



Cultural Relevance and Responsiveness within the Science Classroom

Infusing culture into today's teaching makes a big impact on students. It's a way to easily draw connections between the curriculum and a student's everyday life. This connectivity makes interpreting new information easier, quicker, and more meaningful. It also enables students to see themselves within the examples they study and the books they read, drawing their experiences into the greater collective.

This connection, however, isn't automatic, and many educators are putting in a lot of time updating curriculum and instructional practices with the cultural norms of today so that students see a realistic picture of the world around them.

Cultural relevance and responsiveness must be a part of the entire educational process in order to give students what they need to truly see the world through a global lens.



The value of connections

It's universally known that we learn and store information better when we can connect to it from the start. Providing that hook to anchor students into the curriculum allows them to start learning with a proverbial leg up, a gateway into new and possibly challenging information.

Incorporating cultural connections into the learning environment isn't a new concept, but it hasn't been equally dispersed across all populations historically. Looking back, it's easy to find cultural connections for some, but not for others. It's also hard to stay current as culture changes. Today, more than ever, it's necessary that students of color, those with English as their second language, those from other countries, and those who identify within the LGBTQ community can see themselves in what they're learning.

To ensure these connections exist, teachers need to practice culturally relevant teaching, while also being a culturally responsive teacher. This translates to a deeper understanding of the variety of ways culture manifests itself within every aspect of a student's learning experience. It also means a push toward using differentiated instruction in order to tailor learning to all aspects of a student's culture.

The collective and the individual

Allowing a broader reach within the connections students can make to what they're learning offers both an individual and collective experience for students. Individually, they're seeing themselves reflected back. That creates comfort, which builds trust and can lead to a stronger sense of confidence for the individual. From there, myriad academic effects can occur, of which all are good.

The experience is also one for the entire class since it involves a more cultural worldview within the space. Students may learn about individuals, but the collective act creates a deeper understanding of the diversity within the world around them. They learn how to respect and value that diversity.

Becoming a culturally responsive teacher

Integrating cultural references into the classroom can help maximize students' academic achievements. However, doing so requires a sensitivity toward cultural relevance. The first step may be to examine your own implicit bias. Knowing it's there can give you the tools you need to work against it and create a more inclusive environment within your classroom. You can evaluate your own bias using [this test](#) from Harvard.

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Culturally responsive teaching allows students to make meaningful connections between what they're learning and their cultures, languages, and life experiences. As they do this, students are able to better handle rigorous curriculum because they are able to understand the scenarios surrounding the new information. From there, students can develop higher-level academic skills as they're able to focus on the new material since they already see the relevance between what they're learning in school and their daily lives.

The benefits of culturally responsive teaching include:

- reaching all students, no matter their background
- raising expectations for all students
- combating implicit bias
- helping students feel valued, empowered, and a sense of belonging, all of which can help build self-confidence
- building cultural competence through an inclusive curriculum
- supporting social-emotional learning within the classroom

Asking yourself the big question

In order to be a culturally responsive teacher, you must continually think about how your students' cultures are included within your curriculum. This means frequently asking yourself a major question — **How are the lives of my students reflected?**

This question should be asked in relation to curriculum and instruction, but also in regard to the classroom environment itself. Does its appearance and available resources take into consideration the lives, cultures, and experiences of all your students?

If not, consider updating the materials on your walls or change up the selection of books you keep in your classroom. If you have a rotating bulletin board, make sure its themes reflect more than major holidays or events that only cater to the majority. Allow parents to come into the classroom, as well, to teach about their culture and experiences. It's always so rewarding to see students engaged with learning that directly applies to a friend within the class.

Putting the methodology into action

It's okay to start small by recognizing that your classroom needs to be more culturally relevant. Trial and error is always okay while deciding what works best for you and your students, but it's important to apply culturally responsive instruction as a way to enhance your vision as you teach. It's possible to achieve this with a few basic activities.

