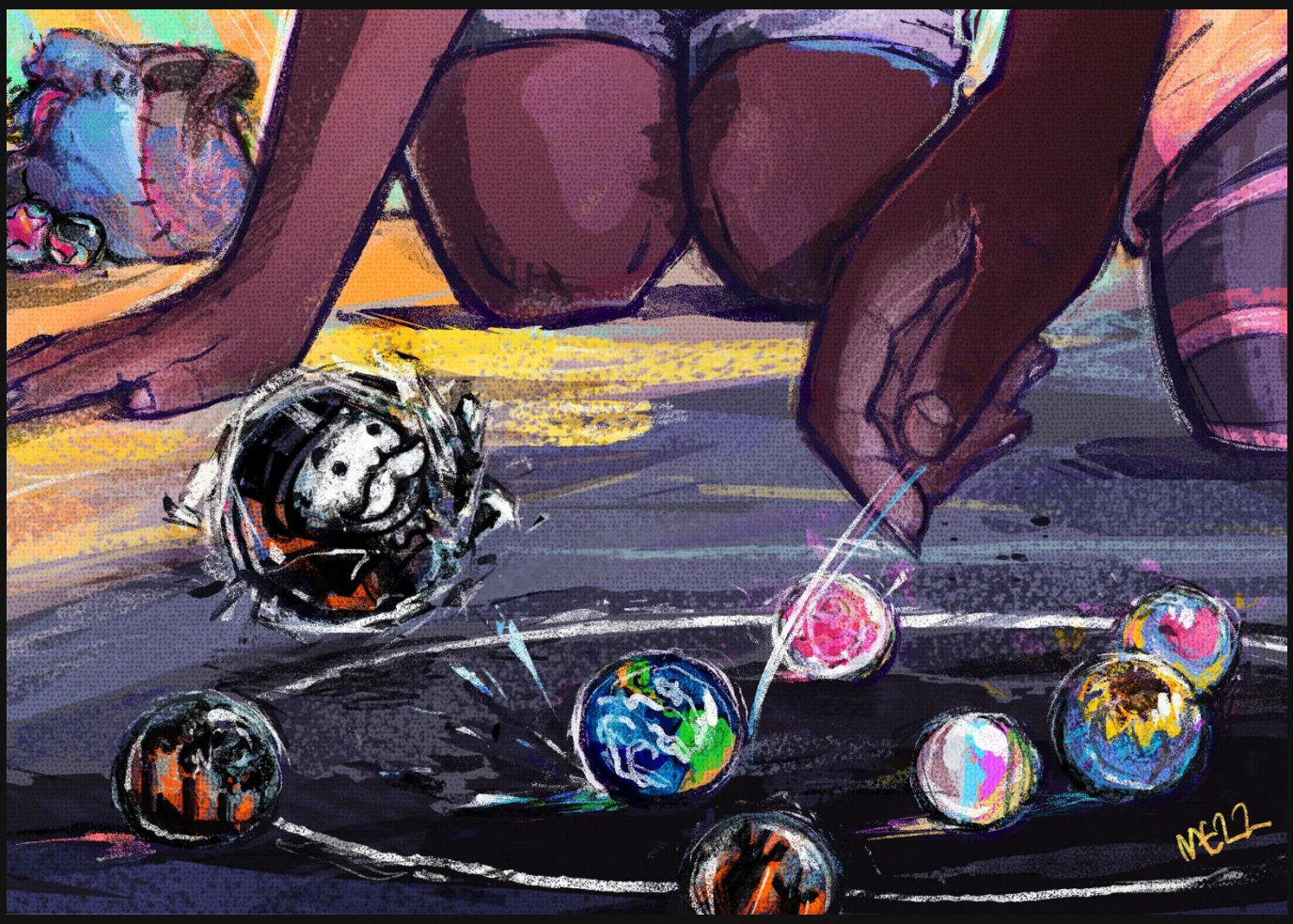

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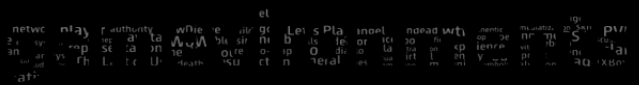

review

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Peer-reviewed Article

Critical Game Literacies and Critical Speculative Imagination: A Theoretical and Conceptual Review

Matthew Coopilton

Abstract: Digital gaming has expanded during the pandemic, adding urgency to educators' efforts to implement research on game literacy learning. However, researchers have also documented racism, sexism, heterosexism, and other forms of oppression in gaming. Educators need to prepare young people to resist these, and game developers need to challenge them in their designs. To contribute to these efforts, this article reviews and synthesizes theories, conceptual frameworks, and research on critical game literacies, defined as the literacy skills needed to play, analyze, modify, and design games in ways that challenge systemic oppression. Synthesizing sociocultural learning theory, abolitionist critical theories, and Afrofuturist Development theory, I argue that critical game literacies can nurture critical speculative imagination, "the capacity to conjure, enact, and rehearse future worlds free from oppression" (Tynes et al. forthc., 23). I demonstrate this by focusing on movements for abolition of police and prisons, part of the international struggle for Black liberation. The theory could also be developed further in related movements around the world, supporting young people in using games as equipment to prototype liberated futures.

Keywords: Critical Pedagogies, Game Design, Video Games, Games and Learning, Critical Digital Literacies, Critical Game Literacies, Afrofuturism, Critical Speculative Imagination, Abolitionism, gamevironments

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Digital gaming has expanded during the pandemic and is becoming a mainstream cultural practice; for example, a recent Ipsos survey of 4.000 adults found that two-

thirds of people in the United States play video games (Snider 2021). This adds urgency to educators' efforts to implement decades of research on game literacies learning inside and outside of the classroom (Squire 2011, Steinkuehler, Squire and Barab 2012, Gee 2013, Kafai and Burke 2015, Garcia et al. 2021). At the same time, researchers have documented racism, anti-Blackness, sexism, heterosexism, and other forms of oppression in digital gaming, and have analyzed ways that players resist these oppressions (Gray and Leonard 2018, Gray 2020, Tekinbaş 2020). Educators can contribute to this resistance by supporting students' development of critical game literacies, defined as the literacy skills needed to play, analyze, modify, and design games in ways that challenge systemic oppression. Students could hone their critical consciousness so they can critique and analyze games as they play, and they could learn to design their own games that support movements for liberation. Game developers could challenge oppression in the games industry, building on existing organizing efforts such as walkouts against sexism at *Activision-Blizzard*, one of the most prominent video game companies (Anguiano 2021), and other emerging movements for social change among game workers and players around the world (Woodcock 2019). To contribute to these efforts, this article synthesizes theoretical and conceptual frameworks for learning, teaching, and researching critical game literacies.

Building on the ways that scholars have analyzed the future-oriented aspects of gameplay (Atkins 2006, Gee 2013, Storm and Jones 2021), I argue that critical game literacies can nurture critical speculative imagination, defined as "the capacity to conjure, enact, and rehearse future worlds free from oppression" (Tynes et al. forthc., 23). Existing literature on games frames them as racialized pedagogical zones (Everett and Watkins 2008) and ideological worlds (Squire 2011) that model, simulate, and critique existing social systems (Gee 2013). For that reason, critical studies of game

design learning environments have tended to involve young people creating games that simulate existing systems of social oppression in order to critique or satirize them (see, for example, Proctor and Blikstein's 2019 study). Critical literacies scholars interested in gaming have begun to call for studying how critical literacies might move beyond such critique towards also imagining future worlds free from oppression (Storm and Jones 2021), and this article develops this idea further.

