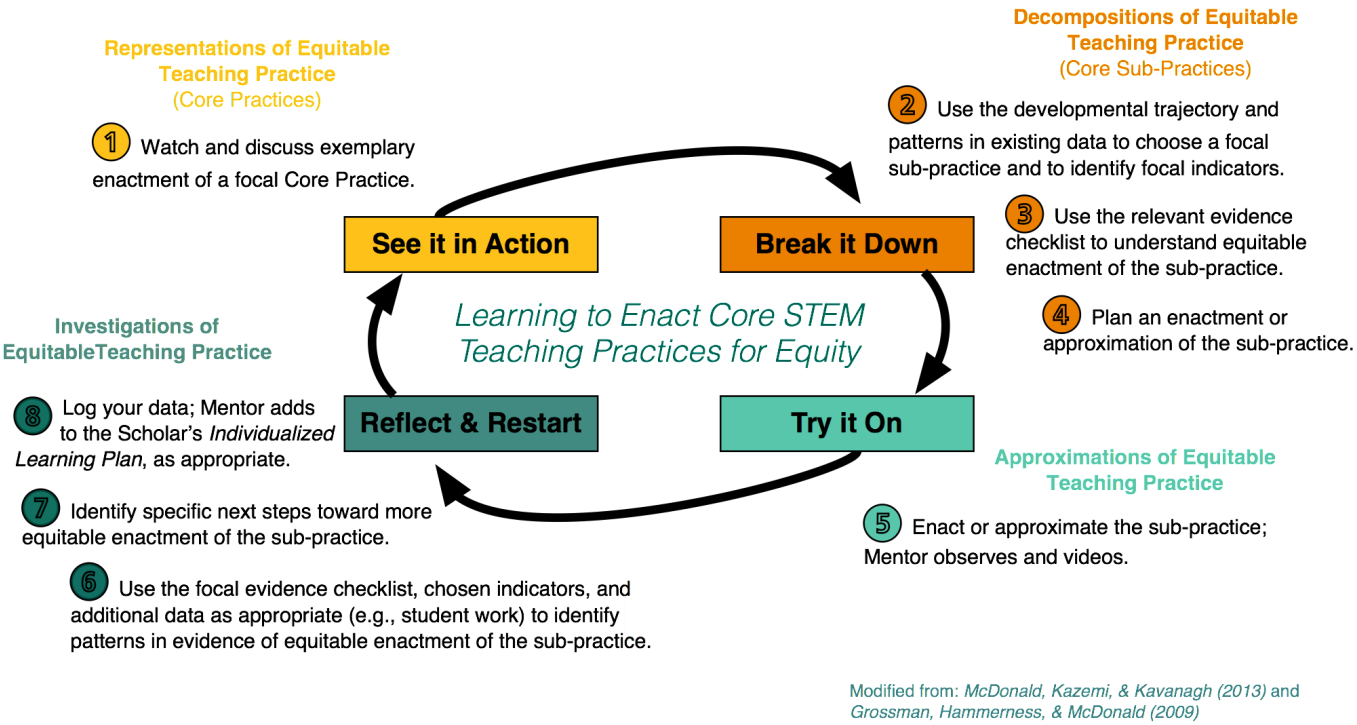
ALL EVIDENCE CHECKLISTS - Core STEM Teaching Practice