Identify students' assets

Take time to reflect on each student's strengths and those that are shared among groups. Get to know your students and learn about their lives outside of school. This can help build relationships but also give you clues on how to adapt your teaching. Engage in conversations with students, but don't be afraid to take a more formal route and use surveys or questionnaires.

You can also take a little time to study up on the highlights of other cultures represented in your classroom. Learn about key historical figures, accomplishments, and other elements that would easily fit into your existing curriculum. This is also a great way to engage students, so ask them to share information about their own lives and cultures as well.

Create a classroom environment full of support

When you demonstrate trust and respect in your relationships with students, it won't go unnoticed. Creating a welcoming classroom will inspire students to act in the same way toward each other, allowing them to genuinely learn from each other when the opportunity presents itself.

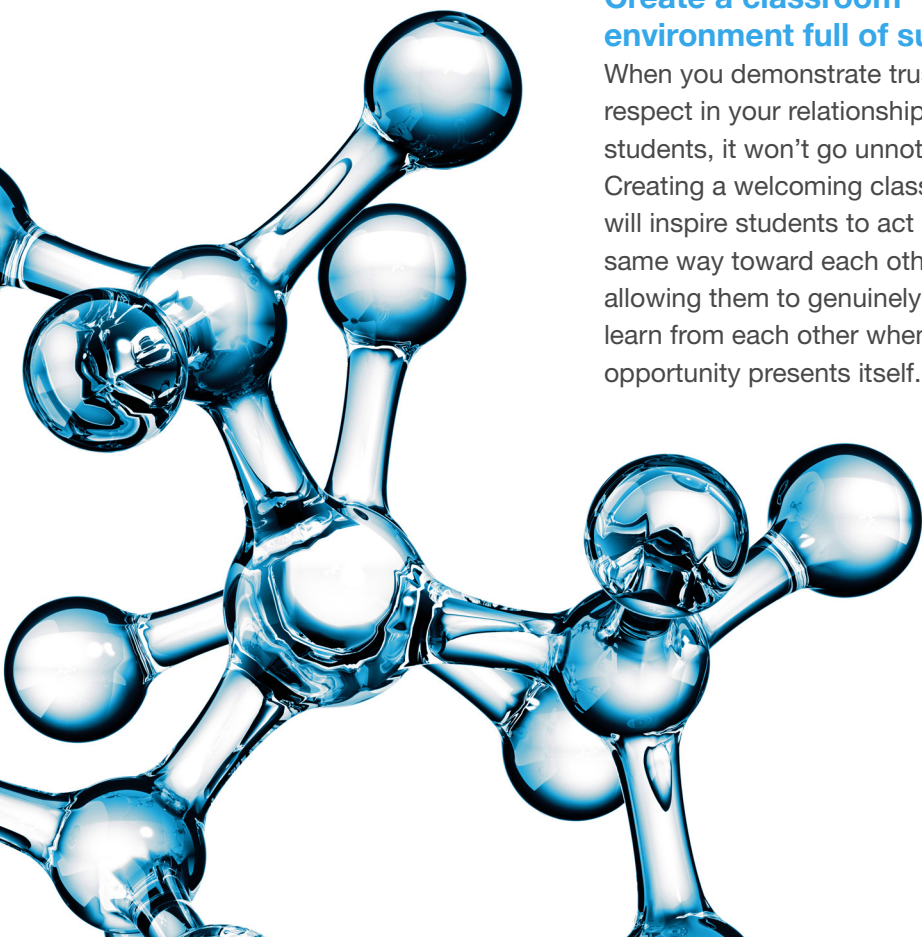
Allow students to share what's happening in their own lives, and make sure you respond with messages of affirmation and encouragement. Give students a chance to reflect on what their peers share in a positive way as well. This may mean getting into subjects that go against the status quo, and that's fine. Students should feel encouraged to talk about tough subjects, even if they're not normally discussed in a teacher-student environment.

