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## Meeting Their Fullest Potential: The Beliefs and Teaching of a Culturally Relevant Science Teacher

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### ABSTRACT

As elementary and middle school children of color continue to score poorly on science standardized tests, culturally relevant teaching has been shown to be an effective approach to addressing the social and academic needs of students from diverse backgrounds. In this article, we illustrate how the theory of culturally relevant pedagogy is embraced in the teaching beliefs of a sixth grade science teacher in a rural, low socioeconomic, predominantly African American school. The findings from a qualitative case study reveal beliefs and teaching practices consistent with three major tenets of culturally relevant pedagogy: conceptions of self and students; social relations; and perceptions of knowledge (Ladson-Billings, 2009). This study builds upon the culturally relevant pedagogy knowledge base by illustrating the tenets of this theory in the beliefs and teaching practices of a sixth grade science teacher.

### KEYWORDS

Culturally Relevant Pedagogy, Science Education, Teacher Beliefs, African American Students

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### References

- [1] Aikenhead, G. (1996). Science education: Border crossing into the subculture of science. *Studies in Science Education*, 26, 1-52.
- [2] Aikenhead, G., & Otsujui, H. (2000). Japanese and Canadian science teachers' views on science and culture. *Journal of Science Teacher Education*, 11, 277-299.
- [3] Atwater, M. (2000). Equity for Black Americans in precollege science. *Science Education*, 84, 154-179.
- [4] Atwater, M., Freeman, T., Butler, M., & Draper-Morris, J. (2010). A case study of science teacher candidates' understandings and actions related to the culturally responsive teaching of 'other' students. *International Journal of Environmental & Science Education*, 5, 287-318.
- [5] Baker, P., & Digiovanni, L. (2005). Narratives on culturally relevant pedagogy: Personal responses to the standardized curriculum. *Current Issues in Education*, 8. <http://cie.ed.asu.edu/volume8/number22/>
- [6] Barba, R. (1993). A study of culturally syntonic variables in the bilingual/bicultural science classroom. *Journal of Research in Science Teaching*, 30, 1053-1071.
- [7] Bianchini, J., & Brenner, M., (2010). The role of induction in learning to teach toward equity: A study of beginning science and mathematics teachers. *Science Education*, 94, 164-195.
- [8] Bianchini, J., Johnston, C., Oram, S., & Cavazos, L. (2002). Learning to teach science in contemporary and equitable ways: The successes and struggles of first-year science teachers. *Science Education*, 87, 419-443.
- [9] Bianchini, J., Cavazos, L., & Rivas, M. (2003). At the intersection of contemporary descriptions of

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science and issues of equity and diversity: Student teachers' conceptions, rationales, and instructional practices. *Journal of Science Teacher Education*, 14, 259-290. doi:10.1023/B:JSTE.0000009550.91975.76

- [10] Boutte, G. S., & Hill, E. L. (2006). African American communities: Implications for culturally relevant teaching. *The New Educator*, 2, 311-329. doi:10.1080/15476880600974875
- [11] Boutte, G., Kelly-Jackson, C., & Johnson, G. L. (2010). Culturally relevant teaching in science classrooms: Addressing academic achievement, cultural competence, and critical consciousness. *International Journal of Multicultural Education*, 12, 1-20.
- [12] Bryan, L., & Atwater, M. (2002). Teacher beliefs and cultural models: A challenge for science teacher preparation programs. *Science Education*, 86, 821-839.
- [13] Driver, R., Asoko, H., Leach, J., Mortimer, E., & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, 23, 5-12.
- [14] Emerson, R. M., Fretz, R. I., & Shaw, L. L. (1995). *Writing ethnographic fieldnotes*. Chicago: The University of Chicago Press.
- [15] Ferillo, B. (2006). *Corridor of shame: The neglect of South Carolina's rural schools*. Columbia, SC: Ferillo & Associates, Inc.
- [16] Gay, G. (2000). *Culturally responsive teaching*. New York: Teachers College Press.
- [17] Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. *Journal for Research in Mathematics Education*, 34, 37-73. doi:10.2307/30034699
- [18] Howard, T. (2010). *Why race and culture matter in schools*. New York: Teachers College Press.
- [19] Jackson, T. O., & Boutte, G. S. (2009). Liberation literature: Positive cultural messages in children's and adolescent literature at Freedom Schools. *Language Arts*, 87, 108-116.
- [20] Jay, M. (2006). *Race in education, anti-racist activism and the role of white colleagues: Listening to the voices of African American educators*. Available from ProQuest Dissertation and These Database (UMI No. 3219468).
- [21] Ladson-Billings, G. (1992). Reading between the lines and beyond the pages: A culturally relevant approach to literacy teaching. *Theory into Practice*, 31, 312-320. doi:10.1080/00405849209543558
- [22] Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32, 465-491.
- [23] Ladson-Billings, G. (2009). *The dreamkeepers* (2nd ed.). San Francisco: Jossey-Bass.
- [24] Lee, O. (2003). Equity for linguistically and culturally diverse students in science education: A research agenda. *Teachers College Record*, 105, 465-489. doi:10.1111/1467-9620.00247
- [25] Lee, O., & Buxton, C. A. (2008). Science curriculum and student diversity: Culture, language, and socioeconomic status. *The Elementary School Journal*, 109, 123-137. doi:10.1086/590522
- [26] Lee, O., & Fradd, S. (1998). Science for all, including students from non-English-language backgrounds. *Educational Researcher*, 27, 12- 21.
- [27] Lee, O., & Luykx, A. (2005). Dilemmas in scaling up educational innovations with nonmainstream students in elementary school science. *American Educational Research Journal*, 42, 411-438. doi:10.3102/00028312042003411
- [28] Luykx, A., & Lee, O. (2007). Measuring instructional congruence in elementary science classes: Pedagogical and methodological components of a theoretical framework. *Journal of Research in Science Teaching*, 44, 424-447. doi:10.1002/tea.20127
- [29] Matthews, C., & Smith, W. (1994). Native American related materials in elementary science instruction. *Journal of Research in Science Teaching*, 31, 363-380.
- [30] Morrison, C. A., Robbins, H. H., & Rose, D. G. (2008). Operationalizing culturally relevant pedagogy: A synthesis of classroom-based research. *Equity & Excellence in Education*, 41, 433-452. doi:10.1080/10665680802400006
- [31] Mullis, V., Dossey, J., Campbell, J., Gentile, C., O' Sullivan, C., & Latham, A. (1994). *NAEP 1992 trends in academic progress*. Washington, DC: Educational Testing Service, under contract with the National

