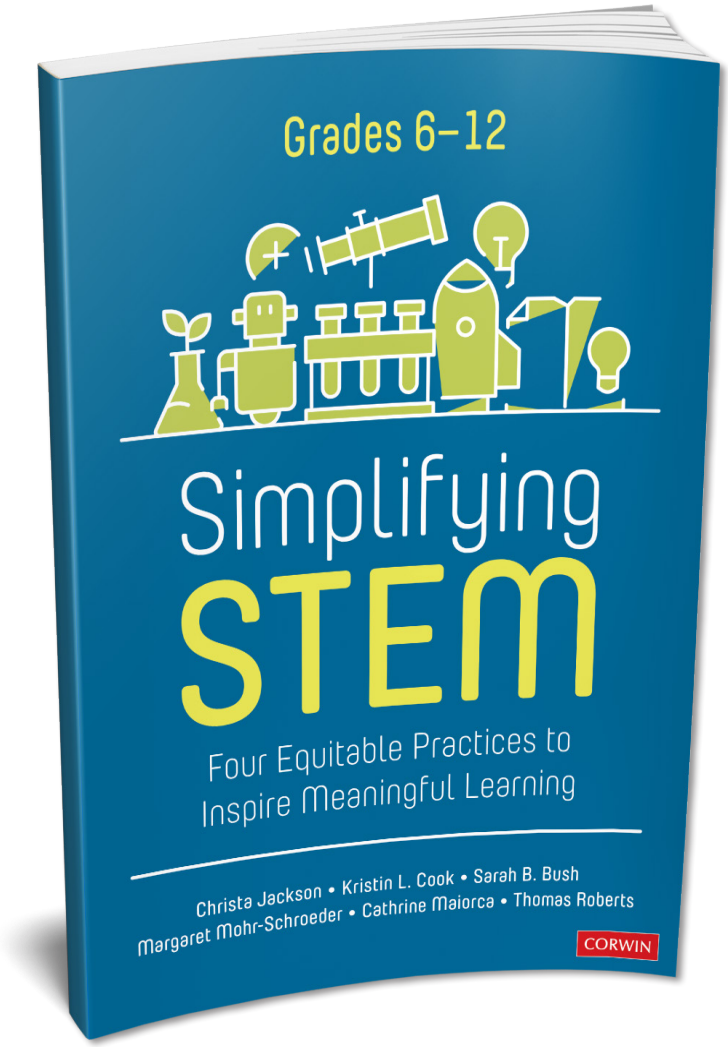

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Table 1.1

Be on the Lookout: STEM Status Quo Characteristics

STEM STATUS QUO CHARACTERISTICS	WHY IT'S HARMFUL IN STEM	HOW WE ADDRESSED IT IN THIS BOOK
Perfectionism	In STEM, we tend to focus on right or wrong and the final solution rather than the progress, and the mistakes that move us toward progress. When we focus on being perfect, or getting it right the first time, we lose out on the learning opportunities. Further, it causes additional anxieties that often build upon each other through subsequent learning experiences. While we can certainly strive for excellence, excellence can be a messy winding road, which is not equivalent to perfection.	We address process, multiple iterations, embracing mistakes, and productive struggle. The chapter-opening stories provide examples of building a culture within the learning experience that embraces messiness, pivots, and has an openness to share and learn new things by all participants, including the educator.
Objectivity	In STEM, there is often the belief that you have to be objective or stay "neutral," especially as it relates to emotions. It can often show up when you are asked to make a "logical" decision, which often means linear decision-making without regard or thoughts of others.	We emphasize and encourage empathy in solution seeking. Empathy is often how our scholars connect with each other—within and outside their lived experiences. Listening, getting feedback, and researching the impact of an idea or solution on others helps to take in all perspectives and voices.
One Right Way	In STEM, most often in mathematics, there is often the belief or underlying notion that there is only one right way or a preferred way to complete something. When someone doesn't do it the same way as others, the others assume the other way is the wrong way.	We share examples and stories that embrace scholars' sharing multiple solutions and ideas. The rubrics make explicit that the expectation is multiple iterations of trials. We are more focused on the process rather than the final solution.
Paternalism	In STEM, this shows up as someone who holds a position of power and controls the decision-making and defines rules, criteria, policy, and so on. This shows up in education, especially when scholars know they do not have the power and are marginalized from decision-making processes.	It is easy to think that in education, a teacher is always going to be paternalistic. However, we point out direct ways to give choice to scholars, elevate their voices, and provide open spaces for them to give input in deciding success criteria.