I will demonstrate the relevance of this argument by focusing on how critical game literacies can support the abolitionist movement against police and prisons in the US, part of the global movement for Black liberation that resurged during the 2020 rebellion against the police murder of George Floyd in the US. I am a part of several collectives that have begun to design abolitionist games (both analog and digital). These games prototype unpoliced futures where anti-Blackness and incarceration have been overcome, and peoples' needs for safety, dignity, and belonging are met in creative ways. This is a practice of freedom dreaming (Kelley 2002), curating visions of possible futures from within existing liberation movements (Imarisha and brown 2015) to expand our capacity to imagine and rehearse the abolition of police and prisons. Carceral infrastructure and schooling limit our critical capacities to imagine worlds without these institutions (Love 2019), and given established connections in the research literature between play and imagination (Gutiérrez, Becker et al. 2019), critical game literacies could be a way to resist these limits and expand our capacities. This is the theoretical conjecture we embedded in the design of *Kai UnEarthed* (forthc.), a video game that emerged out of participatory design activities I did with former students, colleagues, and fellow abolitionists during Seattle's movement against youth incarceration. The game is set in the world we imagined would replace the youth jail we were trying to shut down, and in *Kai UnEarthed* the young adult characters fall in love in the reclaimed ruins of the jail.

Because of this positionality, abolitionist gaming is featured most prominently in this article, but the theoretical links between critical game literacy and critical speculative imagination that I argue here could also be applied in wider class struggles and movements against related forms of oppression. I hope that readers can develop this theoretical synthesis further, applying it in other movements in the US and internationally, e.g., ecological movements addressing climate change, movements to challenge US imperial domination, and decolonial/ anti-colonial movements more broadly.

In this article, I synthesize the following bodies of theory: a) critical sociocultural theories of how young people become historical actors through gaming, producing possible futures, b) Marxist and abolitionist critical theories, and c) the Afrofuturist Development framework (Tynes et al. forthc.), a theory of how young Black people can use technology to imagine and build futures where they can thrive. I use the resulting synthesis to offer a conceptual framework as well as a brief review of related empirical research literature (a full literature review is beyond the scope of this article). I will conclude with a brief description of how I am applying these theories and concepts in a design-based research study around a Critical Game Jam with young adults. More detailed descriptions of those efforts are currently being published in other books and journal articles, and empirical findings on how people learn in these environments will also be submitted for publication in the future.

Why Critical Game Literacies?

Critical game literacies research and design efforts could have a range of social benefits. First of all, efforts to transform gaming and the games industry could be more effective if more workers entering the industry were equipped with the skills

and critical consciousness necessary to organize for change, plus the skills needed to enact innovative design ideas that depart from the reproduction of oppressive status quo assumptions about what games are and should be. These possibilities highlight the importance of critical game design pedagogies in the schools and programs that prepare students for such careers, at both the K-12 and postsecondary level, and in informal learning spaces such as online game design platforms, game jams, etc.

Equipping women, Black, Latine, Indigenous, and LGBTQIA+ students to navigate such conflicts in the workplace is especially important given the ongoing inequities in the industry, where white people, Asians, and men are still disproportionately represented among professional game designers, and everyone else is under-represented (Zippia n.d.). These inequalities are reflected in K-12 schools in the US as well, where students in high social-economic-status (SES) schools tend to use technology for creativity and production, while low-SES schools tend to use it more for drill and practice (Bussert-Webb and Henry 2017). Critical game literacy education should challenge this status quo. It could involve teaching designers to be more aware of their positionalities and the ways their design practices are situated within existing sociocultural contexts structured by tensions between systemic oppression and movements for liberation. It could also support designers from non-dominant backgrounds in recognizing and building on the strengths of their communities' play practices, aesthetics, and politics.

Secondly, there are also many good reasons for people to learn to design games beyond becoming professional game workers. There has been an explosion of independent game production over the past several decades, which is increasing as tools such as game engines become more accessible in terms of cost and learning curves (Anthropy 2012). Making games can be a way that people can express

themselves and their passions, building affinities and collaborative relationships with other people who share these passions (Gee and Hayes 2010); this can help people overcome the alienation and loneliness of late capitalist society, especially in the wake of the COVID19 pandemic. Such critical design efforts are especially important at a moment in history where the capitalist system is treating more and more people as disposable, leaving them with extra capacities that cannot be expressed at work and school (Gilmore 2007, Saltman 2016, Clover 2019, Woodcock 2019). There is already evidence that gaming is a place where people express these extra capacities (Steinkuehler 2010, Woodcock 2019), and a proliferation of critical game literacies could enable people to do this more collaboratively and consciously.

Thirdly, given the prevalence of racism in contemporary gaming cultures (Gray 2020), there is a need for game design learning spaces specifically focused on making games that challenge white supremacist ideologies and structures of institutional racism. Critical race digital literacy education research (Tynes et al. 2021, Garcia et al. 2021) has highlighted the importance of critical digital media creation in challenging racism and intersecting forms of oppression. Creating digital games can be one way to do this.

However, research is needed to help make such experiences more widely available to young people; the field of education so far has not generated or studied many learning experience designs, pedagogies, and practices to support critical game literacies learning. There is ample research on game literacies and game-based learning more broadly, and there are strands of critical pedagogy and critical literacies praxis and research that have informed critical gaming and game design pedagogies (e.g., Crocco 2011, Prax 2020). There are also critical studies of game literacies (Cooke 2016, Gutiérrez, Becker et al. 2019, Proctor and Blikstein 2019, Storm

and Jones 2021, Jones et al. 2021, Gee and Aguilera 2021). However, there are gaps in these literatures, with more research needed in the following areas: 1) critical studies that involve both playing and making games and the relationship between these activities, 2) studies that focus on Black liberation and abolitionism and 3) studies that involve simulating liberation rather than oppression. To support such research, I offer the following theoretical framework.

Theoretical Framework

In this section, I will synthesize theoretical literature on critical sociocultural learning (including connected gaming), abolitionist critical theories, and key principles of the Afrofuturist Development framework. Figure 1 illustrates this synthesis. I conceptualize critical speculative imagination as the point in the center of the diagram where the theories overlap: abolitionist theories (including Marxism) provide the critical aspect, Afrofuturist development theory offers the speculative aspect, and sociocultural theories of learning offer the imagination aspect. In other words, these theories converge in an argument that critical game literacies can nurture critical speculative imagination.