- [32] National Assessment of Educational Progress (NAEP) (2009). Nations Report Card-Science Assessment. US Department of Education, Institute of Education Sciences, National Center for Education Statistics.
- [33] National Center for Education Statistics (2003). Condition of education 2003: Indicator 13 geography performance of students in grades 4, 8, and 12 & indicator 14 US history performance of students in grades 4, 8, and 12. Washington, DC: US Department of Education.
- [34] National Center for Education Statistics (2007). Condition of education 2007: Indicator 13 science performance of students in grades 4, 8, and 12. Washington, DC: US Department of Education.
- [35] National Center for Education Statistics (2010). Condition of education 2010: Indicator 10 reading achievement gaps & Indicator 12 mathematics achievement gaps. Washington, DC: US Department of Education.
- [36] National Science Foundation (NSF) (1994). Women, minorities, and persons with disabilities in science and engineering: 1994 (NSF-94- 333). Arlington, VA: Author.
- [37] Parsons, E. (2008). Learning contexts, black cultural ethos, and the science achievement of African American students in an urban middle school. *Journal of Research in Science Teaching*, 45, 665-683. doi:10.1002/tea.20240
- [38] Patterson, F. (1997). *The African American education data handbook: Volume II. Preschool through high school education*. Baltimore: Frederick D. Patterson Research of Institute of the college fund/ UNCF.
- [39] Phuntsog, N. (2001). Culturally responsive teaching: What do selected United States elementary school teachers think? *Intercultural Education*, 12, 51-64. doi:10.1080/14675980120033966
- [40] Posner, G., Strike, K., Hewson, P., & Gertzog, W. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. *Science Education*, 66, 211-227. doi:10.1002/sce.3730660207
- [41] Rosebery, A., Warren, B., & Conant, F. (1992). Appropriating scientific discourse: Findings from language minority classrooms. *The Journal of the Learning Sciences*, 2, 61-94. doi:10.1207/s15327809jls0201\_2
- [42] Sadler, T. D., Amirshokohi, A., Kazempour, M., & Allspaw, K. M. (2006). Socioscience and ethics in science classrooms: Teacher perspectives and strategies. *Journal of Research in Science Teaching*, 43, 353-376. doi:10.1002/tea.20142
- [43] Stinson, D. (2004). Mathematics as " Gate-Keeper" (?): Three theoretical perspectives that aim toward empowering all children with a key to the gate. *The Mathematics Educator*, 14, 8-18.
- [44] Tate, W. (1995). Returning to the root: A culturally relevant approach to mathematics pedagogy. *Theory into Practice*, 34, 166-173. doi:10.1080/00405849509543676
- [45] Thomas, M. (2006). Building the culturally relevant standards-based social studies classroom. *Southern Social Studies Journal*, 31, 47-61.
- [46] Warren, B., Rosebery, A., & Conant, F. (1989). *Cheche konnen: Science and literacy in language minority classrooms*. Newton, MA: Bolt, Beranek, & Newman.
- [47] Weiss, I., & Pasley, J. (2004). What is high-quality instruction? *Educational Leadership*, 61, 24-28.
- [48] Yin, R. K. (2008). *Case study research: Design and methods (4th Ed.)*. Thousand Oakes, CA: Sage Publications.