing. The risk to Black adolescents is particularly concerning, as genAI’s implicit racism presents a unique risk to their racial identity and general psychological wellbeing.

While CC development was already vital for Black adolescents generally, it becomes even more important with this context in mind. When Black adolescents possess CC, it will mitigate some negative impacts of genAI use, and furthermore, they can even potentially strengthen CC via proactively shaping their critical awareness and use of genAI. As such, the authors offer some guiding principles that can be applied in various contexts, such as curriculum, and across domains, which are based on the preceding extant literature review. Each contributes to building at least one of the three CC aspects: critical awareness, agency, and critical action.

Build a Critical Foundation

Support Counter-Narratives

Nefarious “master” narratives embedded within mainstream channels and institutions of socialization largely shape human beliefs; many of them are detrimental to Black adolescents. To support development of critical

⁹⁹ Peter A. Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction. Research Findings and Recommendations* (Millbrae, CA: The California Academic Press, 1990): 3.

¹⁰⁰ Lee, “Impact of Generative AI on Critical Thinking,” 1, 14.

awareness, adults must help them both identify “master” narratives and construct uplifting counter-narratives. There are two “master” narratives and corresponding counter-narratives the authors believe are key to our present purpose.¹⁰¹

Big tech has helped construct a “master” technodeterminist narrative that assumes AI integration is necessary and unavoidable, as well as a technosolutionist narrative that it is for society’s greater good; these are unidimensional and incomplete, at best, and entirely false, at worst. Passively accepting and internalizing them supports big tech’s dominance and profiteering. The counter-narrative is simply the truth: Potential benefits are unevenly distributed and only applicable to some, digital tools can cause harm to our minds and general wellbeing, and the infrastructure and political economy undergirding them deeply harms our planet, communities, and humans, due to their hyper-capitalist underpinning. This counter-narrative is grounded within the truthful historical context that modern technology infrastructure, software, and business models were built within a culturally hegemonic system that perpetuates and supports systematic oppression and repression of Black people and other marginalized groups. The nature of genAI use, and whether one chooses to engage with it, is one’s prerogative.

The second set of relevant narratives regards the Africana knowledge production and application storyline.¹⁰² The prevailing societal narrative is the false notion that significant knowledge and technological progress have been primarily led by European civilizations and their descendants. Belief in such a narrative negatively impacts Black adolescent feelings of agency and self-efficacy, particularly within academic and learning domains, as well as related beliefs about being Black. The counter-narrative is simply a truthful historical framing: people of African descent across time and space have made significant contributions to knowledge and technological progress, particularly setting scientific and mathematical foundations that

¹⁰¹ To learn more about preparing to socialize youth with these counter-narratives, see: Benjamin, “Race After Technology,” 2019; Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press, 2018; Zukeri, “Exploration of Africana Heritage Engagement,” Kweli Zukeri, “The GenAI Revolution, Ep 1: What is GenAI and Why is it Biased?,” *HU2U Podcast*, Season 2, episode 7; Zukeri, “The GenAI Revolution, Ep 2: Howard Change-makers Leading the Way,” *HU2U Podcast*, Season 2, episode 8; Zukeri, “The GenAI Revolution, Ep 3: How our Alumni are Wielding AI in Entrepreneurship and Big Tech,” *HU2U Podcast*, Season 2, episode 9.

¹⁰² Zukeri, “Exploration of Africana Heritage Engagement,” 6-8.

have benefitted the world for thousands of years.¹⁰³ Essentially, when it comes to wielding tech for a positive impact, Black folk ain't new to this. This counter-narrative is a part of AHE that prior studies have shown to both elicit emergence of CC and fortify Black adolescent racial and cultural identity, acting as a general buffer against racism, which is also needed as psychological protection amidst genAI's implicit racism. Additionally, AHE emphasizes the resilience of and resistance within Africana heritage in the face of historical enslavement and its modern remnants, which can support Black adolescent agency and critical action.