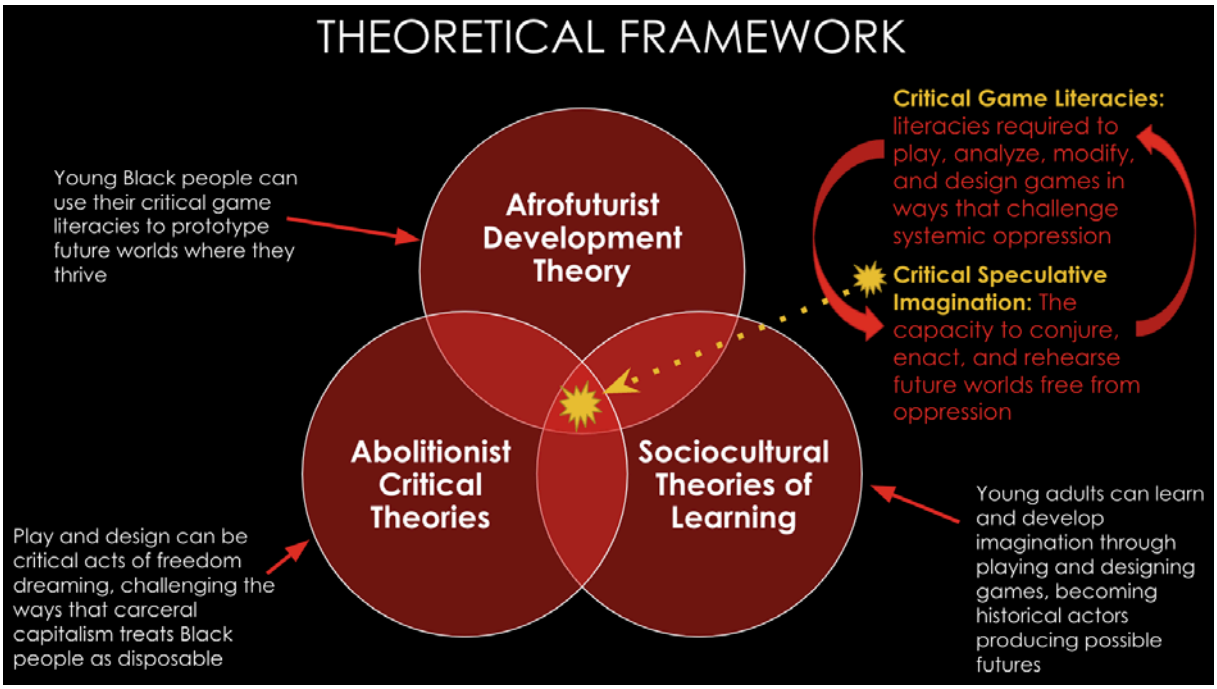


Figure 1: Theoretical Framework

Sociocultural Learning Theory

Sociocultural learning theory is a theory of how people learn and develop through historically situated activities mediated by their cultures, participation in activities with people around them, and tools/ artifacts such as language and other technologies (Göncü and Gauvain 2012). One form of sociocultural theory, Cultural Historical Activity Theory (CHAT), focuses on how people learn and develop through modifying objects to interact with each other and the world (Göncü and Gauvain 2012). Tools, including games and digital technologies, are not ideologically neutral (Tettegah and Mayo 2005, Roberts-Mahoney, Means and Garrison 2016, Gray 2020), they embody histories that "both enable and constrain the types of agentive moves young people can make in their everyday meaning-making and action-taking" (Gutiérrez, Higgs et al. 2019, 73). Sociocultural theory has informed research on play (Göncü and Gauvain 2012, Henricks 2015), games (Garcia 2017) critical approaches to multimodal literacies (Mirra and Garcia 2020), and connected learning for liberated futures (Gutiérrez, Higgs et al. 2019), demonstrating its relevance to studies of game literacies.

Games as Zones of Proximal Development

Sociocultural theory supports analyses of games as lived experiences, not just formal systems; the creators of a game and its players collaborate to co-create socioculturally situated acts of play (Sicart 2011, Fullerton 2019, Gutiérrez, Higgs et al. 2019). Play is central to sociocultural theorist Lev Vygotsky's concept of the zone of proximal development (ZPD), which he defines as "the distance between [a learner's] actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky 1978, 86). Vygotsky argued that play creates this zone in children:

> "Play provides a background for changes in needs and in consciousness of a much wider nature. Play is the source of development and creates the zone of proximal development. Action in the imaginative sphere, in an imaginary situation, the creation of voluntary intentions, and the formation of real-life plans and volitional motives – all appear in play and make it the highest level of preschool development. The child moves forward essentially through play activity." (Vygotsky 1967, 16)

Building on this insight, researchers have theorized play as a leading activity: interactions optimized to support currently developing cognitive capacities while at the same time laying the groundwork for capacities that can develop next (Leont'ev 1981, Griffin and Cole 1984, cited in Gutiérrez, Higgs et al. 2019).

Play and Development Among Emerging Adults

Sociocultural theory offers a developmental perspective that is relevant to studying learning among adolescents and adults, not just children. Theorists of leading activities often claim that each developmental phase of life involves a different leading activity: imaginative play in early childhood, followed by school-based

learning during middle childhood, peer social interactions during adolescence, and work during adulthood (Gutiérrez, Higgs et al. 2019). Because of the emphasis on work among adults, Henricks (2015) critiques the Vygotskian theoretical tradition for underestimating the power of play in adolescent and adult development. However, Gutiérrez, Higgs, and colleagues (2019, 71-72) argue that play remains a potential leading activity throughout the lifespan, building on a range of sociocultural research they cite. They also theorize that already-experienced leading activities do not disappear; they become "part of the foundation of everyday activities upon which new forms of activity are built" (Gutiérrez, Higgs et al. 2019, 71).

Children play partially because they do not control their situation and they get frustrated with it so they develop imaginative capacities to act out desires that cannot (yet) be fulfilled materially; this becomes a leading activity, a zone of proximal development for learning imaginative and symbolic thinking (Flanagan 2009, Henricks 2015). If play remains a leading activity into adulthood, it is possible that it might form zones for proximally developing imagination among adolescents and adults as well, making it relevant for educators who aim to encourage critical speculative imagination. Marxist game studies scholar Jamie Woodcock (2019) suggested that the content of adult ludic imagination might be shaped by adults' frustrations with work and/or unemployment. He theorized video game play as a psychological refusal of alienated capitalist labor and a potential space for imagining worlds outside of it. To describe this refusal phenomenologically, he quoted a media interview that Jane McGonigal had given:

> "Games provide a sense of waking in the morning with one goal: I'm trying to improve this skill, teammates are counting on me, and my online community is relying on me. There is a routine and daily progress that does a good job at replacing traditional work." (Bui 2017, cited in Woodcock 2019, 148)

From this perspective, gaming and game design activities could be spaces where adolescents and adults learn together, where they experience the joy of seeing what they are capable of (Henricks 2015) in ways that might be blocked or underdeveloped inside capitalist schools and workplaces.

This developmental perspective challenges commonplace biases against adolescent and adult gameplay that can be characterized as anti-ludic adultism, the idea that games are an unproductive waste of time that should be left behind when childhood ends. Some game designers internalize these biases, thinking that what happens inside a game does not matter in the real world, refusing to take responsibility for their real power as creators of a growing and influential media ecosystem (Gray and Leonard 2018). Understanding this power is crucial for designing games that can support the development of critical game literacies among adolescents and adults.

Scaffolding Connected Gaming

While sociocultural theory focuses on learning through play, some versions of it have conceptualized playing and designing games as part of a combined and coherent learning ecology rather than as separate domains (e.g., Gutiérrez, Becker et al. 2019). This approach is compatible with the theory of Connected Gaming (Kafai and Burke 2016) which argues that the roles of player and game designer are already merging in popular gaming and metagaming cultures (Gee 2013, Boluk and LeMieux 2017), so educators should build on this trend. Connected Gaming combines instructionist approaches (using games to teach skills) with constructionist practices that invite students to create their own games for learning, sharing these with their peers (Kafai and Burke 2016) as an authentic audience for multimodal composition (Mirra and Garcia 2020). They argue that creating for a peer audience boosts both engagement and subject-matter learning – even when the games students create are not as

complex as commercial video games (Kafai and Burke 2015).

From a sociocultural perspective, Connected Gaming's constructionist emphasis on discovery through design needs to be balanced with attention to scaffolding. Design thinking is mediated by tools, mentors, and more experienced peers (Gee 2013, Vossoughi et al. 2021). For example, the games learners create might be scaffolded by game engines and templates like Scratch or Twine that provide low barriers of entry by facilitating technical processes and allowing for remixability (Kafai and Burke 2015). Also, mentors might provide proleptic design demonstrations (Vossoughi et al. 2021) to show learners what is possible. Such an approach is consistent with Connected Gaming's foundations in Connected Learning, a framework that involves connecting students' personal interests with networks of supportive relationships, tools, and resources (Ito et al. 2013). It also draws from the concept of participatory cultures (Jenkins 2006), in which artistic expression and civic engagement are supported by informal mentorship that can scaffold collaborative creativity.

Learners as Historical Actors in the Production of Possible Futures

Sociocultural theory offers a way to make sense of the future-oriented aspects of gameplay and game design. Gutiérrez, Higgs, and colleagues (2019) analyzed how young people are able to use their ingenuity to alter existing technologies, including video games, becoming historical actors in the production of possible futures. They theorized this process as follows: first, there is a double-bind or contradiction between the person's activity and the normative order (e.g., a young person looks for glitches in the code of a game), people then breach that order through tinkering, then they cycle through wider social experimentation to support this tinkering, e.g., discussions or finding YouTube resources; finally, the object of their activity expands and consolidates into a larger learning ecology involving literacy activities across

multiple media (Gutiérrez, Becker et al. 2019).