Core Practice *What do accomplished STEM teachers DO to facilitate student learning?*	Decompositions of Practice ("Sub-Practices") *What bite-size chunks of practice make up what accomplished STEM teachers do (with fluency and automaticity) in each activity?*
1. Facilitate productive STEM discourse (CA TPE 4, 5) (CA STP 2, 3, 4, 5) (NBPTS AYA Math I, V, VI and Science III, V)	• Support students drawing conclusions from given data, models and explanations (Y0)* • Support students articulating, justifying, evaluating, and revising models, arguments, and ideas (Y1-2)* • Press students for evidence-based explanations (Y0) • Facilitate productive whole class discussions (Y3-4) • Facilitate productive small group work (Y1-2)
2. Develop distinct classroom community and culture (CA TPE 1, 2, 4) (CA STP 1, 2, 3, 4) (NBPTS AYA Math I, II, III, IV, V, VI and Science I, III, V, VIII)	• Choose tasks and activity structures to position all students as competent scientific/mathematical thinkers (Y3-4) Establish and maintain norms for students to: o Articulate, justify, evaluate, and revise models, arguments, and ideas (Y0)* o Struggle, be wrong, and persevere (Y1-2)* o Participate equitably in whole class discussions (Y3-4) o Participate equitably in small group work (Y1-2)
3. Elicit, represent, and capitalize on students' ideas (CA TPE 1, 2, 4, 5) (CA STP 1, 2, 3, 4) (NBPTS AYA Math I, III, IV, VI and Science III, IV, V, VIII)	• Construct and organize a variety of public records of student thinking (Y0) • Predict and capitalize on students' errors and misconceptions (Y3-4) • Facilitate productive struggle (Y1-2)* • Support students making connections across models, arguments, and ideas (Y1-2) • Pose purposeful questions (Y0)* • Use student ideas to make strategic decisions about next instructional steps (Y3-4)
4. Plan for engagement with important STEM ideas (CA TPE 1, 2, 3, 4, 5) (CA STP 1, 2, 3, 4, 5) (NBPTS AYA Math I, II, IV, VII and Science I, II, III, IV, VIII)	• Unpack curricula and standards to establish meaningful learning goals (Y3-4) • Anchor instruction in complex and puzzling natural events (Y3-4) • Analyze, choose, and modify tasks for specific learning goals (Y1-2) • Anticipate a wide variety of student strategies and thinking (Y0) • Organize sequence(s) of learning experiences (Y1-2)
5. Collect, make sense of, and respond to evidence of student learning (CA TPE 1, 2, 3, 4, 5) (CA STP 1, 2, 3, 4, 5) (NBPTS AYA Math I, III, IV, VII and Science IV, VIII)	• Collect and use diverse evidence of student learning (Y3-4) • Check for understanding in multiple, strategic forms (Y0-3) • Make sense of student thinking to inform instruction (Y1-2) • Provide targeted oral and written feedback (Y3-4)
6. Use STEM content knowledge strategically (CA TPE 1, 3, 4) (CA STP 1, 2, 3, 4) (NBPTS AYA Math I, II, III, IV and Science I, II, III, IV, VIII)	• Offer detailed, relatable explanations (Y1-2) • Develop models, analogies, and examples (Y1-2) • Recognize and respond to common patterns in student thinking (Y3-4) • Connect multiple representations to one another (Y3-4)

KEY:
(Y#) = Year(s) in which the sub-practice is the focus of mentoring work
***** Suggested focal sub-practice to begin the school year

LINK to All Digital Forms for Gathering & Tracking Data

At-A-Glance User Guidelines



Modified from: *McDonald, Kazemi, & Kavanagh (2013)* and *Grossman, Hammerness, & McDonald (2009)*

For any one indicator on a focal evidence checklist for a particular observation or approximation,	
Use a...	**To reflect...**
3	• There was full, consistent, and clear evidence of the indicator. • All evidence of the indicator was visible and/or audible. • **A 3+ designation reflects the above AND clear evidence of valued student learning.**
2	• There was partial and/or inconsistent evidence of the indicator. • Most or all evidence of the indicator was visible and/or audible.
1	• There was opportunity to see evidence of this indicator but it was not visible or audible in the focal enactment/approximation. • No evidence of the indicator was visible and/or audible.
N/A (default)	• There was no opportunity to see evidence of this indicator. OR • The indicator was not in focus (as decided in planning for the enactment/approximation in Step 4 of the *Learning Cycle*).
KEY	✪ High Leverage Equity Indicators Δ High Leverage Growth indicators that appear across all 6 years of Trellis * Focal Indicators

When accomplished STEM teachers
support students drawing conclusions from given data, models, and explanations,
they may do one or more of the following:

___ Model what constitutes an evidence-based explanation in STEM disciplines (T40)
___ Model what drawing a conclusion looks/sounds like (T41)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ *
___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ
___ Ask a variety of students to share ideas, when appropriate (T1) ✪
___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ
___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ
___ Assign competence to students in authentic ways (T68) ✪ Δ *
___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪
___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ
___ Take all student ideas and contributions seriously (T82) ✪ *
___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ
___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ
___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109)
___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ
___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪ *
___ Provide digital, written and/or oral feedback after public sharing (T17) Δ
___ Ask students to synthesize ideas (T105)

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

___ Explaining others' models, arguments, and ideas (S27)
___ Monitoring and evaluating their progress toward a specific goal and changing course as necessary (S50)
___ Relying on each other instead of or before relying on the teacher (S16) Δ
___ Respectfully interrupting each other (S17) Δ
___ Spontaneously comparing and contrasting each others' ideas (S38) Δ
___ Spontaneously volunteering ideas without prompting from the teacher (S39) ✪ *
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*

