

equity in science education

Equity in Science Education: Building a Fair and Inclusive Future

Equity in science education is more than just a buzzword—it's a critical foundation for cultivating a diverse and innovative generation of thinkers, problem solvers, and leaders. As science and technology continue to shape our world, ensuring that all students have fair access to quality science learning experiences is essential. The goal is to close the opportunity gaps that exist due to socioeconomic status, race, gender, disability, and geographic location. When equity in science education is prioritized, it fosters not only academic success but also social justice and economic mobility.

Understanding Equity Versus Equality in Science Education

Before diving deeper, it's important to distinguish equity from equality. While equality means giving every student the same resources or opportunities, equity recognizes that students come from diverse backgrounds with varying needs. Equity in science education means tailoring support and resources to ensure all students can succeed, regardless of their starting point.

For example, a student from an under-resourced school may require additional hands-on lab equipment, tutoring, or mentorship to thrive in science subjects. Simply providing the same textbook or curriculum as a wealthier school doesn't address these disparities. Equity champions personalized approaches that level the playing field.

Why Equity Matters in Science Learning

Science subjects like biology, chemistry, physics, and environmental science are often gateways to high-demand careers in healthcare, engineering, technology, and research. When students from marginalized communities lack access to quality science education, they miss out on these opportunities, perpetuating cycles of underrepresentation and economic disadvantage.

Moreover, diverse perspectives in science fuel creativity and innovation. A team composed of individuals with varied backgrounds is more likely to approach problems with a broader lens and develop groundbreaking solutions. Equity in science education not only empowers individuals but strengthens society as a whole.

Barriers to Equity in Science Education

Despite the importance of equity, several obstacles persist that hinder equal access to science learning.

Socioeconomic Challenges

Many schools in low-income areas face budget constraints that limit resources such as up-to-date lab equipment, technology, and qualified science teachers. Students in these environments may also lack access to extracurricular science programs or advanced placement courses that can deepen their knowledge and college readiness.

Implicit Bias and Stereotypes

Teachers and counselors may unconsciously harbor biases that influence their expectations and interactions with students. For instance, girls and students of color are often underrepresented in STEM classes due to stereotypes about who 'belongs' in science fields. These biases can discourage students from pursuing science or limit the support they receive.

Limited Representation and Role Models

The lack of visible role models in science for underrepresented groups can affect students' sense of belonging and self-efficacy. When students don't see scientists who look like them or share similar experiences, they may feel that science careers aren't accessible or welcoming.

Strategies to Promote Equity in Science Education

Thankfully, educators, policymakers, and communities are increasingly implementing strategies to address these barriers and promote equity.

Creating Inclusive Curriculum and Pedagogy

An inclusive science curriculum reflects diverse contributions to science and connects content to students' cultural backgrounds and real-world experiences. Project-based learning and inquiry-based approaches allow students to explore science in meaningful ways, fostering engagement and

critical thinking.

Teachers trained in culturally responsive teaching methods can better meet students where they are, adapting instruction to various learning styles and backgrounds. This approach also challenges stereotypes and builds a more supportive classroom environment.

Providing Access to Resources and Opportunities

Equity-driven programs ensure that schools serving marginalized communities receive adequate funding for science labs, technology, and extracurricular activities. Partnerships with local universities, science centers, and industry can open doors to mentorship, internships, and hands-on experiences.

Additionally, offering scholarships, summer camps, and after-school programs focused on STEM can bridge gaps and ignite passion for science among underrepresented students.

Supporting Educators and Addressing Bias

Professional development focused on equity and anti-bias training equips teachers to recognize and dismantle barriers within their classrooms. Encouraging diverse hiring practices helps bring varied perspectives into education, creating a more relatable and inspiring environment for students.

Regular reflection and feedback mechanisms allow educators to continuously improve their practices and ensure all students feel valued and capable in science learning.