Other game studies and education researchers have also noted an orientation to the future in the acts of designing and playing games. Gee (2013, 7) argues that humans think best when they can imagine and simulate meaningful experiences that prepare them for action in the world, so his criteria for good video games are "action-and-goal-directed preparations for, and simulations of, embodied experience." He describes a "circuit of reflective action" (Gee 2013, 52), where humans explore the constraints and affordances of a world to predict future actions, then they take action to check if their prediction came true, and they adjust their understanding of the world's constraints and affordances based on feedback that informs future action. Through this process, people tend to tell "identity stories" (Gee 2013, 54) about how the world responds to them and when they play characters in video games; this allows them to explore multiple possible selves that are projective identities, composites of their own experiences and the characters. Gee says this process involves thinking like a game designer. Squire (2011) builds on this theory, but he more clearly differentiates games from simulations; he says games do simulate and model worlds and identities, but that is not the only thing they can do, they also allow for speculation beyond realism, including imagining future worlds that do not yet exist.

For these reasons, gameplay itself involves designing possible future worlds and lives; players are constantly asking the question *what happens next if…* (Atkins 2006). This epistemology of ludic futurity suggests that critical gaming might support the goals of critical speculative education projects focused on supporting young people in imagining, building, and fighting for liberated futures (e.g., Truman 2018, Love 2019, Mirra and Garcia 2020, Toliver 2021, Tynes et al. forthc.). When combined with critical

consciousness-raising, the player's question *what happens next if…* could conceptualize the potentials of real-life embodied movements for liberation. Games could prompt players to ask questions like *what happens next if we walk out of school to protest police brutality* or *what happens 200 years in the future if our generation makes a revolution to stop fossil fuel production*. To support such potentials, sociocultural game literacies research needs to engage with critical theories.

Abolitionist Critical Theories

Critical theories analyze social conflicts over how people use technology to produce things and relationships; the goal of such analysis is to challenge oppressive systems and develop strategies for liberation (Au 2018). Sociocultural theory has critical – e.g., Marxist – roots in Vygotsky's participation in the 1917 Soviet revolution, but its potential as a critical theory has been ignored or underdeveloped in mainstream education research (Au 2018). Critical sociocultural theorists study social contradictions at the level of learning environments and ecologies, while recognizing that these, in turn, are shaped by macro-level systemic contradictions. To support this, Au (2018) builds on non-Western Marxisms, merging these with insights from indigenous theorists of decolonization and Black feminists to develop an intersectional Marxist theory of how to confront capitalism's reproduction of race, class, and gender oppression (Au 2018) in schools and other learning environments. Applied to the study of educational technologies such as video games, Marxism illuminates how technology embodies the general intellect of society, congealing the exploited labor of past workers into "the materialized power of knowledge" – what Marx calls fixed capital or dead labor: this fixed capital is then used to dominate workers and students, who Marx calls variable capital or living labor (Hall 2015, 110).

Abolitionist theories attend to the ways that this social reproduction apparatus is

breaking down as capitalism goes into crisis. They analyze the tension between late capitalism and the human capacities it renders extra; this is manifested politically as a conflict between carceral infrastructures and movements that aim to abolish them. As capitalism refines its technological control over labor, it renders larger and larger numbers of people disposable, treating them like a surplus population (Saltman 2016). As Gilmore (2007) theorizes, capitalism has left communities with extra capacities that it cannot absorb through work and school, and in the US, the prison system has grown to control these capacities. The carceral capitalist system targets Black people in particular, through police brutality, mass incarceration, and classroom practices that mirror their logic of control and discipline (Alexander 2010, xi, Love 2019). Clover (2019) theorizes 21st century riots against police violence as conscious expressions of repressed human capacities, breaking out of these carceral control schemes set up to contain them. These theoretical insights help make sense of the 2020 George Floyd Rebellion.

In the wake of the rebellion, abolitionism has re-emerged as a core part of the Black liberation movement, calling for the destruction and dismantling of carceral infrastructures and a proliferation of forms of communal life that they currently suppress (Kaba 2020, Salam and Castillon 2021). However, this movement faces formidable challenges. Benjamin (2019) has documented how capitalism is co-opting calls for racial equity that have emerged in the wake of earlier waves of rebellion (e.g., Ferguson 2014). It is doing so by morphing into new forms of digital surveillance, decentralized incarceration, and racist algorithmic control that she calls the New Jim Code (Benjamin 2019). Critical digital literacy education today needs to focus on abolishing these oppressive carceral systems and technological platforms inside and outside the classroom, preparing students for the fact that digital media has become a battleground (Garcia and de Roock 2021). Relatedly, critical educators such as

Bettina Love are designing abolitionist pedagogies that involve freedom dreaming (Kelley 2002), imagining future worlds free from anti-Black institutions such as police, prisons, and prison-like schooling (Love 2019). Building on the already-existing forms of sophisticated play in Black cultures, Love (2019) asserts that freedom dreaming can be realized through art and design-based learning experiences where Black students can express joy; she argues such learning is not just an extra-curricular activity, it is a key part of imagining and building liberated learning spaces and future worlds. Critical game design education and playful design thinking could be considered part of this abolitionist worldbuilding.

To contribute to these efforts, educators can develop learning environments that support critical game literacies. Such an approach can build on the work of scholars who have conceptualized game literacies as ways young people can assert that they matter beyond market logic, forming new social relationships that can help them live meaningful lives (Croco 2011, Gee 2013). In particular, they could be ways that young Black people can assert that their lives matter in the face of a carceral capitalist system that tries to treat them as extra and disposable. In doing so, young people could use games as a medium to imagine, build, and defend worlds where Black people thrive, enacting a process of Afrofuturist Development (Tynes et al. forthc.).

Afrofuturist Development: A Theory and Design Lens

Based on the critical theories just reviewed, focusing studies on Black liberation is necessary and timely; not only does carceral capitalist schooling target Black people in particular ways, but some of the most potent emancipatory movements of our times have been Black liberation struggles against carceral infrastructures (Salam and Castillon 2019). To make sense of the current sociocultural context, one needs a comprehensive theory of how young Black people learn within technology-enhanced

environments, with an emphasis on possible futures. Afrofuturist Development offers this, as a "theory, design lens, and praxis for Black child, adolescent and emerging adult thrival" (Tynes et al. forthc., 2). It combines frameworks from Black studies and developmental psychology with interdisciplinary insights from Afrofuturism, a pan-African cultural movement focused on race and technology that involves challenging anti-Black plans for the future and imagining pro-Black ones (Anderson and Jones 2016). The theory outlines ten core principles which focus on "Black learning and development in homes, schools, communities, online, and at work across developmental stages" (Tynes et al. forthc., 2).

Afrofuturist Development's emphasis on Black futures is compatible with the theories of futurity in critical game literacies, especially historical actor theory (Gutiérrez, Becker et al. 2019). When combined together, these theories reveal how young Black people can use their critical game literacies to design future worlds where Black people thrive, and they equip researchers and educators to design learning spaces that can support them in doing that. Several of the Afrofuturist Development principles are particularly relevant to these tasks.

Thriving Black Futures and Afrofuturistic Selves

Principle Ten states that "Black children and young people, often powered by their Afrofuturistic selves, imagine, build, and reinvent liberated, pro-Black futures and technologies" (Tynes et al. forthc.). Afrofuturistic selves are

> "Multidimensional self-concepts that center a) the individual within the context of Black history; b) Black community, organization, and movement involvement; c) redefining notions of success; and d) the iterative design of an (Afro)future self that may be immediate or long-term, five seconds away or ten years." (Schuschke and Tynes forthc., cited in Tynes et al forthc., 30)

In the context of critical game literacy learning, when young Black people generate Afrofuturistic selves they are able to imagine "critically, beyond existing constraints of the game industry, intertwining their vocational paths with larger community struggles for liberation" (Tynes et al. forthc., 34). Such self-concepts resonate with the enlarged sense of purpose that Gee (2013) and Crocco (2011) describe as a goal for critical game literacies learning, beyond the current limits of vocational training and STEM-based game literacy programs. Afrofuturistic selves might support young people in resisting capitalist disposability and expressing capacities that have been rendered extra by grounding these capacities within Black histories and possible futures.