Keep a close eye on curriculum

Constant watch on what you're teaching is one of the easiest ways to infuse more cultural representation into your class. As you get to know your students better, you can customize portions of the curriculum to be more inclusive and representative. You can then raise expectations for students and support increased rigor, all because students are able to effectively make connections.

Continue to learn

The opportunity to become more culturally aware is just as much for you as it is for your students. Continuing to learn helps you broaden your own knowledge, deepen your understanding of implicit bias and its effect on our educational infrastructure, and learn how to fight back.



Adapting existing curriculum

Now that you've thought about how to be a culturally responsive teacher, it's time to take a hard look at your curriculum. While you can't change everything, you can make small adjustments and bring in outside sources to supplement a lack of diversity in content you're required to use.

Consider examining the voice in the books students are reading. Is there representation and/or diversity? While you're looking at the books, review existing lesson plans and highlight areas where you can make positive change. Keep in mind that learning is as much about a student's academic needs as it is about making them feel good because they can recognize themselves in the curriculum.

The key elements within a culturally responsive curriculum focus on diversity and representation. You want to ensure multiple voices are shared and all cultural identities are present. You should be open to the difficult conversations this enhanced representation may create as well. It's also necessary to think about access. Simply presenting more cultural examples isn't enough. The different types of learning styles your students exhibit should also be supported so that these culturally diverse examples can be interpreted and absorbed.

Actual practices you can incorporate into your curriculum include:

- **Watching and learning.** Show and discuss relevant, age-appropriate documentaries that address culturally relevant topics. It's important to bring real-world issues into the classroom, and showing carefully crafted, visual content can help make a big impact.
- **Employing games.** Many apps and games today automatically use cultural tools such as solving puzzles, repetition, and more. They're also great for capturing the brain's attention and keeping students engaged.
- **Telling stories.** When students have a cohesive narrative to go with a topic, it's easier for them to remember what they need to know. This trait is not relegated to a specific culture, but spans them all. It's a great equalizer to help students of different backgrounds learn effectively, and also promotes an acceptance and respect for student differences.

Any additional activities should help students develop a broader sociopolitical consciousness. This will help them identify, and be appropriately critical of, cultural norms that create and maintain social inequalities. You can also employ existing resources already geared toward cultural relevance.

Teachers looking to engage in Culturally Responsive Teaching (CRT) in their classroom may struggle to recognize and implement the specific techniques and strategies that best align with this approach.

Following is a guide that shows how the STEMscopes science curriculum provides entry points for using CRT to increase student achievement by helping learners overcome obstacles that often make it difficult for them to connect with each other and the curriculum. This guide breaks down the techniques based on major principles of CRT from the extant literature.



Culturally responsive principle	What it means	How it's applied in the STEMscopes Science curriculum and how it works
Using cultural knowledge and experiences of diverse students	Whenever possible, the teacher should ensure that students have the opportunity for exposure to the unique knowledge and experiences of people from diverse cultures, especially those of historically marginalized people, and of those from their home culture. Often the best way to do this is to make sure students' own voices have a significant role in the classroom.	<ul style="list-style-type: none"> • APK (Accessing Prior Knowledge) [Engage]: This hook, at the beginning of a unit of study, allows students to share what they already know about the topic or phenomenon to be explored. This not only makes the topic more relevant, it provides opportunities for students to learn from others in a diverse classroom. • Discussion Questions [Explore]: Throughout the investigation, students are asked to make sense of what they are studying in classroom discussions. As students make sense of their observations, they naturally do use an approach unique to their own perspective. • Communicate Science [Explain]: In whole-class dialogues, students not only have the opportunity to express their own perspectives, informed by their unique backgrounds, they get the chance to hear from others. • CER (Claim-Evidence-Reasoning) [Evaluate]: This assessment asks students to make a claim and support it with evidence that makes sense to them, providing yet another opportunity to add their own unique voice to the classroom.
Making learning student-centered	Often the teacher and students do not share the same cultural background. No teacher can share the same background as all her students. For this reason, whenever learning is student-centered, it is, by definition, aligned with the students' unique knowledge and experience, informed by their social and cultural background.	<ul style="list-style-type: none"> • Graphic Organizer [Engage]: Students create their own visual representation of their unique understanding of the phenomenon under investigation and update it throughout the unit as their personal understanding changes. • Independent Practice [Intervention]/Extensions [Acceleration]: A student-centered classroom allows for the fact that not all students will progress to the same level at the same time, and so provides resources for students who progress more slowly (Independent Practice) and those who progress more quickly (Extensions).
Emphasizing a community model of learning	Culturally Responsive Teaching is not only concerned with making sure teachers are sensitive to and can effectively navigate interactions with diverse communities, but also seeks to ensure students develop the same skills. To this end, a major tenet of CRT is a model of learning in which students work cooperatively, in large and small groups, to construct a shared understanding.	<ul style="list-style-type: none"> • Investigations [Explore]: Most in-class investigations are designed for work in small groups with ample opportunities for sharing of observations and responding to questions with the entire class. • Communicate Science [Explain]: In whole-class dialogues, students not only have the opportunity to express their own perspectives, informed by their unique background, they get the chance to hear from others.