The Role of Technology in Advancing Equity in Science Education

Technology has the potential to level the playing field when used thoughtfully. Digital platforms can provide interactive simulations, virtual labs, and access to experts that students might otherwise miss, especially in remote or underserved areas.

However, the digital divide remains a concern. Ensuring that all students have reliable internet access and devices is essential for technology to truly support equity. Initiatives that provide affordable connectivity and devices are critical components in closing this gap.

Examples of Tech-Driven Equity Initiatives

- Online STEM courses that offer free or low-cost enrollment for students in rural areas.
- Virtual mentoring programs pairing students with scientists and engineers worldwide.
- Adaptive learning software that personalizes science instruction based on individual student progress.

Community and Family Engagement: Vital Partners in Equity

Achieving equity in science education isn't solely the responsibility of schools; it requires active collaboration with families and communities. When parents and guardians are engaged and supported, students are more likely to pursue and excel in science.

Community organizations can provide culturally relevant science programs and create safe spaces for students to explore interests. Additionally, involving families in science fairs, workshops, and school planning helps build a shared commitment to equitable learning.

Tips for Enhancing Family and Community Involvement

1. Host bilingual science nights to accommodate diverse language speakers.
2. Partner with local businesses and nonprofits to sponsor science events and resources.
3. Provide clear communication about science curriculum goals and how families can support learning at home.

Looking Ahead: The Future of Equity in Science Education

The journey toward equity in science education is ongoing. As society becomes increasingly aware of systemic inequalities, innovative policies and practices continue to emerge. From integrating social justice themes into science lessons to leveraging artificial intelligence for personalized learning, promising developments are on the horizon.

Yet, the heart of equity remains human connection—recognizing each student's potential and providing the support they need to thrive. By fostering inclusive environments, challenging biases, and investing in resources and relationships, we can create a science education landscape where every learner is empowered to contribute to the wonders of discovery and innovation.

Frequently Asked Questions

What is equity in science education?

Equity in science education refers to the fair and inclusive access to quality science learning opportunities for all students, regardless of their background, race, gender, socioeconomic status, or abilities.

Why is equity important in science education?

Equity is important in science education to ensure that all students have the opportunity to develop scientific literacy, pursue STEM careers, and contribute to innovation, which helps reduce social disparities and promotes diversity in the scientific community.

What are common barriers to equity in science education?

Common barriers include unequal funding, limited access to resources and experienced teachers, cultural biases in curriculum, lack of representation, and systemic discrimination that affect marginalized groups.

How can teachers promote equity in science classrooms?

Teachers can promote equity by using culturally responsive teaching practices, differentiating instruction, providing diverse role models, fostering inclusive classroom environments, and advocating for resources that support all students.

What role does curriculum design play in achieving

equity in science education?

Curriculum design plays a critical role by incorporating diverse perspectives, real-world applications relevant to different communities, and ensuring content is accessible and engaging for students from varied backgrounds.

How can schools address the gender gap in science education?

Schools can address the gender gap by encouraging girls' participation in STEM activities, providing mentorship programs, challenging stereotypes, offering female role models in science, and creating supportive policies that promote gender equity.

What policies support equity in science education at the national or state level?

Policies that support equity include funding formulas that allocate resources to underserved schools, mandates for inclusive curricula, teacher training on equity and diversity, initiatives to recruit diverse educators, and programs aimed at closing achievement gaps in STEM subjects.

Additional Resources

Equity in Science Education: Bridging the Gap for Inclusive Learning

Equity in science education remains a critical concern globally as educators, policymakers, and communities strive to create learning environments where every student has the opportunity to succeed regardless of background. Despite advances in pedagogical methods and technology integration, disparities persist in access, resources, and outcomes within STEM (Science, Technology, Engineering, and Mathematics) fields. Understanding the multifaceted nature of these inequities is essential to crafting effective strategies that promote fairness, diversity, and inclusion in science classrooms.