Similarly, Principle Two of the framework argues that Afrofuturist Development requires that "contexts in which children and young people learn, play, and work center their full humanity, as well as foster Black aliveness and innovations of speculative futures void of oppressions" (Tynes et al. forthc., 9). This principle further develops Love's (2019) emphasis on Black joy, and prompts researchers and designers to attune ourselves to the ways in which critical play and design thinking are already present within Black cultures:

> "When developing interventions, programs and curricula, scholars/educators might consider intersectionality along with their rich cultures, including the expansive spiritual lives of Black young people and the innovative use of technology for the purposes of liberation and world-building in the face of systemic oppression." (Tynes et al. forthc., 14)

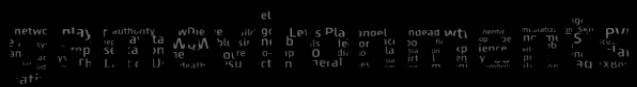
This principle's emphasis on intersectionality means supporting all Black young people, including LGBTQIA+ people, making it compatible with attempts to develop anti-racist queer futurities within critical game literacies research (Storm and Jones 2021). The emphasis on spirituality supports educational games such as *Kai*

UnEarthed (forthc.) that intentionally incorporate aspects of ritual, meditation, and mindfulness with themes of ancestral spiritual connection. The emphasis on worldbuilding supports critical game literacy learning spaces where young people can create gameworlds to prototype possible futures free from systemic oppression.

Critical Consciousness, Imagination, and Action

Afrofuturist Development does not deploy spiritual concepts to bypass necessary and immediate sociopolitical action against oppressive institutions; it deploys them to supplement, inspire, and ground such action, while recognizing that Blackness cannot be reduced to anti-racist resistance alone (Love 2019, Brock 2020). Principle five of the theory states that "Critical consciousness and action are competencies taught in developmentally appropriate ways to support Black people as they navigate and resist oppressive media, technology, institutions and social practices" (Tynes et al. forthc., 9). From an Afrofuturist perspective, critical consciousness is not simply a negation of existing oppression, it also involves imagining other ways of living and thriving that could replace it; critical literacies researchers have begun to identify a need for learning spaces that foster this kind of futurity (Storm and Jones 2021). For this reason, Afrofuturist Development also involves critical speculative imagination; it is a capacity can be taught, developed, and studied by educators and researchers (Tynes et al. forthc.).

When synthesized, these theories motivate research and design efforts to enhance tendencies toward critical speculative imagination in critical game literacies learning environments, challenging capitalist disposability and carceral infrastructures. Such efforts can support young people in prototyping, rehearsing, and inhabiting worlds where Black people – and all people – are free.



Conceptual Framework

This theoretical synthesis highlights ways of conceptualizing play, games, literacies, and critical pedagogies that involve attention to the dynamic sociocultural contexts of late capitalism and attempts to imagine worlds free from their systemic oppressions. Here I define and conceptualize key terms from game studies and education literature that could inform research and design efforts around critical game literacies.

Play is a transformative, process-oriented, unpredictable, consensual, self-regulated, rhythmic, and episodic engagement with the world involving intensified meaning and revelation of new capabilities (Henricks 2015). Play is also slippage in a system, movement in the spaces between the components of a system otherwise built for utilitarian purposes (Salen and Zimmerman 2004, cited in Fullerton 2019). Educational game designer Tracy Fullerton argues that games are not efficient educational content delivery systems, they are intentionally inefficient because play involves taking advantage of those slippages (Fullerton 2014); this makes games good ways to develop critical literacies about systems and how to challenge them. Forms of play cross-cross the capitalist mode of production like desire lines crisscross landscape architecture or lines of flight crisscross the psyche (Deleuze and Guattari 2004, Robinson 2020). They are shaped by capitalism, but they stray outside of its machinery. In this sense, "play is a rebellion against the forms and forces of the world" (Henricks 2015, 1451).

Games are most commonly defined as systems of artificial conflict defined by rules (Salen and Zimmerman 2004, 3). This definition supports analyses of procedural rhetoric in games, the meaning that emerges from the interactions the rules facilitate

(Garcia 2017, Gee and Aguilera 2021). Only procedural systems like games "represent process with process" (Bogost 2007, 14) rather than with images or texts. However, games are not *just* systems, they are also worlds full of audiovisual signification and player imagination that interact with the worlds' players inhabit (Squire 2011). Defining games as systems threatens to instrumentalize play into rationalist procedures that can be measured quantitatively, stripping them of these sociocultural contexts (Sicart 2011). Games are ergotic phenomena (Apperley and Beavis 2013) that are not complete until players add their own activity to them, so at some level, players could be considered co-designers of games. Games cannot be fully understood without analyzing players' experiences playing them (Sicart 2011, 209, Upton 2017, Fullerton 2019).

Modding means altering a game, e.g., by altering the art to change the characters' representation.

Metagames are everything that happens around, before, during, (or any other preposition) in relation to games (Garcia, Dail and Witte 2020), including activities like modding, streaming, finding glitches, etc. (Boluk and LeMieux 2017). The video game industry reifies games as unalterable commodities (Boluk and LeMieux 2017), conflating the act of play with consumption, and generating an ideological conflict between play and production; metagaming challenges this reification and separation. Play requires consensual agreement on the rules of the game (Henricks 2015), where rules are generative, freely chosen constraints that prompt creative and emergent behaviors rather than legalistic governance. Playing well is a learning process of consensually altering the rules of play to suit the evolving needs of a play community; in this perspective, the roles of player, game designer, and facilitator/community organizer overlap (De Koven 2013). The industry undermines this consensus process

by conflating rules with proprietary code regulated by intellectual property laws (Boluk and LeMieux 2017). Metagamers challenge this by hacking, modding, recontextualizing, and breaking games, using them as equipment to make metagames (Boluk and Lemieux 2017).

Literacy is a "socially-situated and semiotic (sign-based) activity, focused on the communication of meaning" (Gee and Aguilera 2021, 173). Consistent with sociocultural learning theories, literacies are changeable social practices, so I use the term literacies in the plural to signify this multiplicity (Street 2003, 77-91).

Critical Literacies are literacy practices that involve the "critique and transformation of dominant ideologies, cultures and economies, institutions, and political systems" (Luke 2014, 22).

Critical Consciousness involves "capacities to critically analyze the contradictions that drive society (e.g., class struggles and struggles between white supremacist systems and anti-racist/decolonial movements), and the ability to use this knowledge to take action to liberate oneself and one's community from oppression" (Tynes et al. forthc., 21).

Critical Pedagogy is an approach to education that is "(r)ooted in the experiences of marginalized peoples; that is centered in a critique of structural, economic, and racial oppression; that is focused on dialogue instead of a one-way transmission of knowledge; and that is structured to empower individuals and collectives as agents of social change" (Duncan-Andrade and Morrell 2007, 183). Freire (1972) developed critical pedagogies in his critical literacy efforts among working class people in Latin America, teaching them to read the word and the world. He used methods such as

codification, which involves discussing a theme, engaging with a piece of media that codifies that theme, and then encouraging students to critically analyze the theme and the media; the goal is for students to see themselves as shapers of a discourse and not passive objects of it (Freire 1972). Teachers have used games to codify themes in a similar way (e.g., Crocco 2011).

Game Literacies are the literacies required to analyze, design, and play games. Modding or designing a game (playing like a designer) is analogous to learning to read metacognitively like a writer (Gee 2013). While games involve procedural rhetoric that goes beyond textual semiotics (Bogost 2007, Garcia 2017, Gee and Aguilera 2021), gaming is also a "narrative, hewn out of the 'verbs' made available within a game design…in effect, games are narrative spaces that the player inscribes with his or her own intent" (Steinkuehler 2010, 61). For this reason, games can be situated in learning spaces in ways that are analogous to how texts can be situated (Fullerton, Farber and Erekson 2022). This is how Tracy Fullerton, Matt Farber, and I positioned the new educational version of the game *Walden* (2021) in a curriculum we designed, available at www.waldengame.com/educators.