Evidence Checklist	**Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
support students drawing conclusions from given data, models, and explanations,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask students to synthesize ideas (T105)	___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ * ___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ* ___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ ___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ * ___ Take all student ideas and contributions seriously (T82) ✪ *	___ Ask a variety of students to share ideas, when appropriate (T1) ✪ ___ Model what constitutes an evidence-based explanation in STEM disciplines (T40) ___ Model what drawing a conclusion looks/sounds like (T41) ___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪ ___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪ * ___ Provide digital, written and/or oral feedback after public sharing (T17) Δ	___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ ___ Assign competence to students in authentic ways (T68) ✪ Δ * ___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ * ___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ ___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109) ___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ

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

___ Explaining others' models, arguments, and ideas (S27)
___ Monitoring and evaluating their progress toward a specific goal and changing course as necessary (S50)
___ Relying on each other instead of or before relying on the teacher (S16) Δ
___ Respectfully interrupting each other (S17) Δ
___ Spontaneously comparing and contrasting each others' ideas (S38) Δ
___ Spontaneously volunteering ideas without prompting from the teacher (S39) ✪ *
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*

Evidence Checklist **Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
support students articulating, justifying, evaluating, and revising models, arguments, and ideas,
they may do one or more of the following:

___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪
___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48)
___ Justify the importance of creating, articulating, justifying, evaluating, and revising models, arguments, and ideas as a powerful STEM learning strategy (T53)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117)
___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ*
___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ
___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)
___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*
___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ *
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)*
___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ *
___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ
___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪*
___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114)
___ Support students articulating what they understand and/or showing what they can do (T128)
___ Provide digital, written and/or oral feedback after public sharing (T17) Δ
___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ
___ Ask students to synthesize ideas (T105)

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

___ Actively evaluating the reasonableness of their conclusions and the conclusions of others (S18) ✪*
___ Articulating if they agree or disagree with a presented/shared claim (S20)
___ Clarifying and building on their and other students' ideas (S23)*
___ Comparing and contrasting ideas (S24)
___ Defending and justifying their answers with little or no prompting from the teacher (S26) ✪*
___ Restating others' ideas in their own words (S57)
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

Evidence Checklist	**Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
support students articulating, justifying, evaluating, and revising models, arguments, and ideas,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask students to synthesize ideas (T105) ___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*	___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ ___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ* ___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ ___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪* ___ Support students articulating what they understand and/or showing what they can do (T128)	___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Provide digital, written and/or oral feedback after public sharing (T17) Δ ___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪ ___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48) ___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44) ___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ * ___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ	___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ * ___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ ___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)* ___ Justify the importance of creating, articulating, justifying, evaluating, and revising models, arguments, and ideas as a powerful STEM learning strategy (T53) ___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117) ___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114)

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

___ Actively evaluating the reasonableness of their conclusions and the conclusions of others (S18) ✪*
___ Articulating if they agree or disagree with a presented/shared claim (S20)
___ Clarifying and building on their and other students' ideas (S23)*
___ Comparing and contrasting ideas (S24)
___ Defending and justifying their answers with little or no prompting from the teacher (S26) ✪*
___ Restating others' ideas in their own words (S57)
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

When accomplished STEM teachers
press students for evidence-based explanations,
they may do one or more of the following:

___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪
___ Model what constitutes an evidence-based explanation in STEM disciplines (T40)
___ Model what drawing a conclusion looks/sounds like (T41)
___ Ask many "why?" questions that require justification or elaboration (T2)
___ Ask probing questions and follow-up questions of all students (T5)*
___ Ask questions that cannot easily be reduced to closed questions (T8)
___ Ask questions that will help students go deeper in their explanation (T9)
___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ*
___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ
___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *
___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87)
___ Take all student ideas and contributions seriously (T82) ✪ *
___ Ask students to clarify and expand on their thinking and the thinking of others (T104)
___ Consistently clarify and expand on student thinking (T93)
___ Hold students accountable to asking and responding to challenging questions (T112)
___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114)
___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118)

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

___ Articulating why they agree or disagree with a presented/shared claim (S21) ✪
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪ *
___ Initiating talk with other students (S49)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪
___ Repeating and/or following-up their own or others' questions until satisfied with peers' answers (S56) ✪
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

