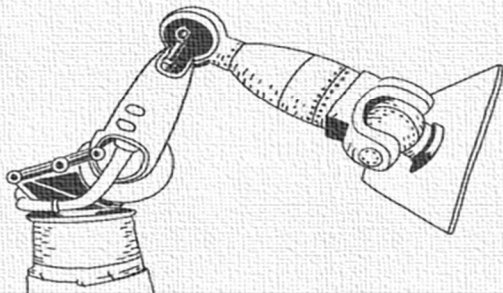


# SHAPING THE NATION'S EDUCATIONAL FUTURE

## ① WHITE MINORITY IS IMMINENT.

MILLENNIALS ARE THE MOST RACIALLY DIVERSE ADULT POPULATION



## ② GLOBALISM IS IMPENETRABLE & UNRETRACTABLE.

ACCEPTANCE AND SUPPORT OF INTERNATIONAL EXCHANGE ADVANCES CROSS-AWARENESS CAN ADVANCE RESISTANCE TO INSTITUTIONAL RACISM.



## ③ AUTOMATION TECHNOLOGIES WILL RESHAPE THE WORKFORCE.

# 47%

OF AMERICAN WORKFORCE WILL BE LOST TO AUTOMATION ACCORDING TO 2013 STUDY

# Humanistic Distributed Agency

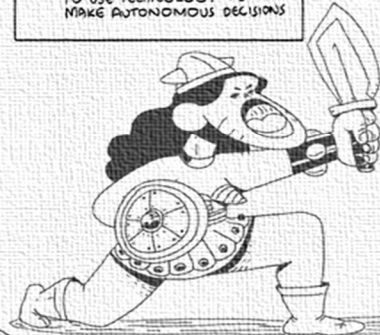
## Remaking Education at the Human-Technology Frontier

BY: IVORY A. TOLDSON, PH.D.

THE QEM NETWORK | HOWARD UNIVERSITY  
WASHINGTON, DC

### ② THE ROLE OF AGENCY

- EDUCATORS WORK TO MAINTAIN UNIFORM PROFESSIONAL NORMS AND STANDARDS AS ESTABLISHED BY EDUCATIONAL ADMINISTRATORS
- THE EDUCATORS WHO HAVE FREQUENT CONTACT WITH STUDENTS HAVE THE AGENCY TO USE TECHNOLOGY TO MAKE AUTONOMOUS DECISIONS



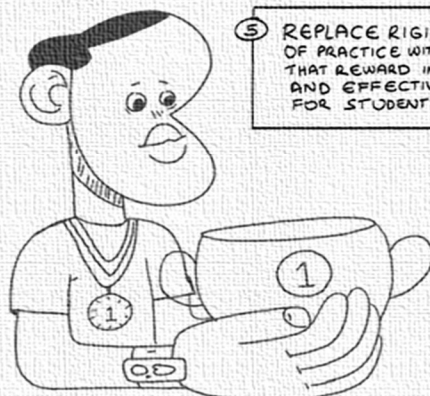
### ③ USE TECHNOLOGY STRATEGICALLY TO SHIFT COGNITIVE TASKS AWAY FROM TEACHERS AND REPRIORITIZE HUMANISTIC RESPONSIBILITIES



- ### ⑤ REPLACE RIGID STANDARDS OF PRACTICE WITH SYSTEMS THAT REWARD INNOVATION AND EFFECTIVE STRATEGIES FOR STUDENT SUCCESS

INNOVATION  
-AND-  
STRATEGY

- ### ④ IMPLEMENT DATA SYSTEMS TO ALLOW THE EDUCATION SYSTEM TO LEARN FROM DEVIATIONS FROM STANDARD PRACTICE.



- ### ⑥ USE RECORDED INNOVATIONS AND STRATEGIES TO SHAPE PROFESSIONAL PRACTICE IN ACCORDANCE WITH MORE INTENTIONAL AND COMPREHENSIVE MISSIONS, IDEAS AND PRINCIPLES.

Preface: The National Science Foundation (NSF)'s Dear Colleague Letter 20-061 called for information on future topics for NSF's Convergence Accelerator initiative, which aims to “*accelerate use-inspired convergence research* in areas of national importance, and to initiate convergence team-building capacity around exploratory, potentially high-risk proposals addressing selected topics (tracks)” (para. 5). With NSF funding, QEM will develop and host a series of (virtual) think tank sessions, whereby experts from multiple disciplines and sectors can explore human-technology mechanisms to mitigate institutional racism in education, criminal justice, and healthcare. The information gathered from these sessions will be used to create a technical report that will inform future research and NSF investment priorities related to disciplinary convergence toward mitigating institutional racism. QEM's project supports several NSF “Big Ideas.” In envisioning a future workforce whereby human-technology partnerships can advance skills augmentation and humanistic distributed agency. QEM addresses the NSF idea, *Future of Work at the Human-Technology Frontier*. By merging ideas, approaches and tools from computational, behavioral and social sciences, QEM expands NSF's *Convergence Research*. The constructed theory of change foregrounds *Harnessing the Data Revolution* by emphasizing the necessity of a data infrastructure that allows the teaching workforce to develop and increase agency and equity. Additionally, QEM's efforts to create inclusive educational and career pathways through the reduction of institutional racism correspond to the *NSF INCLUDES* model of ‘integration, inclusion, and diversity.