*Multimodal Literacie*s scholars study how "language, image, gesture, sound, and a variety of other modes" communicate meaning (Gee and Aguilera 2021, 173). Games, like multimodal media more broadly, are both digital and analog, and many have layers of digital and non-digital practices that interrelate in non-linear ways (Garcia, Dail and Witte 2020). Digital gaming literacies are the intersection of multimodal digital literacies broadly (Mirra and Garcia 2020), which includes video game literacies, and multimodal game literacies broadly, which occur in both digital and analog gaming practices (e.g., Garcia 2017).

Ideological Worlds are a concept Kurt Squire (2011, 29) has used to describe games; they are simplified and curated models of real-world dynamics. Like ideologies, these worlds are embedded with power-laden partial truths that help us analyze the real world in consequential but flawed ways. For these reasons, when studying game literacies, researchers should ask questions like *Whose ideologies get to be modeled as game worlds* and *What real world actions are they simulating*?

Critical Game Literacies (CGL) are the literacies required to play, analyze, modify, and design games in ways that challenge systemic oppression. This definition is informed by existing pedagogical frameworks for critical game literacy teaching (Crocco 2011, Apperley and Beavis 2013, de Albuquerque and Ainsworth 2013). However, we need to move beyond the separation some of these frameworks articulate between playing and designing games; these activities have already begun to merge into metagaming cultures (Boluk and LeMieux 2017) and connected gaming research (Kafai and Burke 2016). Moreover, young people need access to game design learning opportunities where they can create their own ideological worlds (Squire 2011) to model liberation from systemic oppression. Since game design is like writing, students deserve a chance to think like authors. Gee (2013) argues that writing has always been the high end of print literacy and that game design is the high end of game literacy. If students from non-dominant backgrounds are not taught how to do it, then schools risk creating a situation similar to feudalism where high-end literacies are dominated by digital priests who control the information received by a less literate digital laity.

Racialized Pedagogical Zones (RPZ) are simulated environments in which players practice and learn racism (Everett and Watkins 2008). For example, Acosta and Denham (2018) criticize the use of history games about slavery in the classroom; they are right to caution that uncritically adopting such games could be harmful to Black

students and could simulate oppression.

Black liberation is the movement among Black people and their collaborators towards freedom from systemic anti-Blackness, white supremacy, and institutionalized racism. Historically, the Black liberation movement has included efforts towards reparations, self-determination, abolitionism, and decolonization, and some wings of the movement are trying to build liberated futures that are non-capitalistic, communal, or even communistic. Black liberation often involves international solidarity with struggles across Africa and the African diaspora (e.g., in Europe and the Caribbean), and sometimes involves solidarity with indigenous and working-class peoples globally. The movement historically has included maroon communities of people who liberated themselves from slavery, the Black Panther Party and anti-colonial movements of the 1960s, and the movement for Black lives and rebellions against carceral infrastructure today (Fanon 1963, Robinson 1983, James 1989, Hilliard 1995, Collins 2002, Kelley 2002, James, Boggs and Castoriadis 2006, Shoatz 2013, Cleaver and Katsiaficas 2014, Gumbs 2016, Taylor 2017, Lorde 2020, Shakur 2020).

Review of Empirical Research Literature

While the precise concept of critical game literacy learning has been operationalized infrequently in empirical research literature, it sits at the intersection of broader research on critical theories of social change, game studies, literacy studies, and the learning sciences. Figure Two demonstrates how this literature overlaps to cohere the concept. While a full review of these bodies of literature is beyond the scope of this article, I will use the theoretical synthesis I have provided to highlight several aspects of the literature that warrant further attention in research and design efforts.

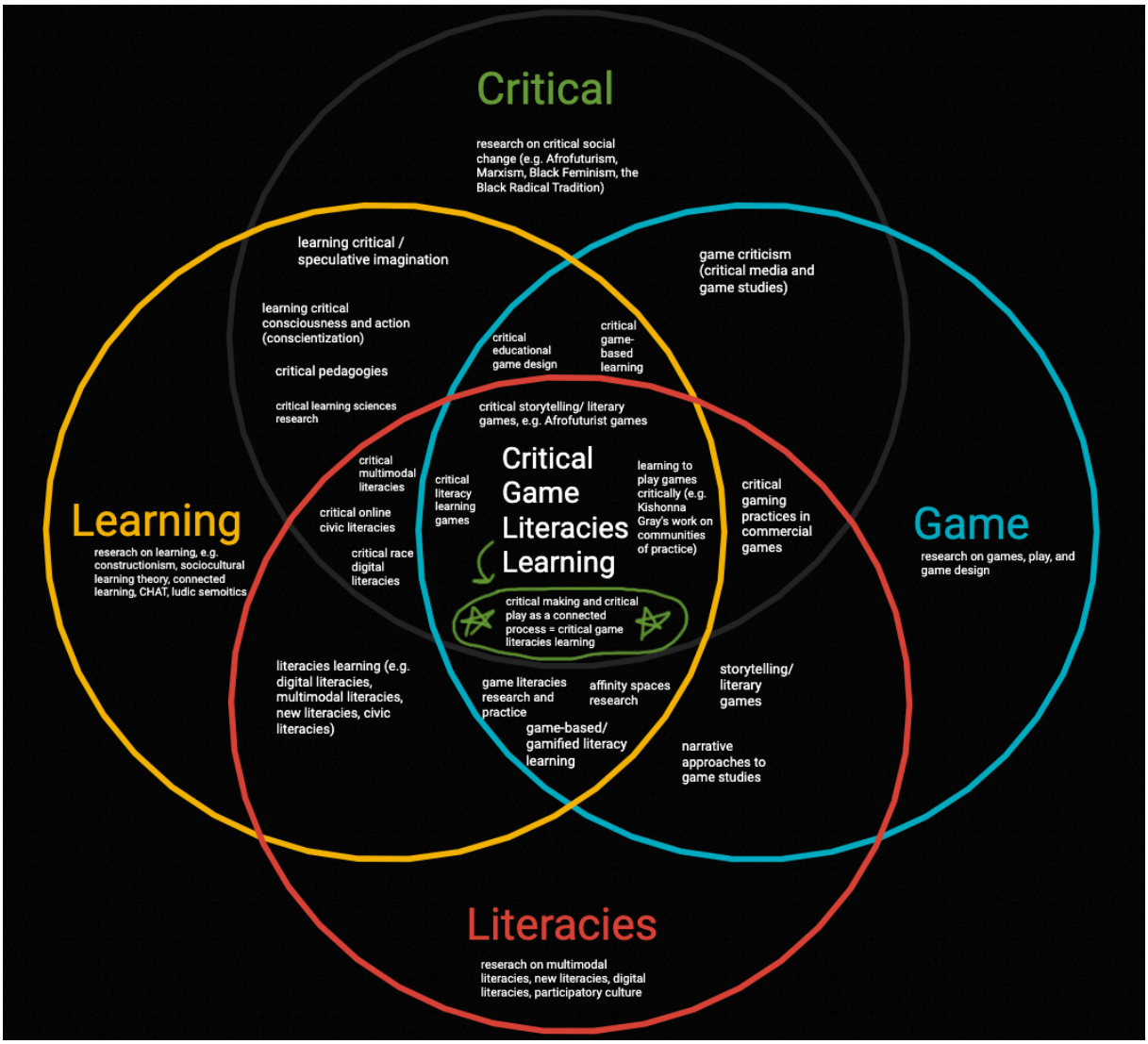


Figure 2: Map of Critical Game Literacies Learning Research Literatures

Key Threads in Game Literacies Research Broadly

In her research on the literacy practices of teenage boys, Constance Steinkuehler (2010) found two related kinds of digital game literacies. On the one hand, playing video games involves reading the game's meanings and writing one's own meanings into the game. On the other hand, she and others have found complex literacies in activities that are now called metagaming (Boluk and LeMieux 2017), such as scientific reasoning in the online chat dynamics of massively multiplayer online games (Steinkuehler and Duncan 2008). Game literacy research has tended to focus

on these two forms of literacy.