Understanding Equity in Science Education

Equity in science education goes beyond equal access to curricula; it involves recognizing and addressing systemic barriers that prevent underrepresented groups from fully engaging and excelling in science disciplines. Unlike equality, which implies identical treatment, equity requires differentiated support tailored to students' unique circumstances, enabling them to reach comparable levels of achievement.

Research highlights that students from marginalized communities—such as racial minorities, low-income families, and girls—often face challenges including limited exposure to quality science instruction, lack of role models, and implicit biases that affect teacher expectations and student confidence. These disparities contribute to persistent achievement gaps and underrepresentation in advanced science tracks and STEM careers.

Key Factors Influencing Equity in Science Education

Several factors influence equity, ranging from socio-economic conditions to institutional policies:

- **Resource Allocation:** Schools in affluent areas typically have better-equipped laboratories, updated textbooks, and access to extracurricular science programs, while underfunded schools struggle to provide even basic science materials.
- **Teacher Training and Bias:** Educators' awareness and sensitivity to cultural diversity and implicit biases shape classroom dynamics. Professional development focused on inclusive teaching methods is often unevenly distributed.
- **Curriculum Design:** Curricula that fail to connect science concepts to students' lived experiences can disengage learners, especially those from non-dominant cultures or languages.
- **Parental and Community Involvement:** Families' educational backgrounds and community support systems significantly impact students' attitudes toward science and available learning opportunities outside school.

Data-Driven Insights on Equity Challenges

Quantitative analyses underscore the scope of inequities in science education. According to the National Assessment of Educational Progress (NAEP) in the United States, proficiency gaps in science between White and Black or Hispanic students remain substantial, with only a fraction of minority students reaching grade-level standards. Similarly, UNESCO reports indicate that girls are less likely to pursue science subjects in secondary education, a trend that contributes to gender imbalances in STEM professions worldwide.

International comparisons reveal that countries with targeted equity policies, such as Finland and Singapore, exhibit narrower achievement gaps and higher overall science literacy. These nations emphasize early

intervention, culturally responsive pedagogy, and equitable funding models—demonstrating the tangible benefits of systemic commitment to equity.

Implications for Curriculum and Instruction

Promoting equity in science education necessitates curriculum reform that validates diverse perspectives and encourages critical thinking. Integrating culturally relevant examples and interdisciplinary approaches can make science more accessible and engaging. Furthermore, differentiated instruction that accounts for varied learning styles and language proficiencies helps accommodate diverse classrooms.

The role of formative assessment is also pivotal. Frequent, low-stakes assessments provide feedback that can identify learning gaps early and inform tailored instructional support. When combined with inclusive teaching practices, these assessments help level the playing field for historically disadvantaged students.

Strategies to Enhance Equity in Science Education

Addressing equity requires concerted efforts across multiple dimensions:

1. **Equitable Funding:** Allocating resources based on student needs rather than uniform distribution ensures that schools serving vulnerable populations receive adequate support for science labs, technology, and enrichment activities.
2. **Professional Development:** Training educators in culturally responsive pedagogy and implicit bias mitigation fosters more inclusive classroom environments.
3. **Community Engagement:** Building partnerships with families and local organizations encourages broader support networks and real-world science experiences.
4. **Policy Initiatives:** Implementing policies that promote diversity in STEM recruitment, retention, and advancement addresses systemic inequities beyond the classroom.
5. **Use of Technology:** Leveraging digital tools can democratize access to advanced science content, especially in remote or underserved areas.

Challenges in Implementing Equity-Focused Reforms

While the rationale for equity is compelling, practical challenges complicate reform efforts. Resistance to change, limited budgets, and entrenched biases can slow progress. Additionally, measuring equity outcomes is complex because improvements often require longitudinal data and nuanced indicators beyond standardized test scores.

Moreover, the intersectionality of students' identities—such as race, gender, socio-economic status, and disability—means that one-size-fits-all solutions are insufficient. Tailored approaches that consider multiple dimensions of disadvantage are necessary but more demanding to design and execute.