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# Contents

Education at the human-technology frontier .....	4
New Realities that will Transform Education .....	4
Reimaging Education in the Post Reform Era .....	6
Equity in Education: Past and Present .....	6
Why Institutional Racism in Education is Refractory to Change .....	6
Transforming Education at the Human-Technology Frontier .....	9
Theory of Change: Humanistic Distributed Agency .....	11
Discussion .....	12
Think Tank Discussion Topics .....	14
Think Tank Discussion Framework .....	15
Deliverables .....	15
Convergence .....	15
Partnership .....	16
Track Coherence .....	17
<b>American competitiveness</b> .....	17
Global leadership .....	17
Workforce Inclusion .....	18
Think Tank Members .....	19
References .....	20
About the Author and Principal Investigator .....	22



# Education at the human-technology frontier

Profound changes in racial demographics (Cilluffo & Cohn, 2019; Poston, 2020), increased social awareness (Minnesota Department of Education, n.d.; Praslova-Forland, 2002), and technological advancement (Fischer-Baum, 2017) necessitate radical changes in education. Recent census projects indicate that the U.S. will be a “minority white” population by the year 2045 (Frey, 2018). Modern education reform movements, which plateaued with the *No Child Left Behind Act of 2001* (Levine & Levine, 2012; Meir, 2004), and continued with reform-oriented policies such as *Race to the Top* (Levine & Levine, 2012), have done little to meet the needs of the current demographic, social, or technological changes; nor the demands of the future workforce. Growing sociodemographic diversity and the exponential acceleration of technology will indelibly shape the future of education in the U.S. and abroad. New realities will spark enlightenment and innovation, as well as consternation and social unrest.

## ***New Realities that will Transform Education***

First, *the White minority is imminent*. For three years in a row, White deaths have outpaced White births (Tavernise, 2018). The millennial population, now larger than the baby boomers, is the most racially diverse adult population in U.S. history (Frey, 2016). By the mid-2040s, the U.S. will be majority people of color (Frey, 2018). As society approaches this demographic reality, xenophobia increases, creating racial divisions and a state of ‘cold war’ within schools. The dismantling of institutional racism in schools and society is more than a moral prerogative. It is a social imperative if educational proponents want to ensure equitable educational experiences and life opportunities for diverse student populations. From a macrocosmic standpoint, the disassembly of institutional racism will shape the state of national security, economic standing and global competitiveness.

Secondly, *globalism is impenetrable and unretractable*. Information and communication technologies now enable a level of commercial and social exchange that defies national borders. While enhanced exchanges impact market economies, political agendas, and the general welfare of global citizens; exchanges resulting from technological advancement also affect practices within these larger systems. As change agents examine educational practices, they must consider how globalism will continue to diversify the nation’s student population and transform their learning experiences and outcomes. The economic, political, and social sustainability of the U.S. depends on young learners’ ability to explore opportunities beyond national borders and their access to such exploration depends on the extent to which we embrace globalism. Furthermore, acceptance and support of international exchange advances cross cultural awareness beyond our nation’s borders, which can advance resistance to institutional racism.

Finally, *automated technologies will reshape the workforce*. In a 2013 study, Frey and Osborne determined that approximately 47% of workers in the U.S. were employed with occupations at considerable risk of possible automation in the foreseeable future. In recent years, more U.S. jobs have been lost to automation than outsourcing (Lardieri, 2019). The inevitability of automation presents a daunting shift within the workforce and mandates a rethinking of current educational systems and practices. As automated technology redefines

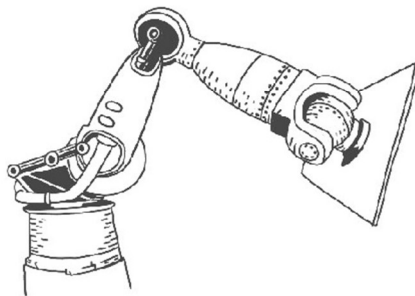
employment, educational change agents must innovate antiquated instructional methods for students as well as the overall purpose of education.

Considering these realities, a revolutionary new era of education at the human-technology frontier is necessary to advance society. This era re-envision education by uplifting a diverse coalition of students and school activists to advance far-reaching and sustainable changes in schools at the systems level. The foundation and reinforcement of institutional racism is openly confronted and addressed, allowing for “courageous conversations” (Singleton, 2014) to permeate conventional educational structures. Technology is used to democratize knowledge, allowing for a reprioritization of functions, and obsoleting the perfunctory use and testing of rote memory. The outmoded hierarchical structure of schools is transformed into a system based on humanistic distributed agency in which socially aware and justice-oriented educators design standards and practices for unsurpassed educational experiences for all students.