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Focusing on personal relevance and societal contributions	In a classroom where CRT is practiced, there are multiple opportunities for students to recognize and explore not only how the content is relevant to their everyday lives, but how the application of the learning can be used to improve the lives of individual people and society as a whole.	<ul style="list-style-type: none"> • STEMscopedia [Explain]: Articles in the STEMscopedia go beyond simply describing scientific theories and engineering principles. They often explore how these concepts impact us in our everyday lives, including topics as varied as forest fires and restriction enzymes. • Science Today [Elaborate]: These readings are designed specifically to help students make connections between the science concepts they are learning, and their practical, real-world applications and societal impacts. • Career Connections [Elaborate]: These videos feature interviews with a variety of professionals from a variety of backgrounds explaining how their job relates to the scientific concepts being explored by students. Although many of the careers presented are those typically associated with STEM, students are exposed to new perspectives from those in other professions, such as a farmer or a welder.
Striving for content integration	The culturally responsive teacher seeks to present subject matter content, whenever possible, from a variety of cultural perspectives.	<ul style="list-style-type: none"> • Class Discussions [Engage, Explore, Explain]: One of the most effective ways to ensure the presentation of subject matter from a variety of cultural perspectives is to allow students themselves to share their own, which happens repeatedly in every unit. • Spotlight on Scientists [Elaborate]: In these brief presentations of the lives and work of scientists and engineers, students can see how people from different backgrounds have contributed to our shared knowledge of STEM.

STEMscopes Science demonstrates how it's possible to combine science curriculum with culturally relevant content in a way that doesn't sacrifice the academics a student must learn. It's a modification to bridge the inclusivity gap, not a reduction of academic presence.



Maintaining an inclusive environment

Thinking about one's own classroom, as an educator, it's of course a priority to include every student. You never want an absent learner within the group. It's the mission to see every student succeed. While a lot of time goes into addressing learning styles and motivating students, cultural relevance and culturally responsive teaching are simple tools that may have been previously overlooked.

Prioritizing the inclusion of students' differences into the structure of the class not only gives them an opportunity to see themselves reflected in their learning, but it also motivates, inspires, and provides a way to give others a more worldly view. It allows for an increase in academic rigor since the challenge of connecting students to the materials decreases. It's a positive, important, and helpful way to make a classroom a more inviting and accepting place.

Viewing your class through a culturally inclusive lens could make all the difference for many of your students, while also broadening your own views so that you become an even better educator.

Source Materials

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About Accelerate Learning

Accelerate Learning works with more than 200 practicing teachers who help Accelerate Learning write curriculum, field test lessons and assessment items, and review and edit all materials to ensure factual accuracy, so our curriculum is current and practical for implementation in any type of classroom.

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