The Future of Equity in Science Education

Emerging research underscores the potential of innovative pedagogies and policy frameworks to enhance equity in science education. Project-based learning, for example, encourages collaboration and problem-solving skills that engage diverse learners. Additionally, mentorship programs connecting students with STEM professionals from similar backgrounds provide inspiration and guidance.

As global economies increasingly rely on STEM competencies, ensuring equity in science education is not only a matter of social justice but also of economic imperative. Continued investment in research, inclusive policy-making, and grassroots initiatives will be vital to narrowing gaps and fostering a diverse scientific workforce capable of addressing complex future challenges.

Equity in science education is a dynamic and evolving field that demands ongoing vigilance and commitment. By acknowledging the barriers and implementing strategic, evidence-based interventions, education systems can move closer to realizing the ideal of truly inclusive science learning environments.

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socioeconomic groups persist, and points toward practical means of narrowing or eliminating these gaps. Lee and Buxton examine instructional practices, science-curriculum materials (including computer technology), assessment, teacher education, school organization, federal and state policies, and home-school connections. Book features: A synthesis of the emerging body of research in the field of science education and its application to practice and policy. A description of effective practices for narrowing science achievement gaps among demographic subgroups of students. A focus on the unique learning needs of English language learners. An analysis of major science education initiatives, interventions, and programs that have been successful with nonmainstream students.

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equity in science education: Multicultural Science Education Mary M. Atwater, Melody Russell, Malcolm B. Butler, 2013-11-19 This book offers valuable guidance for science teacher educators looking for ways to facilitate preservice and inservice teachers' pedagogy relative to teaching students from underrepresented and underserved populations in the science classroom. It also provides solutions that will better equip science teachers of underrepresented student populations with effective strategies that challenge the status quo, and foster classrooms environment that promotes equity and social justice for all of their science students. *Multicultural Science Education* illuminates historically persistent, yet unresolved issues in science teacher education from the perspectives of a remarkable group of science teacher educators and presents research that has been done to address these issues. It centers on research findings on underserved and underrepresented groups of students and presents frameworks, perspectives, and paradigms that have implications for transforming science teacher education. In addition, the chapters provide an analysis of the socio-cultural-political consequences in the ways in which science teacher education is theoretically conceptualized and operationalized in the United States. The book provides teacher educators with a framework for teaching through a lens of equity and social justice, one that may very well help teachers enhance the participation of students from traditionally underrepresented and underserved groups in science, technology, engineering, and mathematics (STEM) areas and help them realize their full potential in science. Moreover, science educators will find this book useful for professional development workshops and seminars for both novice and veteran science teachers. *Multicultural Science Education: Preparing Teachers for Equity and Social Justice* directly addresses the essential role that science teacher education plays for the future of an informed and STEM knowledgeable citizenry. The editors and authors review the beginnings of multicultural science education, and then highlight findings from studies on issues of equity, underrepresentation, cultural relevancy, English language learning, and social justice. The most significant part of this book is the move to the policy level—providing specific recommendations for

policy development, implementation, assessment and analysis, with calls to action for all science teacher educators, and very significantly, all middle and high school science teachers and prospective teachers. By emphasizing the important role that multicultural science education has played in providing the knowledge base and understanding of exemplary science education, *Multicultural Science Education: Preparing Teachers for Equity and Social Justice* gives the reader a scope and depth of the field, along with examples of strategies to use with middle and high school students. These classroom instructional strategies are based on sound science and research. Readers are shown the balance between research-based data driven models articulated with successful instructional design. Science teacher educators will find this volume of great value as they work with their pre-service and in-service teachers about how to address and infuse multicultural science education within their classrooms. For educators to be truly effective in their classrooms, they must examine every component of the learning and teaching process. *Multicultural Science Education: Preparing Teachers for Equity and Social Justice* provides not only the intellectual and research bases underlying multicultural studies in science education, but also the pragmatic side. All teachers and teacher educators can infuse these findings and recommendations into their classrooms in a dynamic way, and ultimately provide richer learning experiences for all students. Patricia Simmons, North Carolina State University, Raleigh, USA