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# Reimagining Education in the Post Reform Era

## ***Equity in Education: Past and Present***

**School Segregation Era (Pre-1964):** The Plessy v. Ferguson, 163 U.S. 537 (1896), decision upheld the constitutionality of racial segregation laws for public facilities. While the ruse of “separate but equal” had maintained its legality, structural and financial inequities in education persisted. In the west, (predominantly) Indigenous and Hispanic students experienced subpar learning conditions while in the south and east, Black students suffered the brunt of inequitable learning conditions (Frankenberg, 2009; Jones, 1956; McCormick & Ayala, 2007; Menchaca & Valencia, 1990; Wollenburg, 1974). Notably, although Brown v. Board constitutionally overturned segregationist practices, champions of segregation implemented Jim Crow Laws through the intimidation practices of local law enforcement, businesses, and other terrorist groups (Klarman, 2006; Prince, 2017). Among other changes, the Civil Rights Movement and Civil Rights Act of 1964 ushered in a new era of educational reform.

**School Desegregation Era (Mid-1960s to Late-1980s):** Brown v. Board of Education (1954) constitutionally outlawed segregation in PK-12 and higher education settings. After Brown II (1955), efforts to equalize education involved the forcing of Black students into White schools through busing and other strategies as well as the erasure of the Black teaching and administrative workforce (Ladson-Billings, 2004). In opposition to the mandate of “all deliberate speed” (Brown II), staunch segregationists devised strategies to halt desegregation including but not limited to the establishment of magnet and specialty schools, the resurgence of private schools, and reallocation of school funding (Ladson-Billings, 2004; Ford, Johnson, & Partelow, 2017). These strategies resulted in de facto segregation that persisted through the 1980s.

**School Reform Era (1990s to 2020):** With de facto segregation creating “separate but unequal 2.0”, efforts shifted from desegregating schools to improving schools regardless of demographic composition. However, efforts to increase equitable instruction and outcomes for all students has been hampered by institutional racism (Chatterji, 2020; Gillborn, 2004, 2006). Reform efforts have repeatedly obfuscated Blackness through equity rhetoric and surface level practices (e.g., diversity, establishment of standards) (Vasquez Heilig, Brown, & Brown, 2012). Tacitly, school reform relied on the idea that if Black students could not attend schools with White students, improvement would be achieved by forcing majority Black schools to function like majority White schools, a premise rooted in the assumption of the superiority of White systems, practices, teachers, and students. The school reform movement plateaued with the No Child Left Behind Act of 2001, which made testing central to reform efforts. By the late 2000s, school reform movements had become divided with unproductive friction between parents’ rights and school choice movements, teachers’ unions, public school advocates, and corporate investors. The culture of reform also influenced higher education admissions, accreditation, rankings, and other exclusionary processes.

## ***Why Institutional Racism in Education is Refractory to Change***

Institutional racism is a sociological construct and sociopolitical theory that emerged during the late 1960s

and has been actively discussed in academic literature for more than a half-century. Institutional racism holds that mainstream disapproval of individual acts of bigotry belies a far-reaching, stable, and insidious system of White racial preference that is interwoven into the normal practices and policies of organizations and institutions (Phillips, 2010). As a system of social control, institutional racism is a guiding principle that helps theorists across disciplines examine the systemic practices and policies that result in wealth, employment, housing, criminal justice, and political power disparities. Racially biased systems can supplant independent motivations and lead individuals to contribute to racist outcomes in criminal justice, education, and health systems.

Racially biased systems can have a diverse workforce, but still have racial preferences for White people. For instance, an original analysis of the American Community Survey (ACS) of the U.S. Census using the Integrated Public Use Microdata Series (IPUMS) (Ruggles et al., 2017) estimates that approximately 136,000 police officers in the United States are Black. Collectively, about 30,000 Black police officers serve the five metropolitan areas with the largest number of Black people---New York, Chicago, Washington, DC, Atlanta, and Miami. In all of these areas, according to ACS estimates, the percentage of Black police officers is consistent with the percentage of Black people in the respective populations.

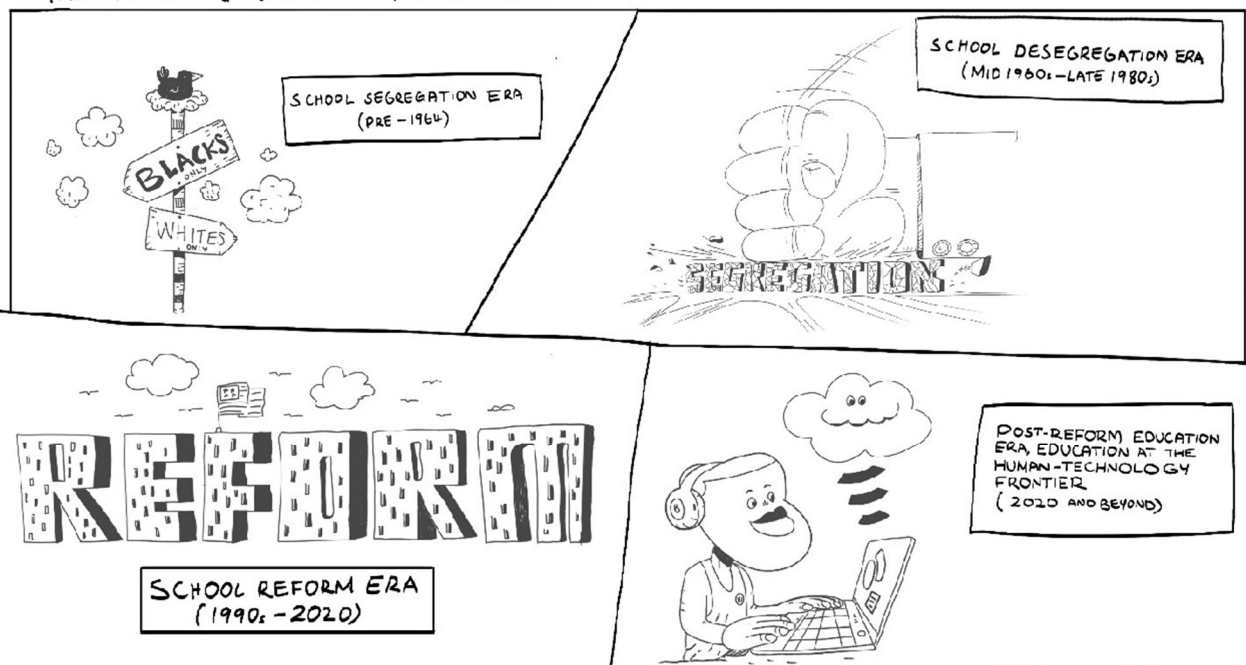
Further analysis of IPUMS data reveal the social work profession has an overrepresentation of Black professionals. Black social workers comprise most of the profession in five states and the District of Columbia, including Mississippi, Louisiana, Georgia, Maryland, and Delaware. However, institutional racism precludes Black social workers collectively from pushing social justice-oriented, culturally responsive social work at the institutional practice and policy level. According to Lavoie (2014), “social workers committed to critical, anti-racist practice are often frustrated in their attempts to bring about institutional change that addresses racism” (p. 1).