Evidence Checklist	**Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
press students for evidence-based explanations,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask many "why?" questions that require justification or elaboration (T2) ___ Ask probing questions and follow-up questions of all students (T5)* ___ Ask questions that cannot easily be reduced to closed questions (T8) ___ Ask students to clarify and expand on their thinking and the thinking of others (T104)	___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ* ___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ ___ Take all student ideas and contributions seriously (T82) ✪* ___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87) ___ Consistently clarify and expand on student thinking (T93)	___ Model what constitutes an evidence-based explanation in STEM disciplines (T40) ___ Model what drawing a conclusion looks/sounds like (T41) ___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪ ___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *	___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114) ___ Ask questions that will help students go deeper in their explanation (T9) ___ Hold students accountable to asking and responding to challenging questions (T112) ___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118)

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

___ Articulating why they agree or disagree with a presented/shared claim (S21) ✪
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪*
___ Initiating talk with other students (S49)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪
___ Repeating and/or following-up their own or others' questions until satisfied with peers' answers (S56) ✪
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

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

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

___ 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)

Evidence Checklist	**Core Practice:** Facilitate Productive STEM Discourse

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

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)

Evidence Checklist **Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
facilitate productive small group work,
they may do one or more of the following:

___ Justify the importance of small group work as a powerful STEM learning strategy (T54)
___ Make clear how small group work will be assessed (T57)
___ Provide clear expectations for how every student is engaged in the small group's work (T61)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133)
___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140)
___ Use a strategic, equitable, and explicit process for creating groups (T143) ✪
___ Ask questions of designated reporters (T6)
___ Consistently gather information about the nature and content of small group work (T16)
___ Move among and interact with small groups in order to make sense of how students' ideas are developing (T13) ✪
___ Identify the difference between productive struggle and sheer frustration, and intervene meaningfully in the latter (T35)
___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73)
___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)
___ Spend equitable time with all groups (T122)
___ Work with one group or student while also maintaining the engagement of the rest of the class (T132)
___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137)
___ Interact with groups with a purpose and in relation to learning goals (T138) ✪
___ Track student contributions (T18)
___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74)
___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63)

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
___ Knowing when independent work is appropriate in small group work (S13)
___ Relying on each other instead of or before relying on the teacher (S16) Δ
___ Respectfully interrupting each other (S17) Δ
___ 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)

Evidence Checklist	**Core Practice:** Facilitate Productive STEM Discourse

When accomplished STEM teachers
facilitate productive small group work,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)	___ Use a strategic, equitable, and explicit process for creating groups (T143) ✪ ___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133) ___ Work with one group or student while also maintaining the engagement of the rest of the class (T132) ___ Spend equitable time with all groups (T122)	___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Provide clear expectations for how every student is engaged in the small group's work (T61) ___ Make clear how small group work will be assessed (T57) ___ Move among and interact with small groups in order to make sense of how students' ideas are developing (T13) ✪ ___ Track student contributions (T18) ___ Ask questions of designated reporters (T6) ___ Interact with groups with a purpose and in relation to learning goals (T138) ✪ ___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73) ___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74) ___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63)	___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137) ___ Justify the importance of small group work as a powerful STEM learning strategy (T54) ___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140) ___ Identify the difference between productive struggle and sheer frustration, and intervene meaningfully in the latter (T35) ___ Consistently gather information about the nature and content of small group work (T16)

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
___ Knowing when independent work is appropriate in small group work (S13)
___ Relying on each other instead of or before relying on the teacher (S16) Δ
___ Respectfully interrupting each other (S17) Δ
___ 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)

Evidence Checklist **Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
choose tasks and activity structures to position all students as competent scientific/mathematical thinkers, they may do one or more of the following:

___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ
___ Explain and justify an organizational routine or activity structure to students (e.g., "Today we will work in groups of three because…") (T45)
___ Anticipate and validate different approaches to a task (T83)
___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133)
___ Use organizational routines or activity structures that allow all students to participate equitably and that directly address issues of status (e.g., complex instruction) (T144) ✪
___ Model productive struggle (T37)
___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69)
___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *
___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ *
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Redirect questions of other students' thinking back to students to consider and answer (T88)
___ Scaffold and support students without decreasing cognitive demand (T92)
___ When ideas are re-phrased or summarized, ensure that they reflect the author's intent (T89)
___ Consistently make student thinking visible (T94) Δ
___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ
___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137)
___ Provide individual feedback to students on their engagement in an organizational routine or activity structure (T65)
___ Reflect with students on the use of a particular organizational routine or activity structure (T76)
___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)