For example, Gee analyzed the learning processes in existing games, arguing that game design is an applied science of learning because successful game designers need to teach people to play games that are often long and complex, while maintaining engagement throughout (Gee 2013). However, Everett and Watkins' (2008, 150) discourse analyses of urban street games shows that these pedagogical features of commercial games are not ideologically neutral; they are "racialized pedagogical zones" (RPZs) that tie the pleasurable aspects of game-based learning to the reproduction of stereotypes. Some adolescents can critique these stereotypes (DeVane and Squire 2008), and critical media literacy interventions can support such critiques (Darvasi 2020).

Constructionist and Connected Gaming Research on Game Design

Over the past few decades, instructionist approaches to content delivery through games have overshadowed constructionist approaches to learning through designing games (Kafai and Burke 2016). Nevertheless, there is a smaller but growing constructionist gaming literature, mirroring the increasing popularity of game design among young people inside of sandbox games like *Minecraft* (Kafai and Burke 2015, 2016), the influence of the Maker/ DIY movement (Martin 2015, Vossoughi, Hooper and Escudé 2016, Wyld 2020, Vossoughi et al. 2021), and efforts by the tech industry to encourage coding skill development through gaming (Kafai and Burke 2016). One of the most comprehensive reviews of constructionist game design learning (Kafai and Burke 2015) found that it has supported a wide range of learning and literacy processes and outcomes, from computer science to language arts.

Several of these lines of inquiry could be strengthened by more critical approaches.

For example, learning to design games is associated with increased interest in computing and awareness of possible career pathways related to it, including among Black students (Kafai and Burke 2015); further research could be done to see whether critical game design supports Black students in developing Afrofuturistic selves involving notions of computational participation (Kafai and Burke 2015, 2016) that go beyond career aspirations to also include community solidarity and visions of liberated futures (Schuschke and Tynes forthc., Tynes et al. forthc.). Also, several studies have shown that designing games leads to increased use of metacognitive learning strategies, decision-making, troubleshooting, systems analysis, and systems design (Kafai and Burke 2015). Further research could build on this by asking students to recognize and critically analyze the already game-like elements within existing systems, such as schooling, dating, social media, etc., inviting them to modify, queer, subvert, or redesign such systems in order to challenge their oppressive features (this idea emerged from a conversation I had with game studies scholars Bo Ruberg and Tracy Fullerton).

Few studies on young people designing games have focused on race, ethnicity, or culture. An important exception to this is the Skins program by the Aboriginal Territories in Cyberspace research group. Kahnawake Mohawk youth used Second Life and the 3D game engine Unreal to create video games based on stories from their communities. They did this in conversation with elders, while respecting community protocols around storytelling (Lameman, Lewis and Fragnito 2010, 105-112, LaPensée and Lewis 2011, 54-63). Similar projects could be done among Black students and other groups.

Playing and Analyzing Games Critically

Three studies have noted a relationship between playing critically and hacking

capitalist technologies to open up possible futures. In the mid twentieth century, Grace Lee Boggs, Black Marxists Jimmy Boggs and CLR James, and their comrades did consciousness raising study groups with Detroit auto workers, helping them to theorize their own self-activity as historical actors. They documented how they collectively played with the machinery of the factory assembly lines to resist the ways that the technology imposed itself on their bodies; they theorized that this was actually a possible future, a new socialistic society erupting out of the contradictions of capitalism (Romano and Stone 1972, James, Boggs and Castoriadis 2006). As Woodcock (2019) documents, white collar workers did something similar a few decades later, hacking and repurposing computers originally built to maintain US military dominance, and through that process they invented video games.

Gutiérrez, Becker and colleagues (2019) noticed a similar process occurring among working class Latine children, their families, and their peers at an afterschool maker space, in a large-scale Connected Learning study. They observed how young people modified and repurposed technologies, e.g., how they used their new video game coding knowledge to discover and manipulate glitches in commercial games they play, using YouTube tutorials to support this learning. From this research, the authors generated the historical actor theory that grounds the theoretical framework presented in this article.

Building on this research, scholars have begun to examine critical queer futurities in the context of collaborative play activities (Jones et al. 2021, Storm and Jones 2021). In a youth participatory action research project in a queer after-school space, eleventh and twelfth graders conducted a discourse analysis of their *Dungeons and Dragons* gameplay practices. They identified ways they could revamp their gameplay to challenge racism and heterosexism in society and in the worldbuilding and

mechanics of the game; they acknowledged existing oppression while radically envisioning utopian futures, e.g., worlds without a gender binary (Storm and Jones 2021). However, when it came to race, the participants chose to critique the game for its racist elements without necessarily envisioning utopian futures free from racism; they chose to simulate racial oppression through the game's mechanics in order to raise critical consciousness (Storm and Jones 2021). As the authors note, future research is needed to examine why young people of various identities choose to center critique, futurity, or both in relation to different social categories (Storm and Jones 2021). Such research can build on the intersectional elements of the Afrofuturist Development framework (Tynes et. al. forthc.).

Racism, Intersectional Oppression, and Resistance in Digital Gaming

An ethnographic study of a school informed by game-based and connected learning frameworks found that the school reproduced hierarchies it aimed to undo, including racialized class divisions (Sims 2017). These findings demonstrate a need to focus critical game literacy research on how to challenge racialized capitalism. However, anti-racist research around digital gaming is still fairly new. While the field of game studies has produced critical studies of patriarchy and feminist politics in gaming, as Gray (2020) summarizes, that scholarship has mostly studied experiences of white women and the white men who harass them, leaving a gap that intersectional Black feminist scholars are currently working to fill (Richard and Gray 2018, 112-148, Gray 2020). Based on extensive ethnographic research, Gray (2020, 31) concludes that the "default operating system" of contemporary gaming culture still reinforces white cultural dominance. Few empirical education research studies on critical game literacy have explicitly named or challenged this dominance, but Gray (2000) documents learning and literacy practices outside of formal educational spaces that can inform such research moving forward. She found that Black gamers face intersecting

oppressions (e.g., queer Black women face anti-Black, homophobic, and sexist harassment in multiplayer games), and they organize themselves to resist this oppression through collective critical gameplay and metagaming media production (Gray 2020). Participants in Gray's studies, who she calls narrators, demonstrate complex skills that could be considered critical game literacies.

Gaming vs. Police Violence

In particular, Black gamers have used games to challenge police violence (Gray 2020), at a moment in history where resistance to such violence has included large-scale protests and uprisings in response to viral social media videos of police murdering Black people. Black gamers have created online spaces where they can avoid seeing these videos (Gray 2020) while they critique the systemic forces that generate them. Gray (2020, 2) situates this within a series of transmedia "counterpublics" that Black creators have produced since the 2014 Ferguson protests, including politicized, pro-Black metagaming and streaming spaces. For example, she describes how some Black gamers defended the protest slogan Black Lives Matter- and riots against police – when other gamers criticized them. Similarly, young Black people developed speculative, abolitionist, and Afrofuturist worldmaking practices inside sandbox games during the protests against the police murder of George Floyd (Cortez, McKoy and Lizárraga 2022). These findings are consistent with the results of a survey of over 9,0000 participants in an online battle arena game administered in 2010; players reported higher than average rates of protest activity, challenging common assumptions about apathy and political disengagement among gamers (Stokes and Williams 2015). Given a lack of existing game titles that intentionally address issues of policing and abolitionism from a Black liberation perspective, exploratory design research is needed, where teams create prototypes of such games and research how Black players engage with them. Such research should also support Black gamers in

designing such games themselves, studying the learning processes involved so they can proliferate among broader critical game literacy learning spaces.