Black people are more likely to choose helping professions generally and education specifically, especially among Black men. According to the ACS, social worker is the 7th most common occupation among Black men with at least a bachelor’s degree. For White men, it is 56th. Primary school teacher is the No. 1 profession of college-educated Black men and No. 3 for White men. Secondary school teacher is No. 5 for Black men and No. 14 for White men. Educational administrator is No. 6 for Black men and No. 20 for White men, and counselor is No. 7 for Black men and No. 40 for White men (Toldson, 2019).

Theorizing about institutional racism through the social and behavioral sciences has done little to ameliorate long-standing discriminatory practices. Further, the narrow scope of interventions, including diversifying hiring and cultural sensitivity trainings, are inadequate strategies for inspiring system-wide change.

Unconscious and implicit bias, for instance, are popular investigative inquiries for understanding racial discrimination. However, researchers have criticized implicit bias research for insinuating that racism is perpetuated through guileless and unintentional motivations, while not addressing the established systems that undermine the progress of racial minorities (Tate & Page, 2018). Tate and Page (2018) indicate that “biases are usually influenced by background, cultural environment, and experiences” (p. 141). Thus, a comprehensive investigation of the system that cultivates racist behavior might be more important than studying the psychological underpinnings of individual biased acts.

# THE HISTORY & FUTURE OF AMERICAN EDUCATION





# Transforming Education at the Human-Technology Frontier

*These emerging concepts in the human-technology frontier have the potential to transform education:*

**Transdisciplinary Convergence** - Fielder et al. (2016) define convergence as the process of merging different technologies, handling disciplines, and devices into an amalgamated whole to create new paths and opportunities. On the other hand, Eyre et al. (2017) define convergence science as a specific approach to solve a problem that affects different disciplines. The process occurs through the integration of data, tools, and alleged techniques from numerous fields to tackle issues that arise in the boundaries of multiple areas. According to the Massachusetts Institute of Technology (MIT), convergence entails the amalgamation of different technologies, processing disciplines, and devices into a unified whole (Somani & Deka, 2018). Transdisciplinary convergence offers a more comprehensive social and intellectual amalgamation of paradigms, theories, systems, restraints with problem-oriented studies, and development. Convergence research can provide a robust transdisciplinary process to find strategies to mitigate institutional racism across sectors.

**Human-Technology Frontier** - According to Mynatt et al. (2018), Human-Technology Frontier focuses on the role of technology in the augmentation of human performance in different places, such as classroom, areas of work, and in the improvement of educational outcomes. The Human-Technology Frontier helps describe the decision-making process in the automated world, the new ways of assigning and distributing tasks, and additional jobs for the new economy.

**Distributed Agency** - A distributed agency is a situation where the activities and operations of people with different motivations, interests, and in diverse locations come together to create a mutual outcome. According to the Oxford review (n.d), distributed can be uncoordinated or coordinated and has four factors that create the agency, including: Intentionality, the intended actions and the outcomes; Causality, the comprehension of a specific story that affects the other; Flexibility, allowing people to learn and adapt in the event of a change; and Accountability, action of the agent is the primary cause of an outcome. Distributed agency is an emerging field that has grown with the drastic growth in social media, a concept that brings people together and coordinates them to create some effect.

**Expanded Cognition** - Technological growth has made it possible for human beings to have an extended-cognition. Expanded cognition is the extension of human cognitive processes as an outcome of bio-social and bio-technological bonding. According to Smart (2017), extended cognition emerges from the use of the information technology, which serves as a physical tool that helps augment human mental capacity and processes.

**Humanism and Humanistic Agency** - Humanism is the notion that human needs and values are essential, which an emphasis on human autonomy and progress. According to the American Humanist Association (n.d), people have the capability and obligation to live moral lives and

better humanity. Therefore, humanistic agencies encourage people to be accountable to others, to give meaning and shape personal lives.