This provocative collection of chapters is a presentation in gutsiness. Ingenious in construction and sequencing, this book will influence science teacher educators by introducing them to issues of equity and social justice directly related to women and people of color. The authors unflinchingly interrogate issues of equity which need to be addressed in science education courses. This provocative collection of chapters is a presentation in gutsiness. Ingenious in construction and sequencing, this book will influence science teacher educators by introducing them to issues of equity and social justice directly related to women and people of color. The authors unflinchingly interrogate issues of equity which need to be addressed in science education courses. It begins with setting current cultural and equity issue within a historic frame. The first chapter sets the scene by moving the reader through 400 years in which African-American's were 'scientifically excluded from science'. This is followed by a careful review of the Jim Crow era, an analysis of equity issues of women and ends with an examination of sociocultural consciousness and culturally responsive teaching. Two chapters comprise the second section. Each chapter examines the role of the science teacher in providing a safe place by promoting equity and social justice in the classroom. The three chapters in the third section focus on secondary science teachers. Each addresses issues of preparation that provides new teachers with understanding of equity and provokes questions of good teaching. Section four enhances and expands the first section as the authors suggest cultural barriers the impact STEM engagement by marginalized groups. The last section, composed of three chapters, interrogates policy issues that influence the science classroom. Molly Weinburgh, Texas Christian University, Fort Worth, USA

equity in science education: Equity in K-12 Stem Education National Academies of Sciences Engineering and Medicine, Division of Behavioral and Social Sciences and Education, Board On Science Education, Board on Science Education, Committee on Equity in Prek-12 Stem Education, 2024-09-30 Science, technology, engineering, and mathematics (STEM) live in the American imagination as promising tools for solving pressing global challenges and enhancing quality of life. Despite the importance of the STEM disciplines in the landscape of U.S. political, economic, and social priorities, STEM learning opportunities are unevenly distributed, and the experiences an individual has in STEM education are likely to vary tremendously based on their race, ethnicity, socio-economic class, gender, and a myriad of other factors. *Equity in K-12 STEM Education: Framing Decisions for the Future* approaches equity in STEM education not as a singular goal but as an ongoing process that requires intentional decision-making and action toward addressing and disrupting existing inequities and envisioning a more just future. Stakeholders at all levels of the education system - including state, district, and school leaders and classroom teachers - have roles as decision-makers who can advance equity. This consensus study report provides five equity frames

as a guide to help decision-makers articulate short- and long-term goals for equity and make decisions about policy and practice.

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equity in science education: Equity in Elementary Science Education Kathryn N. Hayes, 2014 Despite recognition that the foundation for interest in science is laid down at the elementary level (Tai, et al., 2006), in the last ten years elementary science instruction time has declined in K-6 schooling (Center on Education Policy, 2007). A lack of access to excellent science education is exacerbated for low-income students, prompting significant questions regarding inequities within the science education pipeline (Maulucci, 2010). The critical factors needed to address these inequities include teacher preparation, access to resources, and instructional leadership, as well as a supportive policy and institutional milieu. However, although the former three have been studied extensively, the role of policy and institutions in creating the conditions for equity in science education are little understood despite their likely significant role (Lemke, 2001). This mixed methods study addressed this gap by examining the role the policy and institutional milieu play in constraining or supporting equitable elementary science education. Institutional theory provides the framework for understanding how various institutional logics and regulatory pressures permeate schools and districts across contexts, influencing science education implementation (Scott, 2014). Two distinct approaches were used to first quantitatively examine the predictors of differentiation in elementary science education instructional time and methods, and second qualitatively analyze the