Model and Support Self-confident Skepticism and Interrogation

A natural byproduct of adopting the counter-narratives is an inclination for skeptical inquisition and confronting prior socialization. Dissecting existing narratives requires both acquiring critical awareness about AI, best described by Tanksley's CRAL framework,¹⁰⁴ and applying critical inquiry. Youth must be given the time and space to engage in this and encouraged to co-direct their own learning through curiosity and discourse facilitated by adults whose approach is one of transparent co-facilitator rather than "expert." With this approach, adults are also co-learners gaining insights from the youths' perspectives. Adults should also model such practices and set firm boundaries and expectations for their child's use of genAI to help them establish a healthy relationship to it,¹⁰⁵ demystify the process, and contextualize AI, underscoring that the tool is not magic, but simply a computational software model that is trained to mimic human cognition and interaction.¹⁰⁶ Establishing such "consciousness raising systems"¹⁰⁷ within a youth's ecosystem will support their CC development. Co-experimenting with to expose genAI's underlying—and often hard to detect racism—can demonstrate that it is flawed, like humans, and help youth engage in active tech interrogation; for example, experimenting with the user's input vernacular and observing subsequent changes in the nature of bot responses. Luckily, many adolescents are already suspicious of genAI, a tendency that can be leveraged, since lower user confidence in genAI leads to higher CT

¹⁰³ Zukeri, "Exploration of Africana Heritage Engagement," 6-8.

¹⁰⁴ Tanksley, "We're Reimagining the System," 5.

¹⁰⁵ Marco Andrea Piombo et al., "Emotional Intelligence and Adolescents' Use of Artificial Intelligence: A Parent Adolescent Study," *Behavioral Sciences* 15, no. 8 (2025): 11-13.

¹⁰⁶ Zukeri, "The GenAI Revolution," Ep 1.

¹⁰⁷ Heberle, "Critical Consciousness in Children and Adolescents," 544.

enactment during genAI engagement. Additionally, building youth self-confidence will support their agency, as well as deter reliance on genAI.

Illuminate Connections, Encourage Principled Action and Imagination

When Black adolescents build connections between learning materials and points across their ecosystem,¹⁰⁸ they are more likely to understand how the material applies to their own experiences, thus be engaged and invested in learning—because it has now become culturally relevant;¹⁰⁹ this process supports both CT and CC development. Adults must support this effort and help them recognize and analyze various connections between their experiences with tech and their digital communications with friends and families, their communities, and school and learning. With this foundation, they can more easily draw broader connections between digital tools and society and the environment, national and local policy, and political economy. Adults should also help them understand issues of data privacy and security across their use of digital platforms. Additionally, in drawing connections, adults should encourage and make space for principled resistance based on their new insights. For example, if youth understand their use of genAI is connected to extreme environmental impact and it leads to them making a principled decision not to use it, this should be encouraged, even when it means resisting a particular assignment that might require it. Youth should also be given space to engage in the practice of Afrofuturism—that is, imagining a new paradigm in which technology is utilized for social good and to benefit Black people, rather than cause harm. They can even apply such imagination to project-based work, which also supports the process of drawing connections and perhaps contributing to a better collective future. As Dr. Ruha Benjamin notes, rather than allow youth to simply “play the game,” they should learn how to find ways to “hack” it, which requires “...in-depth understanding of how it works...and a vision for how to make it better,” thus allowing them to “...subvert the system and make it do something it wasn’t meant to do.”¹¹⁰

¹⁰⁸ Such as home, community, society, etc.

¹⁰⁹ Gloria Ladson-Billings, “But That’s Just Good Teaching! The Case for Culturally Relevant Pedagogy,” *Theory Into Practice* 34, no. 3 (1995): 159–62.

¹¹⁰ Ruha Benjamin, “Playing the Game or Hacking the System?” *Huffington Post*, 2013, https://www.huffpost.com/entry/playing-the-game-or-hacki_b_3370009.