**Democratizing Knowledge** - Knowledge democratization is a process of making ideas, knowledge, and education accessible anytime, anywhere, and to every person. Murati (2015) states the democratization process in education occurs through the decentralization of the decision-making process by including teachers and other educational staff, and self- management within schools by encouraging greater student participation. The education system can mitigate institutional racism by reworking compulsory education, changing the learning environment, and affirming lifelong education.

**Data democratization** - Data democratization is the process of making data accessible and a strategy that allows the non-technical users to collect and analyze data, taking a grassroots approach to manage and govern data. As a result, data democratization allows everyone within the organization to efficiently assess, understand, and collaborate on the required data to make essential decisions. Data-driven decision-making refers to the process of making executive decisions based on data, rather than observation and intuition (Espin et al., 2017). Organizations make data-driven decisions after identifying the mission, identifying the data sources, cleaning and organizing the data, performance of statistical analysis, and coming up with coherent conclusions. The educators' ongoing process of entering qualitative and quantitative data can direct decisions and system improvement.

#### THE POST-REFORM EDUCATION ERA: MITIGATING INSTITUTIONAL RACISM IN EDUCATION AT THE HUMAN-TECHNOLOGY FRONTIER

EDUCATIONAL POLICIES & PRACTICES ARE OUTMODED BECAUSE OF THE FOLLOWING:

① HIERARCHICAL STRUCTURE MAKES IT DIFFICULT FOR EDUCATORS..



② LACK OF AGENCY...



③ RIGID EDUCATIONAL SYSTEMS...



④ EDUCATIONAL SYSTEMS & PRACTICES DO NOT PRIORITIZE HUMANISTIC TASKS...



⑤ DATA IS NOT ANALYZED..



⑥ SYSTEMS THAT REWARDS COMPLIANCE & PUNISHES INNOVATION...



# Theory of Change: Humanistic Distributed Agency

Transforming educational systems and practices requires innovative ideas that focus on the structure of education, rather than curriculum. Using resources and professional development to deal with learning deficiencies and inequities in education seem duplicative and insufficient for the challenge of addressing larger systemic issues. The future of our nation's mental and physical health, economic standing, and security depend on its eradication.

Lavoie (2014) used Foucault's theory of disciplinary power to explain how suppressive systems, through *hierarchical observation*, *normalizing judgement*, and *examination*, can endure even when the workforce is diverse. To circumvent traditional social structures and advance equity in education, the education system needs to codify a process by which human-technology partnerships are normalized.

Table 1 juxtaposes traditional power structures in education, using Foucault's theory of power and racism (Bhandaru, 2013), against possible transformations that can occur when strategically using technology to distribute agency and expand cognition (Duus, Cooray, & Page, 2018).

Table 1: A theoretical model for transforming education by using technology to expand cognition and distribute agency within the field of education.

	Traditional Power Structure	Humanistic Distributed Agency and Expanded Cognition through Technology
<b>Nature of power</b>	Educational administrators at the top of a hierarchical, apex-like structure wield power over "subordinates." Superiors are responsible for setting organizational priorities that support societal and cultural objectives and norms.	Educational administrators use technology to distribute power throughout the chain of command. Through technology, best-practice guidance is ubiquitous and occurs <i>on demand and in real-time</i> . Standards and norms are adaptable and refined through harvesting data generated from educators who have the most frequent contact with students.
<b>The role of agency</b>	The 'rank and file,' or educators who have the most frequent contact with students, are considered "subordinates" and have little power. They work to maintain uniform professional norms and standards, as established by "superiors," or educational administrators. Rigid functions, that is subject to normalized scrutiny by peers and superiors, are the focus of work.	The educators who have the most frequent contact with students have the agency to use technology to make autonomous decisions. Standards or practice is minimized, and standards of principles that advance a societal good is amplified in training, licensure, and performance evaluation. Data derived from norm deviations and variations in practice and performance are used to update professional norms and standards.
<b>The path to competence</b>	"Subordinates" are assumed to have enough knowledge to complete their	Use technology to democratize knowledge. Shift the burden of heavy

responsibilities but less knowledge than “superiors.” Knowledge gaps are fulfilled through human learning of concepts, techniques, and strategies. The path to competence is based on acquiring and applying knowledge.

cognitive lifting, such as rote memorization and organic information-based processing, to computers systems. The path to competence is based on expanding cognition through technology and developing empathy through humanism.

### Relationship to social order and Institutional Racism

Societal and cultural norms, such as the normalization of whiteness and institutional racism, influence the educational system through the top of the hierarchy.

The educational system can shape societal and cultural norms by expanding cognition through technology and advancing *humanistic agency* among the ‘rank and file,’ or those with the most frequent contact with learners.

#### THEORY OF CHANGE: HUMANISTIC DISTRIBUTED AGENCY

TO CIRCUMVENT TRADITIONAL SOCIAL STRUCTURES AND ADVANCE EQUITY IN EDUCATION, THE EDUCATION SYSTEM NEEDS TO CODIFY A PROCESS BY WHICH HUMAN-TECHNOLOGY PARTNERSHIPS CAN MITIGATE INSTITUTIONAL RACISM.