nature and process by which these mechanisms exert influence. Data for the first two papers was derived from a case study of a purposively sampled district, including surveys of 200 teachers and embedded case studies of four schools. Analysis consisted of multi-level models of teacher attributes and school and policy factors in predicting differential distribution of science education instructional time and methods (Raudenbush & Bryk, 2002). Data for the third paper arose out of a series of principal, administrator, and teacher focus group interviews across three additional districts, purposefully selected to represent a broad range of income level and Academic Performance Index scores. Analysis consisted of a mixed-methods approach: theory generation through an iterative coding process (Eisenhardt, 1989) and subsequent testing through descriptive analysis of code frequency across contexts (Creswell & Clark, 2007). Results indicated that on average, lower income, underrepresented students received substantially less science education than higher income students across sampled schools in the focal district. Socio-economic context and accountability pressures accounted for substantive variance in science instructional time and methods; whereas teacher factors such as professional development, experience, degree and attitude were largely insignificant in the models and accounted for negligible variance. Specifically, students at high accountability pressure schools received only one quarter the amount of hands-on science instruction (on average, 10 minutes per week) as students at lower accountability pressure schools. The second part of this dissertation addressed the need to examine how incentives for science education were differentially structured related to community income level and program improvement status of schools. Mixed-methods data analysis revealed that at high poverty schools, science education was often displaced by a constellation of other pressures, including accountability and accompanying scripted teaching and intervention systems, as well as English Language Learner needs and perceptions that the students needed greater literacy skills before learning science. Although teachers, principals and administrators often expressed resistance to the mandates of accountability, regulatory pressures and resource dependency, in interaction with perceptions of student needs, resulted in a response pattern characterized by cognitive overload and freneticism. These in turn reduced school staff's sense of agency in negotiating for science education goals, and their ability to creatively incorporate science education. Conversely, schools and districts in lower poverty contexts were able to leverage the active interest of parents and other external and internal resources to resist the pressures of accountability and create compromise strategies that supported science education. As implementation of Common Core and the Next Generation Science Standards proceeds, restructuring should take into account the results of this study and others like it, as research and national priorities have historically been focused primarily on teacher development. Although it may be the case, as Milner et al. (2012) claim, that teacher beliefs and attitudes are a key to instructional reform, or that well-targeted professional development can make a great difference in science education implementation (Murphy et al., 2007), without addressing the policy and contextual milieu such efforts may not be efficacious. Moreover, as found in other studies (Malen & Rice, 2004), strengthening school capacity in terms of leadership, teacher retention, and innovative school culture may hold more promise for enhancing the quality of elementary science education than simply increasing the pressures of accountability through high stakes tests.

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Everyday Science Learning is not only an essential text for postgraduate students and postdoctoral researchers of Science Education, Science Communication and Museum Studies, but for any professional working in museums, science centres and institutional public engagement.

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Marie Tejero Hughes, Elizabeth Talbott, 2017-02-21 The Wiley Handbook of Diversity in Special Education is a state-of-the-art reference showcasing cutting-edge special education research with a focus on children and youth with disabilities from diverse cultural, ethnic, linguistic, and economic backgrounds. Cutting-edge special education research focusing on children and youth with disabilities from diverse cultural, ethnic, linguistic, and economic backgrounds An authoritative contribution to the field, this work charts a new path to effective interventions and sets an agenda for future research Addresses disabilities from an international perspective