Maintain a Protective Practice

Prioritize Learning and Development

As a general principle, although productivity/efficiency gains may be enticing and at times may support academic performance, priority should always be given to pedagogy and practices that support authentic learning gains and skills development instead of harming CT development.

Strengthen Skills and Consider GenAI Later

Studies show that if people strengthen their writing skills before introducing genAI as support, the negative CD impacts of its use may be mitigated and even avoided.¹¹¹ While additional longitudinal studies are needed to further explore this principle across longer time periods of writing practice and genAI use, it is safe to say that introducing genAI within specific parameters, and later in a curricular time period, is beneficial.

Strengthen and Don't Displace Critical Thinking

GenAI use has shifted the cognitive processing involved in learning activities like writing, from material production to “task stewardship.” Generally, people characterize the ideal benefit of genAI use as that of a personal assistant; this is a helpful initial analogy, as it frames it as a purely supportive and substitutive role. However, this simple heuristic is not an ideal descriptor on its own because it makes room for uses that displace CT practice.

There are four broad categories of genAI use. The authors briefly discuss recommendations for each with CT development protection in mind and in the context of writing, however similar guidance would likely apply in additional genAI scenarios. It is important to remember that there may be small exceptions to this guidance depending on the scenario and that repeated practice is what constitutes long-term impact:

1. Content generation: generally, never use it to replace one's actual writing process; appropriate uses may include comparing generated content to work that was already created or to test/demo the capability of this functionality as a practice of tech interrogation.

¹¹¹ Kosmyrna, “Your Brain on ChatGPT,” 140.

2. Feedback and assessment: asking genAI for feedback and assessment, especially of technical elements of a written work, such as tallying the number of mentions or overall tone analysis, is appropriate. However, if analysis is related to a more subjective assessment, such as the strength of an argument, it should be done after a user has engaged in the practice themselves and can compare their analysis with genAI's.
3. Amendment and adjustment: like the last point, support of a more technical nature, such as citation format corrections, is appropriate. However, the more cognitively engaging work of continued review and adjustment should not be completely replaced.
4. Planning and ideation: before asking genAI to generate a list or put together a plan of action, following existing best practice guidance for the preliminary work of setting the task's scope and parameters from one's own grounding should be conducted. This grounding becomes the basis to construct an effective genAI prompt that includes clear context and instruction.

CONCLUSION

We've outlined the monumental risks and harms of genAI for Black adolescents. The gap between genAI use by Black adolescents and adult awareness of such use presents a major problem but also an opportunity. Adults directly involved in Black adolescent socialization must take responsibility to proactively address this gap while genAI use is still nascent and simultaneously rapidly becoming further enmeshed across domains within the Black adolescent ecosystem. Critical consciousness remains a vital psychological tool for Black youth navigating the realities of oppression—and its development need not be threatened by the rise of generative AI. With intentional guidance applying the principles offered here in multiple domains, genAI can instead become a resource that strengthens CC rather than undermine it. Grounded in existing literature, the principles outlined above offer a starting point for educators, practitioners, and researchers committed to this work.

FURTHER RESEARCH

The guidance the authors created serves as a foundation to create a theoretical model that more specifically examines how utilizing critical awareness and

use of genAI can strengthen CC and CT development. Future research should empirically assess this model to examine how Black adolescent CC and CT level influences the nature of genAI use, as well as experimentally test the effectiveness of this article's recommendations to strengthen both CC and CT. It would also be useful to explore the use of genAI's relationship with Black adolescent racial identity and AHE configurations.

GENAI USE IN WRITING THIS ARTICLE

The authors used genAI to support our research and writing process in alignment with the protective guidance: to adjust citation formatting, as well as to help to organize and query our gathered research literature; the authors validated resulting output for accuracy before use. However, they did not use genAI to generate, analyze, or adjust any material whatsoever. The authors acknowledge the resulting environmental impact due to their genAI use and hope that the benefits of their work ultimately outweigh this negative impact.

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