FOUCAULT'S THEORY OF DISCIPLINARY POWER CAN EXPLAIN HOW INSTITUTIONAL RACISM, THROUGH HIERARCHICAL OBSERVATION, NORMALIZING JUDGMENT, AND EXAMINATION, CAN ENDURE EVEN WHEN THE WORKFORCE IS DIVERSE - LAJOIE (2014)

LET'S LOOK AT A THEORETICAL MODEL FOR MITIGATING INSTITUTIONAL RACISM BY USING TECHNOLOGY.

#### ① - NATURE OF POWER

- TRADITIONAL HIERARCHICAL APEX-LIKE STRUCTURE YIELDS POWER OF 'SUBORDINATES'
- EDUCATIONAL ADMINISTRATORS CAN USE TECHNOLOGY TO DISTRIBUTE POWER THROUGHOUT THE CHAIN OF COMMAND.



#### ② - THE ROLE OF AGENCY

- EDUCATORS WORK TO MAINTAIN UNIFORM PROFESSIONAL NORMS AND STANDARDS AS ESTABLISHED BY EDUCATIONAL ADMINISTRATORS
- "THE EDUCATORS WHO HAVE FREQUENT CONTACT WITH STUDENTS HAVE THE AGENCY TO USE TECHNOLOGY TO MAKE AUTONOMOUS DECISIONS"



#### ④ - RELATIONSHIP TO SOCIAL ORDER AND INSTITUTIONAL RACISM

- SOCIETAL AND CULTURAL NORMS, SUCH AS THE NORMALIZATION OF INSTITUTIONAL RACISM, INFLUENCE THE EDUCATIONAL SYSTEM THROUGH THE TOP OF THE HIERARCHY.
- THE EDUCATIONAL SYSTEM CAN SHAPE SOCIETAL AND CULTURAL NORMS THROUGH TECHNOLOGY



#### ③ - THE PATH TO COMPETENCE

- 'SUBORDINATES' ARE ASSUMED TO HAVE ENOUGH KNOWLEDGE TO COMPLETE THEIR RESPONSIBILITIES BUT LESS KNOWLEDGE THAN 'SUPERIORS'
- USE TECHNOLOGY TO DEMOCRATIZE KNOWLEDGE

## Discussion

In the late 20<sup>th</sup> century, a person could not imagine a video phone beyond the dual-function stationary box with analogue cables. Individuals had yet to conceive of the internet, wireless connectivity, global positioning systems, and digital media of the present. With no conception of the future, *naïve realism* (Stanford Encyclopedia of Philosophy, 2015) prevented society from comprehending a video phone that would comprise a wireless device small enough to fit in a pocket. Naïve realism is also the reason that so many people who want racial justice in the United States have difficulty perceiving or believing it.

Our current economic, educational, and political systems are analogous to televisions, radios, and local area



network phones in the 1980 – using these systems to eradicate institutional racism will appear far-fetched from a myopic perspective. Using transdisciplinary convergence to circumvent naïve realism, we have identified these aspects of our current education policies and practices that leave them vulnerable to institutional racism: (1) The hierarchical (educational) structure makes it difficult to glean best practices from educators who work directly with students; (2) Educators do not have the necessary agency to make decisions that can positively impact learners; (3) Educational systems and practices do not allow for a technological shift from cognitive tasks (e.g. content memorization and repetition, rote processes); (4) Educational systems and practices do not prioritize humanistic (e.g. social- emotional learning, self-advocacy/efficacy, character knowledge and development) tasks; (5) Data are not currently analyzed and used to develop beneficial deviations from standard and traditional practices; and (6) Rigid standards of practice create a system that rewards compliance, punishes innovation and obstructs the realization of more comprehensive missions, goals, ideas, and principles.

Imperialistic and hierarchical structures lose relevance as technology advances and human consciousness expands. Likewise, equity will not thrive within these structures. Using valid and reliable research, educational stakeholders can respond to increases in racial, ethnic, religious, ability, gender, and sexual diversity. Using the latest technological advances, stakeholders can also achieve a more socially aware and responsive school system.

Methods for transforming education policy and practice include the implementation of foundational approaches that enable educational stakeholders to glean best practices from the teachers that work most closely and effectively with students, expansion of teacher agency for enhanced decision making, use of technology to minimize rote cognitive tasks while maximizing humanistic teaching, implementation of data collection and analysis systems that equate deviations from standard practices, replacement of rigid standards and practices for those that uplift innovation and effective strategy, and the application of these innovations and strategies to shape reimagined professional practice. Concepts presented in this paper will propel our think tank discussions, inform NSF's future grant priorities, and further the mitigation of institutional racism in education at the human-technology frontier.

## CONCLUSION

EDUCATIONAL EQUITY WILL NOT THRIVE WITHIN AN IMPERIALISTICALLY ROOTED, HIERARCHICAL STRUCTURE, WHICH TENDS TO LOSE RELEVANCE AS TECHNOLOGY ADVANCES AND HUMAN CONSCIOUSNESS EXPANDS.

