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Disrupting Normativity: A Critical Examination and Reconstruction Towards a Structurally Inclusive STEM Curricula/Culture

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Those who lead industry and educational institutions and particularly those who teach need to acknowledge that their own STEM education is characterized by (1) the exclusion of non-Whites from positions of power, which almost completely erases Indigenous theories and contributions to STEM; (2) the development of a White frame that organizes STEM ideologies and normalizes White racial superiority; (3) the historical construction of a curricular model based on the thinking of White elites, thus disregarding minoritized cultures that contributed to STEM globally; and (4) the assertion that knowledge and knowledge production are neutral, objective, and unconnected to power relations. STEM education and occupations were designed to attract White men who are heterosexual, able-bodied, middle class, and upper class, and, more recently, some East Asian groups designated as acceptable. Therefore, the curriculum and products of this culture contribute to an inhospitable environment for students, faculty, and employees who do not fit these criteria.

The subsequent segment of the presentation aims to delineate an innovative STEM curriculum that eminently acknowledges and validates the racial identities and firsthand experiences of students who have been historically relegated to the periphery of mainstream education. The centrality of this curriculum lies in its unabashed focus on pressing social matters, utilizing these as the pivotal catalyst around which STEM education is designed and delivered. The significance of this curricular approach guides the shift away from a traditional, monocultural lens of teaching STEM, which often inadvertently buttresses systemic barriers, towards a more culturally responsive and socially conscious pedagogical design. By locating the lived experiences and racial identities of marginalized students at the paradigm's core, the curriculum serves to affirm their voices and perspectives, thereby fostering a more inclusive and equitable educational environment.

Further, by intertwining STEM learning with real-world social issues, the curriculum fosters the development of critical thinking and problem-solving skills, crucial competencies for the 21st-century workforce. It empowers learners to understand, engage with, and propose solutions to real-world challenges using STEM principles. Intrinsically, it instigates a more holistic understanding of STEM, one that transcends the conventional boundaries of textbook learning and plants the seeds for nurturing socially conscious, scientifically literate individuals. Therefore, this innovative, context-driven approach to STEM instruction not only serves as a powerful tool to counter educational exclusion and disparity, but it also equips students with the aptitude and motivation to apply learned concepts in addressing socially relevant issues, thereby redefining the landscape of meaningful and impactful education.

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Keyword-2

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