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

___ Adjusting the physical environment or their place in it to better support their learning (e.g., moving their desk closer to a peer) (S44)
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Answering questions with confidence (S10)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Initiating talk with other students (S49)
___ Participating actively and equitably in classroom work (S32) ✪ *
___ Taking obvious pride in their work (S60)
___ Using scientific and mathematical language (S42) ✪ Δ *

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
choose tasks and activity structures to position all students as competent scientific/mathematical thinkers, they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Explain and justify an organizational routine or activity structure to students (e.g., "Today we will work in groups of three because…") (T45) ___ Consistently make student thinking visible (T94) Δ	___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ ___ Use organizational routines or activity structures that allow all students to participate equitably and that directly address issues of status (e.g., complex instruction) (T144) ✪ ___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ * ___ Anticipate and validate different approaches to a task (T83) ___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ ___ Scaffold and support students without decreasing cognitive demand (T92)	___ Model productive struggle (T37) ___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ * ___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69) ___ Redirect questions of other students' thinking back to students to consider and answer (T88) ___ When ideas are re-phrased or summarized, ensure that they reflect the author's intent (T89) ___ Provide individual feedback to students on their engagement in an organizational routine or activity structure (T65) ___ Reflect with students on the use of a particular organizational routine or activity structure (T76)	___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133) ___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137) ___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ ___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)

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

___ Adjusting the physical environment or their place in it to better support their learning (e.g., moving their desk closer to a peer) (S44)
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Answering questions with confidence (S10)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Initiating talk with other students (S49)
___ Participating actively and equitably in classroom work (S32) ✪ *
___ Taking obvious pride in their work (S60)
___ Using scientific and mathematical language (S42) ✪ Δ *

When accomplished STEM teachers
establish and maintain norms for students to articulate, justify, evaluate, and revise models, arguments, and ideas,
they may do one or more of the following:

___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ
___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ
___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪
___ Model what constitutes an evidence-based explanation in STEM disciplines (T40)
___ Model what drawing a conclusion looks/sounds like (T41)
___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ
___ Explicitly state the value of sharing ideas with others as expected and an opportunity for learning (T52)
___ Justify the importance of creating, articulating, justifying, evaluating, and revising models, arguments, and ideas as a powerful STEM learning strategy (T53)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ
___ Model active listening (T36)
___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ *
___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ*
___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ *
___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ
___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ *
___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109)
___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ
___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ
___ Reflect with students on the use of a particular organizational routine or activity structure (T76)

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

___ Listening actively and respectfully (S14)
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Participating actively and equitably in classroom work (S32) ✪ *
___ Using scientific and mathematical language (S42) ✪ Δ *
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪ *
___ Holding each other accountable to asking questions of one another (S48)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
establish and maintain norms for students to create, articulate, justify, evaluate, and revise models, arguments, and ideas,
they may do one or more of the following:

ALWAYS	**STRATEGICALLY**	
	More Straightforward:	*More Challenging:*
___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ ___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ	___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ ___ Explicitly state the value of sharing ideas with others as expected and an opportunity for learning (T52) ___ Model what constitutes an evidence-based explanation in STEM disciplines (T40) ___ Model what drawing a conclusion looks/sounds like (T41) ___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪ ___ Model active listening (T36) ___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ ___ Make clear that all student ideas are "fair game" for examination and discussion (T58) ✪ Δ * ___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ* ___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ ___ Reflect with students on the use of a particular organizational routine or activity structure (T76)	___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ * ___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109) ___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ ___ Justify the importance of creating, articulating, justifying, evaluating, and revising models, arguments, and ideas as a powerful STEM learning strategy (T53) ___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ * ___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Listening actively and respectfully (S14)
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Participating actively and equitably in classroom work (S32) ✪ *
___ Using scientific and mathematical language (S42) ✪ Δ *
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪ *
___ Holding each other accountable to asking questions of one another (S48)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *

When accomplished STEM teachers
establish and maintain norms for students to struggle, be wrong, and persevere,
they may do one or more of the following:

___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28)
___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ
___ Acknowledge that struggling and being wrong are part of STEM learning and require courage (e.g., naming a "growth mindset") (T42)
___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48)
___ Explicitly name pre/misconceptions and errors as expected and opportunities for learning (T50)
___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ
___ Justify the importance of struggling, making mistakes, and persevering in STEM learning (T55)
___ Actively foster a growth mindset (T32) ✪*
___ Explicitly encourage and celebrate scientific/mathematical risk-taking and bravery (T29)
___ Make the examination of errors and misconceptions a consistent part of classroom work (T33)
___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ
___ Model productive struggle (T37)
___ Explicitly encourage and celebrate resilience and perseverance (T47)
___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ*
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*
___ Actively discuss errors and misconceptions (T103)
___ Hold students accountable to asking and responding to challenging questions (T112)
___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59)