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Peppler, 2017-01-15 The SAGE Encyclopedia of Out-of-School Learning documents what the best research has revealed about out-of-school learning: what facilitates or hampers it, where it takes place most effectively, how we can encourage it to develop talents and strengthen communities, and why it matters. Key features include: Approximately 260 articles organized A-to-Z in 2 volumes available in a choice of electronic or print formats Signed articles, specially commissioned for this work and authored by key figures in the field, conclude with Cross-References and Further Readings to guide students to the next step in a research journey Reader's Guide groups related articles within broad, thematic areas to make it easy for readers to spot additional relevant articles at a glance Detailed Index, the Reader's Guide, and Cross-References combine for search-and-browse in the electronic version Resource Guide points to classic books, journals, and websites, including those of key associations This title will be available on SAGE Knowledge, the ultimate social sciences library

equity in science education: *Perceptions about Student Diversity and Equity in Early Childhood Science Education* Eun Young Lee, 2018 Using a mixed-methods approach, the current study examined the relationship between early childhood preservice teachers' cultural awareness and their self-efficacy in equitable science education. It further aimed to determine if the relationship between these two constructs was moderated by their race/ethnicity or the number of languages they speak. Finally, it sought to identify preservice teachers' understanding of equity in

science education, as well as how they planned to incorporate the equity concept into their future science teaching practices for diverse learners in early childhood classrooms. Data for this study were drawn from 380 preservice teachers who self-enrolled in a science methods course as part of a teacher preparation program. To measure the preservice teachers' cultural awareness and self-efficacy in equitable science education, two Likert-scale instruments, Cultural Diversity Awareness Inventory (CDAI) and Self-Efficacy Beliefs about Equitable Science Teaching and Learning (SEBEST), were employed. Qualitative data were collected by administering six open-ended questions. For quantitative results, statistically significant findings indicated that when the participants were more aware of creating a multicultural environment and instruction and/or when they were less biased and were more sensitive/knowledgeable about diversity of students and families, their expectations about science learning of students from diverse backgrounds would be higher. Furthermore, when the participants were more aware of creating a multicultural environment and instruction and/or when they felt more comfortable about confronting students or parents whose cultures and languages were different from their own, they tended to have a stronger sense of efficacy in teaching science to those students. In addition, when the participants were less biased and were also sensitive and knowledgeable about students' and families' diverse backgrounds, they were more likely to have a strong sense of science teaching efficacy. Along with these findings, participants' race/ethnicity was a statistically significant moderator affecting the relationship between their sense of science teaching outcome expectancy and awareness of creating a multicultural environment and instruction. When the awareness of creating a multicultural environment and instruction of both White and non-White participants were increased at an equal level, White participants' expectations for science learning of students from diverse backgrounds were higher than those of non-White participants. Measurement challenges were identified through the analysis process that compromised the validity of the quantitative findings. Thus, they should be interpreted with caution. For qualitative results, three predominant themes related to the participants' conceptualization of equity in science education were identified. First, the participants harbored alternative understandings of the definitions of equity in science education. One third of the participants understood equity as providing appropriate access and support based on the levels of students' needs whereas another one third defined equity as providing identical teaching services and resources to all students regardless of their backgrounds. They also conceptualized equity in science education as an issue independent of their future students' racial/ethnic backgrounds; instead, they regarded it as a subject associated with their students' English proficiency.

equity in science education: Embracing Diversity in the Learning Sciences Yasmin B. Kafai, 2012-10-12 More than a decade has passed since the First International Conference of the Learning Sciences (ICLS) was held at Northwestern University in 1991. The conference has now become an established place for researchers to gather. The 2004 meeting is the first under the official sponsorship of the International Society of the Learning Sciences (ISLS). The theme of this conference is Embracing Diversity in the Learning Sciences. As a field, the learning sciences have always drawn from a diverse set of disciplines to study learning in an array of settings. Psychology, cognitive science, anthropology, and artificial intelligence have all contributed to the development of methodologies to study learning in schools, museums, and organizations. As the field grows, however, it increasingly recognizes the challenges to studying and changing learning environments across levels in complex social systems. This demands attention to new kinds of diversity in who, what, and how we study; and to the issues raised to develop coherent accounts of how learning occurs. Ranging from schools to families, and across all levels of formal schooling from pre-school through higher education, this ideology can be supported in a multitude of social contexts. The papers in these conference proceedings respond to the call.

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