

When accomplished STEM teachers **facilitate productive whole class discussions**, they may do one or more of the following:

<input type="checkbox"/> Explicitly establish, refer to, and/or maintain norms that support whole class discussion (T31)
<input type="checkbox"/> Justify the importance of whole class discussions as a powerful STEM learning strategy (T56)
<input type="checkbox"/> Provide clear expectations for how every student is accountable to the whole group's work (T60)
<input type="checkbox"/> Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
<input type="checkbox"/> Ask many "why?" questions that require justification or elaboration (T2)
<input type="checkbox"/> Ask probing questions and follow-up questions of all students (T5)*
<input type="checkbox"/> Ask questions of the whole class (not only to individual students) (T7)
<input type="checkbox"/> Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ*
<input type="checkbox"/> Avoid focusing on right and wrong answers (T24)
<input type="checkbox"/> Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)
<input type="checkbox"/> Model active listening (T36)
<input type="checkbox"/> Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *
<input type="checkbox"/> Pause discussions to name instances in which valued norms are being upheld appropriately (T72)
<input type="checkbox"/> Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ *
<input type="checkbox"/> Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90)
<input type="checkbox"/> Restate or summarize student ideas, as appropriate (T121)
<input type="checkbox"/> Support students discussing similarities and differences among ideas/thinking (T129)
<input type="checkbox"/> Work to facilitate students taking up and building on each others' ideas (T131)
<input type="checkbox"/> Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ
<input type="checkbox"/> Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67)

In these classrooms we expect to see a diverse range of students...

<input type="checkbox"/> Asking questions of the teacher and other students to clarify their own thinking (S11) ✪ Δ
<input type="checkbox"/> Relying on each other instead of or before relying on the teacher (S16) Δ
<input type="checkbox"/> Respectfully interrupting each other (S17) Δ
<input type="checkbox"/> Spontaneously volunteering ideas without prompting from the teacher (S39) ✪ *
<input type="checkbox"/> Spontaneously comparing and contrasting each others' ideas (S38) Δ
<input type="checkbox"/> Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
<input type="checkbox"/> Adjusting the physical environment or their place in it to better support their learning (e.g., moving their desk closer to a peer) (S44)



When accomplished STEM teachers **facilitate productive whole class discussions**, they may do one or more of the following:

ALWAYS		STRATEGICALLY	
More Straightforward:	More Challenging:	More Straightforward:	More Challenging:
<p>___ Ask many “why?” questions that require justification or elaboration (T2)</p> <p>___ Ask probing questions and follow-up questions of all students (T5)*</p> <p>___ Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)</p>	<p>___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ*</p> <p>___ Avoid focusing on right and wrong answers (T24)</p> <p>___ Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90)</p>	<p>___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ⚡ Δ*</p> <p>___ Model active listening (T36)</p> <p>___ Make clear that all student ideas are “fair game” for examination and discussion (T58) ⚡ Δ*</p> <p>___ Provide clear expectations for how every student is accountable to the whole group’s work (T60)</p> <p>___ Pause discussions to name instances in which valued norms are being upheld appropriately (T72)</p> <p>___ Ask questions of the whole class (not only to individual students) (T7)</p> <p>___ Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67)</p>	<p>___ Explicitly establish, refer to, and/or maintain norms that support whole class discussion (T31)</p> <p>___ Justify the importance of whole class discussions as a powerful STEM learning strategy (T56)</p> <p>___ Invite and expect all students to ask questions about each others’ ideas (T78) ⚡ Δ*</p> <p>___ Support students discussing similarities and differences among ideas/thinking (T129)</p> <p>___ Work to facilitate students taking up and building on each others’ ideas (T131)</p> <p>___ Quickly weigh the benefits, costs, and implications of focusing on some students’ ideas over others (T153) Δ</p> <p>___ Restate or summarize student ideas, as appropriate (T121)</p>

In these classrooms we expect to see a diverse range of students...

___ Asking questions of the teacher and other students to clarify their own thinking (S11) ⚡ Δ
___ Relying on each other instead of or before relying on the teacher (S16) Δ
___ Respectfully interrupting each other (S17) Δ
___ Spontaneously volunteering ideas without prompting from the teacher (S39) ⚡*
___ Spontaneously comparing and contrasting each others’ ideas (S38) Δ
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Adjusting the physical environment or their place in it to better support their learning (e.g., moving their desk closer to a peer) (S44)