Critical Pedagogies of Play

These critical play practices can be supported and developed further though critical pedagogies of play in schools and other learning environments. For example, Augusto Boal (2000) engaged in socialist critical literacy education in Latin America in the mid-twentieth century using critical pedagogy techniques. He developed and documented a series of theater games that could be considered an early critical game literacy curriculum. His playful Theater of the Oppressed practice broke the immersion of capitalism's ideological spectacles through a kind of metagaming that merged play and game design. By inviting spectators to become actors themselves, he prompted them to experience what the Marxist playwright Bertolt Brecht called an alienation effect: seeing media as something that can be analyzed and modded (Boal 1985).

For Boal, these activities also involved enacting visions of a new society and actively rehearsing for revolution (Boal 2000). Revolution is fundamentally dangerous, and the risks of failure are extremely high; rehearsing for it beforehand in the lower-stakes environment of a game is consistent with broader literacy research on games as safer spaces to learn through failure (e.g., Gee 2013). In some ways, *Theater of the Oppressed* techniques might be morphing into a praxis of Videogames of the Oppressed (Frasca 2001); for example, a design-research team modded *Grand Theft Auto* (2013), using it to stage a riot against landlords who were trying to displace working class tenants (Rowlands et al. 2018). In terms of pedagogical praxis, *Theater of the Oppressed* informed the learning spaces in the research that generated historical actor theory (Gutiérrez, Higgs et al. 2019), and a game design professor

used Boalian techniques to teach his students to become critically aware of the ethics and politics involved in their craft (Prax 2020).

Squire (2011) used similar methods when he taught Black students to challenge the colonial ideologies embedded in the game *Civilization III* (2001) through metacognition and modding practices, studying how they learned through the process. Recognizing the game is an ideological world, he attempted to prompt students to name and challenge its ideologies and to play it against the grain to question dominant historical narratives. He found that this approach increased students' engagement and historical inquiry skills, with some deepening in critical thinking about colonialism. However, such an approach only went so far given the core model of the game was itself still colonial, biased towards Eurocentric notions of linear history, civilization, and barbarism (Ford 2016, Vrtačič 2014). There is a need for educational games that are ideological worlds modeling liberation from colonialism and anti-Blackness, rooted in African, Afrodiasporic, and indigenous ontologies, epistemologies, play aesthetics, and liberation movement strategies. Such games have not been designed yet. The Afrofuturist Development Framework (Tynes et al. forthc.) could inform their development and could shape studies of how people engage with them in learning environments. Roberto (2020) is conducting design research that moves in a similar direction; she designed an anti-colonial digital narrative game set in Guam where players make strategic choices about whether to resist US military occupation; these involve double-binds (Gutiérrez, Becker et al. 2019) that prompt participants to mod the game through hacking its source code, achieving the kind of critical distance from the game world's model that Squire (2001) and Boal (2011) were attempting to provoke (Roberto 2020). Such activities might prepare students to design their own ideological game-worlds to model their own liberation strategies and freedom dreams (Kelley 2002).

Designing Critically

Learning through critical game design is an under-researched area; however, there have been four relatively recent studies on it (Cooke 2016, Proctor and Blikstein 2019, Robinson 2020, Gee and Aguilera 2021), suggesting it is an emerging topic of inquiry. These are empirical design studies in which researchers organized game-creation spaces, participants created games with critical themes, and researchers studied the process. Gee and Aguilera (2021) describe how students iteratively aligned their social justice goals with their game mechanics (i.e., procedural rhetoric). Proctor and Blikstein (2019) found that participants generated critical discourse models which cannot be conveyed by representational texts. Cooke (2016) analyzed how a participant made a game challenging racism and other forms of oppression in health care; by analyzing how she supported this student through multiple design iterations, she generated design principles for recursively redesigning game creation learning spaces to nurture both technical skills and social justice goals. Robinson (2020) analyzed how his decision to teach at the edge of chaos kept open space for emergent student self-organization.

While this emerging thread of critical game literacies research is promising, it also has its limitations. The lack of racial-ethnic demographics in Gee and Aguilera's (2021) paper and the limited reporting in Proctor and Blikstein's (2019) study makes it hard to assess the authors' critical claims about identity and sociocultural learning. Proctor and Blikstein (2019) focused on race, but in problematic ways. They narrate how a Black student reacted to a racist comment by one of the study co-facilitators by writing an interactive story about a Black student being bullied; the player character is white, and no matter what choice they make they are unable to act in solidarity with the student, who commits suicide. The authors claim this kind of game could build

empathy among white people toward Black victims of racist harassment, but they offer no evidence to support this. Education researchers have critically examined the limits of white empathy (Issi 2015), and Gray (2020) notes that games since 2016 have made a spectacle of Black suffering, similar to how hashtags share Black death without any contextualization in the larger lives of the Black people who have been killed. A critical game literacy lens requires attention to this sociocultural context, which seems to require strategies for change that do not rely on trying to make white people empathize with Black trauma. The student's choice to simulate oppression rather than liberation may have stemmed from the design prompts the researchers chose, which focused on critiquing oppressive discourses without necessarily imagining alternatives (Proctor and Blikstein 2019). These limitations show the need for critical game literacy research focused on critical speculative imagination and Afrofuturist Development (Tynes et al. forthc.), using games and game design to simulate liberation, not just oppression.

Ongoing Research: A Critical Game Jam

Colleagues and I are building on this existing research, and beginning to fill its gaps through a critical game literacy design-based research project with participatory elements. We designed and are studying a Critical Game Jam where young adults (mostly Black and Latine) have played, analyzed, and begun to design games about liberated and unpoliced futures. We positioned initial abolitionist game design efforts, including a playtest of *Kai UnEarthed*, as proleptic demonstrations of what is possible (Vossoughi et al. 2021), encouraging students to develop their own ideological game-worlds prototyping abolition and liberated Afrofutures. The theoretical and conceptual framework synthesized in this article informed our design of the game jam, and our design process around *Kai UnEarthed* and the jam will be

described in more detail in an upcoming book chapter. I am also currently analyzing how participants experienced critical game literacy learning and Afrofuturist Development within this learning environment, asking how the learning activities can be improved in future iterations. I intend to publish a series of design principles based on those findings, which could inform new critical game literacy learning environments in the future.

Conclusion: Critical Game Literacies Could Nurture Critical Speculative Imagination

Synthesized together, the theoretical and empirical literature reviewed in this article suggests that critical game literacies could help support the development of critical speculative imagination. Critical sociocultural theories of play and games suggest they are future-oriented (Atkins 2006, Gee 2013) and can be mediums for young people to become historical actors producing possible futures (Gutiérrez, Becker et al. 2019). The Afrofuturist Development Framework outlines ways to support Black students in doing this. However, empirical game literacy research on such critical, future-oriented approaches to gaming and speculative imagination has only just begun, with studies on play as a leading activity (Gutiérrez, Higgs et al. 2019) and queer futurities in gaming (Storm and Jones 2021) leading the way.

The broader game literacy and connected gaming literatures suggest ways this could be developed further: supporting students in creating their own ideological game-worlds that simulate liberation, and inviting them to share these with each other and with their communities through design challenges such as game jams, building on the constructionist literature that shows such creativity and sharing supports engagement and learning (Kafai and Burke 2015). Moreover, initial efforts towards

abolitionist game design could serve as proleptic demonstrations in game design learning contexts (Vossoughi et al. 2021), demonstrating what might be possible. The research on learning through game design (Kafai and Burke 2015) suggests that designing critical games might support non-dominant students in imagining possible futures for themselves and their communities that involve critically reappropriating technologies for their own purposes (Gutiérrez, Becker et al. 2019), whether this means organizing for change inside the game industry or building futures outside of it. In either case, the literature suggests designing games can help people to critically model systems they want to change and to prototype their visions for collective liberation. While colleagues and I are studying this conjecture in the context of abolitionism and Black liberation, I hope that readers will build on it within related movements around the world, prototyping futures where we all can thrive.

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