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

___ Actively using mistakes as learning opportunities (S8) ✪*
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪*
___ Expressing frustration appropriately (S47)
___ Owning mistakes with pride (S65)
___ Sharing when they are feeling frustrated and the reasons for their struggle (S58)
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
establish and maintain norms for students to struggle, be wrong, and persevere,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪ * ___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28) ___ Explicitly encourage and celebrate scientific/mathematical risk-taking and bravery (T29) ___ Explicitly encourage and celebrate resilience and perseverance (T47)	___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ ___ Actively foster a growth mindset (T32) ✪ * ___ Make the examination of errors and misconceptions a consistent part of classroom work (T33) ___ Actively discuss errors and misconceptions (T103)	___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ ___ Explicitly name pre/misconceptions and errors as expected and opportunities for learning (T50) ___ Model productive struggle (T37) ___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ ___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48) ___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ* ___ Acknowledge that struggling and being wrong are part of STEM learning and require courage (e.g., naming a "growth mindset") (T42) ___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59)	___ Hold students accountable to asking and responding to challenging questions (T112) ___ Justify the importance of struggling, making mistakes, and persevering in STEM learning (T55)

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

___ Actively using mistakes as learning opportunities (S8) ✪ *
___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪ *
___ Expressing frustration appropriately (S47)
___ Owning mistakes with pride (S65)
___ Sharing when they are feeling frustrated and the reasons for their struggle (S58)
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

When accomplished STEM teachers
establish and maintain norms for students to participate equitably in whole class discussions,
they may do one or more of the following:

___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ
___ Explicitly establish, refer to, and/or maintain norms that support whole class discussion (T31)
___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ
___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ
___ Justify the importance of whole class discussions as a powerful STEM learning strategy (T56)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)
___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ
___ Assign competence to students in authentic ways (T68) ✪ Δ *
___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ*
___ Pause discussions to name instances in which valued norms are being upheld appropriately (T72)
___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ *
___ Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90)
___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ *
___ Work to facilitate students taking up and building on each others' ideas (T131)
___ Engage students in whole class discussion intentionally with respect to particular learning goals (T151) ✪
___ Track student contributions (T18)
___ Provide individual feedback to students on the ways they participate (or not) in whole class discussions (T64)
___ Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67)
___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ
___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ

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

___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clarifying and building on their and other students' ideas (S23)*
___ Holding each other accountable to asking questions of one another (S48)
___ Naming and offering suggestions to address status issues (S15) ✪
___ Participating actively and equitably in whole class discussions (S34) ✪
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*
___ Using scientific and mathematical language (S42) ✪ Δ *

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
establish and maintain norms for students to participate equitably in whole class discussions,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)	___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ ___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ * ___ Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90) ___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ	___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ ___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ ___ Track student contributions (T18) ___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ* ___ Pause discussions to name instances in which valued norms are being upheld appropriately (T72) ___ Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67) ___ Provide individual feedback to students on the ways they participate (or not) in whole class discussions (T64)	___ Explicitly establish, refer to, and/or maintain norms that support whole class discussion (T31) ___ Justify the importance of whole class discussions as a powerful STEM learning strategy (T56) ___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ ___ Assign competence to students in authentic ways (T68) ✪ Δ * ___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ * ___ Work to facilitate students taking up and building on each others' ideas (T131) ___ Engage students in whole class discussion intentionally with respect to particular learning goals (T151) ✪ ___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clarifying and building on their and other students' ideas (S23)*
___ Holding each other accountable to asking questions of one another (S48)
___ Naming and offering suggestions to address status issues (S15) ✪
___ Participating actively and equitably in whole class discussions (S34) ✪
___ Using language support structures (e.g., sentence stems, word lists, etc.) to start and participate in small group conversation (S40) Δ*
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

___ Using scientific and mathematical language (S42) ✪ Δ *

Evidence Checklist — **Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
establish and maintain norms for students to participate equitably in small group work, they may do one or more of the following:

___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ
___ Explicitly establish, refer to, and/or maintain norms that support productive small group work (e.g., no one is done until everyone understands) (T30) ✪
___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ
___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ
___ Make clear how small group work will be assessed (T57)
___ Provide clear expectations for how every student is engaged in the small group's work (T61)
___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133)
___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140)
___ Use a strategic, equitable, and explicit process for creating groups (T143) ✪
___ Consistently gather information about the nature and content of small group work (T16)
___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ
___ Assign competence to students in authentic ways (T68) ✪ Δ *
___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73)
___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)
___ Track student contributions (T18)
___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74)
___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63)
___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clarifying and building on their and other students' ideas (S23)*
___ Knowing when independent work is appropriate in small group work (S13)
___ Naming and offering suggestions to address status issues (S15) ✪
___ Naming and reinforcing roles within their group (S51)
___ Participating actively and equitably in small group work (S33) ✪
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*
___ Using scientific and mathematical language (S42) ✪ Δ *

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
establish and maintain norms for students to participate equitably in small group work, they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)	___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ ___ Use a strategic, equitable, and explicit process for creating groups (T143) ✪ ___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133) ___ Swiftly and effectively redirect behavior violating valued norms (T34) Δ	___ Provide language support structures (e.g., sentence stems, word lists, etc.) (T66) ✪ Δ * ___ Explicitly name, describe, and provide documentation about valued norms (T51) Δ ___ Model valued norms and/or provide opportunities for students to practice them (T38) Δ ___ Provide clear expectations for how every student is engaged in the small group's work (T61) ___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74) ___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63) ___ Track student contributions (T18) ___ Make clear how small group work will be assessed (T57) ___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73)	___ Explicitly establish, refer to, and/or maintain norms that support productive small group work (e.g., no one is done until everyone understands) (T30) ✪ ___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140) ___ Assign competence to students in authentic ways (T68) ✪ Δ * ___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ ___ Consistently gather information about the nature and content of small group work (T16)

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

___ Answering others' questions thoughtfully and completely (S9) Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clarifying and building on their and other students' ideas (S23)*
___ Knowing when independent work is appropriate in small group work (S13)
___ Naming and offering suggestions to address status issues (S15) ✪
___ Naming and reinforcing roles within their group (S51)
___ Participating actively and equitably in small group work (S33) ✪
___ Using non-judgemental language (i.e. focusing on ideas, not people sharing them) (S41) Δ*

___ Using scientific and mathematical language (S42) ✪ Δ *

Evidence Checklist

Core Practice: Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
construct and organize a variety of public records of student thinking,
they may do one or more of the following:

___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪
___ When ideas are re-phrased or summarized, ensure that they reflect the author's intent (T89)
___ Consistently make student thinking visible (T94) Δ
___ Create or facilitate students' creating public records of ideas (T110) Δ
___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)
___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ
___ Record student ideas verbatim as shared (T102)
___ Refer to public records of ideas in strategic ways (T120)
___ Use color strategically when collecting student thinking (T123)
___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ
___ Check for other students' understandings of a presented and/or recorded idea (T15)
___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Generating questions, models, and theories to investigate (S5)
___ Sharing their ideas in forms/ways they choose (S36)

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
construct and organize a variety of public records of student thinking,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Consistently make student thinking visible (T94) Δ ___ Record student ideas verbatim as shared (T102) ___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)	___ Create or facilitate students' creating public records of ideas (T110) Δ ___ Check for other students' understandings of a presented and/or recorded idea (T15)	___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ ___ Refer to public records of ideas in strategic ways (T120) ___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪ ___ When ideas are re-phrased or summarized, ensure that they reflect the author's intent (T89) ___ Use color strategically when collecting student thinking (T123)	___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ ___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Generating questions, models, and theories to investigate (S5)
___ Sharing their ideas in forms/ways they choose (S36)

Evidence Checklist

Core Practice: Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
predict and capitalize on students' errors and misconceptions,
they may do one or more of the following:

___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ
___ Name models, arguments, and ideas as typical or common (T70)
___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ
___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ
___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ
___ Avoid focusing on right and wrong answers (T24)
___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ
___ Actively foster a growth mindset (T32) ✪*
___ Explicitly encourage and celebrate scientific/mathematical risk-taking and bravery (T29)
___ Make the examination of errors and misconceptions a consistent part of classroom work (T33)
___ Call out their own mistakes and model their use as learning opportunities (T43)
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*
___ Actively discuss errors and misconceptions (T103)
___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)*
___ Explicitly focus students' attention on common/typical models, arguments, explanations, and ideas (T127)
___ Use typical or common student ideas strategically (T130)
___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪
___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*
___ Use errors and misconceptions as formative assessment (T19)

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

___ Answering questions with confidence (S10)
___ Building more complete/accurate understandings from current understandings (S22)
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪*
___ Identifying and analyzing mistakes and misconceptions (S28)
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*
___ Taking risks (S66)

