

APPENDIX V – 41

MCD recommends cultural inclusiveness, inquiry as well as the Next Generation Science Standards as the key principles of the Framework for TUSD's K–12 Science Education. Presenting science as a hands-on, activity-based, problem-solving instructional program couched in constructivist theory enables all students, including students of color, to excel in science.

A. Curriculum Reform

Review curriculum for Cultural Inclusion - science content must be culturally consistent, relevant, centered on the lives and cultures of students. Content is interdisciplinary. It helps to eliminate bias, to create a new standard of measure, and to provide equitable curriculum and pedagogical practices.

- a. Level 1 – Additive and Tangible - Science experiences, perspectives, and contributions of people of color and women are presented in isolation or as additives to the regular science curriculum.
- b. Level 11 – Infusion – Contributions of scientists of color and women are integrated into the science curriculum, not just tacked on.

B. Pedagogy/Instructional Practices

- a. Use of instructional strategies that are amenable to all students and are culturally diverse. Instruction begins with questions about phenomena (rather than with facts to be memorized); by investigating their questions, students construct new understandings.
- b. Encourage students to ask critical questions about all information they receive i.e., who wrote or edited the text? Whose voice am I hearing or not?
- c. Use Inquiry Based Learning/Constructivist Techniques that facilitate students to generate knowledge, learn from each other's experiences, and create new understandings.

C. Professional Development

- a. Provide a learning community for teachers, to support the development of a constructivist multicultural curriculum. Beginning with small changes, sharing them and respectfully analyzing one's own and one another's work.

D. Equity Pedagogy – Learning must acknowledge and address a diversity of learning styles while challenging the dynamics of power and privilege in the classroom.

- a. Emphasize the larger purpose or value of the material being studying, by connecting teaching and learning to local community and larger global issues – transformative pedagogy/social action.
- b. Use a variety of teaching methods, modalities and groups rather than relying on one mode of engagement.
- c. Carefully frame objectives when raising potentially sensitive or uncomfortable topics.
- d. Understand the dynamics of power in the room to avoid perpetuating privilege and oppression.

- e. Structure discussions to include a range of voices: e.g., take a queue; ask to hear from those who have not spoken, wait until several hands are raised to call on anyone, use think-pair-share activities.
 - f. Allow ample time for any in-class activities that require substantial reading, and provide scaffolding that reflects the fact that processing times will vary.
 - g. Clearly communicate the expectations and grading scheme for each assignment.
- E. Student-Student Interactions – in an inquiry based classroom significant effort needs to be placed on developing a safe learning environment.
- a. Establish guidelines, ground rules, or community agreements for class participation.
 - b. In class, explain the value of collaboration for learning. Speak of students' diverse perspectives as an asset.
 - c. Provide students opportunities to reflect on what they learned through collaborative activities (formal or informal).
 - d. Deliberately assign students to small, heterogeneous groups that do not isolate underrepresented students.
 - e. Establish ways for students to intervene if they feel a certain perspective is being undervalued or not acknowledged.
 - f. Stop or intervene in a discussion if comments become disparaging or devalue other students' experiences.