HOW TO TRANSFORM EDUCATION POLICY & PRACTICE:



## Think Tank Discussion Topics

Discussion Topic 1 (Group 1): Expanded Cognition and Humanistic Reprioritization: *How can we use technology strategically to shift cognitive tasks away from educators, so we can reprioritize humanistic tasks?*

Discussion Topic 2 (Group 2): Institutional Racism from the Top Down: *How does the hierarchical structure of education leave it susceptible to institutional racism and make it difficult to glean best practices from socially conscious educators?*

Discussion Topic 3 (Group 3): Humanistic Distributed Agency: *How do we use technology to democratize knowledge to give humanistic educators the necessary agency to make decisions that can positively impact learners?*

Discussion Topic 4 (Group 1): From Standards in Practice to Standards in Principle: *How do we eliminate rigid standards of practice to create a system that rewards innovation and recorded strategies to shape professional practice in accordance with a larger mission and higher-level ideas and principles?*

Discussion Topic 5 (Group 2): Using Data Science to Glean Best Practice: *How do we implement data systems to allow the education system to learn from variations (deviations) in practice?*

Discussion Topic 6 (Group 3): Post-Reform Education Era, Education at the Human- Technology Frontier: *How will the next 40 years look, and how much does this statement comport with reality? A diverse coalition of students and school activists advance sweeping and far-reaching changes in the school at the systemic level. The foundation of institutional racism is openly confronted allowing for more “courageous conversations” to permeate at the structural level. Technology is advanced to democratize knowledge, allowing for a reprioritization of functions, and making testing of rote memory obsolete. The outmoded*

hierarchical structure of school systems is transformed into a system based on humanistic, distributed agency, allowing for social justice-oriented teachers to set standards for quality education.

## ***Think Tank Discussion Framework***

### ***Deliverables***

If this topic becomes a C-Accel track, what “deliverables” would the subsequently funded research & development efforts produce in the 1 year of Phase I plus two years of Phase II? How would those outputs tangibly impact society?

One of the topics suggested was how the elimination of rigid standards of practice could help create a system that rewarded virtues like innovation and helped develop professional strategies to shape professional practice. The promotion of a culture of learning, problem-solving, and critical thinking were discussed at length. Also included was the creation of a technology enhanced curriculum. Some of the suggestions included moving away from rotation of learning to a competency and proficiency model. Think tank members also recommended abandoning test-based teaching and advancing a holistic approach to teaching. The members also suggested that we move away from one single pathway approach to a multipath educational approach. The members also suggested adopting a demonstration of hands-on concepts, rather than taking the concepts of currency from grades.

The technology could be used to provide real-time testing and evaluation of the data that could help the teacher get the understanding needs of all students. Technology could also be vital in creating a support system that could help teachers navigate a learning environment that was individualized. For example, creating avatar-based mentoring systems could help teachers facilitate a larger community of practice for their students. The technology can also facilitate students' connections so that they could learn other languages or cultures.

Humanistic teaching practices can impact student learning. One of the suggestions involved engaging emotional support for students while also having equity advocates for students. Mental wellness of the students, as well as culturally relevant pedagogy, is vital. Another pillar for this approach was using a student-centered approach in teaching. The augmentation of humanistic teaching practices was also important for this program to achieve the intended goal.

Think tank members proposed developing and delivering an individualized learning system for the schools to enhance learning and emotional support for students. Think tank members also discussed having a diverse team of stakeholders, and a holistic approach to training. Hiring of equity advocates was also discussed.

A curriculum informed by the communities' vision was vital in targeting students' needs and it can potentially impact society by making students wise, instead of simply smart, and meaningfully connecting them communities. Technology can help automate mundane tasks, to expand humanistic interventions. Human intervention is vital because they help orientate the students to more humanistic goals. Schools must also be able to connect the student curriculums to the real-life situations they are likely to face.

### ***Convergence***

What different disciplines and disciplinary approaches/methods are needed to understand and address the challenges? What disciplines would need to be engaged for this track to be successful? Is there a good potential for integration and real collaboration among the disciplines?

Several academic disciplines were suggested, including anthropology, digital arts or digital literacy psychology, history, and sociology, in addition to data science, electrical engineering, artificial intelligence, human-centered computing, statistics, and social and behavioral sciences. Implementation methods included incorporating student's voices, bringing teachers on board with student research, and getting insight from the change management and community management expertise.

Another suggestion was that some integration/collaboration practices should bring onboard students, learning scientists, data scientists, teachers, researchers, and practitioners. Think tank member noted that convergence is naturally occurring in education, with the implementation of systems such as Khan Academy.

Developing a coherent view from these different perspectives, the convergence of attitudinal differences in research, for example, qualitative and quantitative research methods, would require an expansion of what would be considered either data or technology. Therefore, the possibilities of these will depend largely on the hierarchical team structure, flat across all disciplines that would suggest equality in all possible perspectives and the value-added.

Artificial intelligence, psychology, and human-centered computing are among the three disciplines proposed that were needed to make successful the creation of a culture of learning or persuasive technology to motivate the students and monitor their engagement in an up close manner. Also mentioned as key in the product designing was human and computer interaction. This was a multidisciplinary field vital in ending the user's need and something the students could ultimately benefit from.

### ***Partnership***

What different types of organizations and stakeholders would be engaged by this topic? How would they be engaged? What would they want or contribute?