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STEM STATUS QUO CHARACTERISTICS	WHY IT'S HARMFUL IN STEM	HOW WE ADDRESSED IT IN THIS BOOK
Qualified	In STEM, when we talk of someone being "qualified," the criteria are not always consistent or clear, and the notions can be based on antiquated definitions of success (e.g., the one speaking the loudest must be confident and thus correct; the one who is the first to take credit must be the one who knows the most). We also might incorrectly think that only adults with specialized degrees and skills can contribute solutions to authentic STEM obstacles.	We present inclusionary language when sharing stories and positioning scholars within the suggested learning experience. Within the learning experiences, the scholars are the experts. They are the ones carrying out the practices, producing the various solutions or ideas, and communicating them to the various stakeholders. The only qualification a scholar needs in your classroom or setting is to be present, in whatever way that looks for them.
Either/Or and the Binary	In STEM, this positions ideas, solutions, options, issues, and so on as yes or no; either/or; right or wrong; for or against; and so forth. In STEM especially, this type of thinking tends to oversimplify, in a negative way, the complex tasks or experiences our scholars often face in their life.	We encourage the use of multiple options (beyond two) and an openness to what these options or scenarios look like.
Progress Is Bigger/ More and Quantity Over Quality	In life and in STEM, we live in a more is better, bigger is better society. However, sometimes solutions in STEM involve taking away factors, simplifying processes, and taking less actions rather than more. In other words, subtracting can also be a solution, not just adding. Sometimes more people, materials, or money are associated with progress, but this isn't always the case.	We include a focused emphasis on progress being more about the quality of the product, idea, or trial. Further, there is less emphasis on doing something repeatedly over and over again until you achieve "memorization" or "retainment." Rather, we focus on meaningful interactions with the content that will help to forge a connection between the scholar, the content, and the experience.
Defensiveness	In STEM, this usually shows up in the response to feedback to an idea, solution, scenario, and so on. Instead of thinking and taking in the feedback, we are prone to get defensive and start forming our defensive answers in our head, thus taking away the ability to listen and reflect. Further, when defensiveness shows up, it will often shut down those who are participating as it makes it difficult to raise new ideas and thus those who are met with defensiveness may be afraid to speak their ideas or truth.	We include various ways scholars' voices are and can be elevated, especially in giving feedback. We also include strategies for how feedback can be received in a more useful way.

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STEM STATUS QUO CHARACTERISTICS	WHY IT'S HARMFUL IN STEM	HOW WE ADDRESSED IT IN THIS BOOK
Power Hoarding	In STEM, this is most often seen in collaborative settings, or settings where multiple people engage with one another. It is harmful in that someone tries to exert their power or control into or over a situation. Many times, they see themselves as doing what's "best" for the group and others.	We share stories about collaborative experiences where scholars are working together and sharing ideas. In the examples and diving deeper, there is a continued focus on collaboration. In real-world contexts, collaboration is a key component within the community or workplace. Creating shared, positive, collaborative experiences with scholars can help define and provide examples to scholars of how groups can function together toward their main goal or focus.
Urgency	In STEM, this shows up often in timelines and deadlines. How fast can we get something finished, even if it's poor quality. Further, timed tests or events create a sense of urgency that is unreasonable and unrealistic in real-world contexts.	We emphasize the practices as processes that don't necessarily have an endpoint. Or if there is an endpoint, it can look different for different groups of scholars. When addressing urgency, it's important to underscore setting realistic expectations and including scholars in the conversation about realistic expectations. This not only helps to elevate their voices and disrupt the STEM status quo characteristic—paternalism—but also helps them to have ownership in creating a realistic timeline or expectations to complete within a given time period.

Source: Adapted in part from the ideas in Okun (2021); Hawthorne (2022). See these for more examples and antidotes.