The group recognized the value of partnership among institutions, industries, community organizations, and professional associations. Multiple stakeholders include community leaders, researchers, educators and students, who are also mentioned as key in achieving the desired change. Universities and industries can assist with facilitating experts that could deliver content specific to expanding cognition among teachers. Non-profit content producers, like the Khan Academy, can also initiate expert delivery on content and subject matter. Also vital is that artificial intelligence researchers to develop automatic student identification and engagement of emotions. Their contribution could create of data and models. Computer science and the human-centered computing researchers can develop data repositories, to develop systems that would incorporate artificial intelligence to assist teachers.

Other partnerships vital to this course would be on the Data Science and Scientific Researchers. They would bring to the table the creation of open, inclusive statistics that can improve equity in education. They can do this through the concept of visualization and data models. Other partnerships that would be counted as vitals would be from Educational Psychologists and curriculum instruction researchers or



professors. Their major play would be to inform data science, including both Artificial Intelligence and Computer Science communities, on what possible best practices they would in C&I and therefore create empathy lenses from where specific solutions can be built. Crowdsourcing of school practitioners would also be vital in away. Therefore, the resulting solution would be structured guidelines and best practices that would serve as the resulting technology rules.

Another suggestion that was seen as purposeful was the conducting of everyday analysis of the students. This would help in knowing the student's concerns and interests. The technology will then be used to develop and even deliver partially individualized lesson plans. These lesson plans will be based entirely on student proficiencies. Also important is getting the student's input to design but with the individual user in mind. They also considered retired teachers. The suggestion was that their input is included; this was because eventually, their vast knowledge and experience about effective teaching skills would be very useful.

### ***Track Coherence***

Do each of the sub-topics proposed have a way to fit together so that the set of projects supported create an integrated whole?

One of the specific ideas generated was to make an AI system capable facilitating student learning. To accomplish this, we need to study the engagement of students in the classroom by using social and behavior theory to develop interventions. Another idea was to offer virtual role models. Yet another was to develop holistic assessments. Executing these ideas require a leadership group that would help bridge gaps that may exist in discipline communication. Coherence would be vital in creating a culture of collaboration.

The subtopics that have been proposed would prioritize humanistic approaches by employing the use of technology. A holistic approach that is keen on considering the student needs, access to technology, context, and appropriate cross-disciplinary and cross-sector partners would be vital. For example, while technology is needed to curate the data, human intervention is necessary to translate that data into wisdom.

### ***American competitiveness***

Developing an AI that helps gather data on a student that is then shared with the teacher helps the teacher develop a lesson plan that will take into consideration the student he or she is about to encounter. Also important is creating a pipeline of interactive sessions between students and professionals in various fields. In the end, the student comes out as a solution-oriented student who is used to encountering practical problems that he or she can innovatively create a formidable solution for. Developing tools that enable students to have a holistic approach to education will reduce inequality. In such cases, students cannot only get adequate resources; they can develop and grow in an environment that encourages innovation and competitiveness. In this case, they end up being very competitive because the environment allows them to venture outside of the classroom, even if they don't go out.

### ***Global leadership***

A holistic approach to education gives students a competitive edge. Students cannot only develop skills that can help them with problem-solving; they can challenge the status quo and conquer it. The human-

technology frontier can facilitate teacher-student contact; providing a real-time information to better personalized learning objectives. These recommendations also ensure that there are partnerships between the students and other institutions. The student's ability to network molds them into leadership roles, which teaches them to tackle issues plaguing society, because the system prepared well-equipped students with access to a lot of materials, which makes them very competitive.

### ***Workforce Inclusion***

Such students are getting out of such a curriculum sharp and prepared to face the workforce. With technology changing the nature of work, the curriculum and processes need to change. The human-technology frontier in education does not just support the development of an idealized student learning process; it ensures that the student has support within the curriculum. Demographic changes must be considered in making changes to the education system. Research reveals that a more engaged students who receives a more holistic education is likely to be a more well-rounded person. A process built on humanistic distributed agency can help socially conscious teachers have more control over student learning and outcomes.

A changing America must give its students an education that reflect these changes. If we are to achieve equality and prepare students for tomorrow's job market, it is vital to invest in a human-technology infrastructure that prioritizes humanistic distributed agency. It is a national imperative to build better infrastructure for technology, which starts with the convergence of experts across disciplines and sectors, who will help to transform education today, for a more inclusive workforce tomorrow.

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Ivory A. Toldson, Ph.D. is the principal investigator of the NSF award, Transdisciplinary Convergence to Accelerate Strategies to Mitigate Institutional Racism in Criminal Justice, Education, and Health Systems. The project seeks to explore the use of technology in building more socially conscious systems to mitigate institutional racism. Dr. Toldson is also a professor of Counseling Psychology at Howard University, the president of Quality Education for Minorities, the editor-in-chief of the *Journal of Negro Education*, and executive editor of the *Journal of Policy Analysis and Research*, published by the Congressional Black Caucus Foundation, Inc. He is the author of Brill Bestseller, *No BS (Bad Stats): Black People Need People Who Believe in Black People Enough Not to Believe Every Bad Thing They Hear about Black People*. Dr. Toldson is ranked among the nation's top education professors as a member of Education Week's Edu-Scholar Public Influence Rankings, an annual list recognizes university-based scholars across the nation who are champions in

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