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
predict and capitalize on students' errors and misconceptions,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪* ___ Explicitly encourage and celebrate scientific/mathematical risk-taking and bravery (T29)	___ Create and maintain a classroom culture of growth and learning from others (T27) ✪ Δ ___ Actively foster a growth mindset (T32) ✪* ___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ ___ Avoid focusing on right and wrong answers (T24) ___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ ___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ ___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ ___ Call out their own mistakes and model their use as learning opportunities (T43) ___ Make the examination of errors and misconceptions a consistent part of classroom work (T33) ___ Actively discuss errors and misconceptions (T103) ___ Use errors and misconceptions as formative assessment (T19)	___ Name models, arguments, and ideas as typical or common (T70) ___ Explicitly focus students' attention on common/typical models, arguments, explanations, and ideas (T127) ___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*	___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)* ___ Use typical or common student ideas strategically (T130) ___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪

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

___ Answering questions with confidence (S10)
___ Building more complete/accurate understandings from current understandings (S22)
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪*
___ Identifying and analyzing mistakes and misconceptions (S28)
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*
___ Taking risks (S66)

Evidence Checklist **Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
facilitate productive struggle,
they may do one or more of the following:

___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28)
___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48)
___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ
___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ
___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ
___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ*
___ Avoid focusing on right and wrong answers (T24)
___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ
___ Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)
___ Identify the difference between productive struggle and sheer frustration, and intervene meaningfully in the latter (T35)
___ Make the examination of errors and misconceptions a consistent part of classroom work (T33)
___ Explicitly encourage and celebrate resilience and perseverance (T47)
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*
___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87)
___ Scaffold and support students without decreasing cognitive demand (T92)
___ Actively discuss errors and misconceptions (T103)
___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)*
___ Hold students accountable to asking and responding to challenging questions (T112)
___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Continuing to engage with the given task(s) even when feeling stuck, frustrated, and/or on the wrong track (S63) ✪*
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪*
___ Expressing frustration appropriately (S47)
___ Sharing when they are feeling frustrated and the reasons for their struggle (S58)
___ Taking risks (S66)

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
facilitate productive struggle,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28) ___ Explicitly encourage and celebrate resilience and perseverance (T47) ___ Invite and expect all students to share developing and incomplete ideas (T80) ✪* ___ Avoid standing in a place of authority (e.g., the front of the room) or standing at all (T26)	___ Avoid explaining or evaluating models, arguments, and ideas for students (T23) Δ* ___ Avoid providing, justifying, or confirming conclusions for students (T25) Δ ___ Avoid focusing on right and wrong answers (T24) ___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ ___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ ___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ ___ Make the examination of errors and misconceptions a consistent part of classroom work (T33) ___ Actively discuss errors and misconceptions (T103) ___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87) ___ Scaffold and support students without decreasing cognitive demand (T92)	___ Explicitly encourage and/or incentivize flexible thinking and open-mindedness (T48) ___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*	___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)* ___ Hold students accountable to asking and responding to challenging questions (T112) ___ Identify the difference between productive struggle and sheer frustration, and intervene meaningfully in the latter (T35)

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Continuing to engage with the given task(s) even when feeling stuck, frustrated, and/or on the wrong track (S63) ✪*
___ Demonstrating a growth mindset and belief that learning often requires hard work (S43) ✪*
___ Expressing frustration appropriately (S47)
___ Sharing when they are feeling frustrated and the reasons for their struggle (S58)
___ Taking risks (S66)

Evidence Checklist **Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
support students making connections across models, arguments, and ideas,
they may do one or more of the following:

___ Name models, arguments, and ideas as typical or common (T70)
___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139)
___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ *
___ Invite and expect all students to evaluate their ideas by comparing them to the ideas of others (T79)
___ Redirect questions of other students' thinking back to students to consider and answer (T88)
___ Ask students to clarify and expand on their thinking and the thinking of others (T104)
___ Consistently clarify and expand on student thinking (T93)
___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪*
___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)
___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ
___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116)
___ Support students discussing similarities and differences among ideas/thinking (T129)
___ Work to facilitate students taking up and building on each others' ideas (T131)
___ Make connections among student ideas (T97)

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

___ Answering others' questions (S30)
___ Articulating if they agree or disagree with a presented/shared claim (S20)
___ Asking questions of the teacher and other students to push their peers' understandings (S12) ✪
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Identifying the similarities or differences among presented/shared ideas (S29)
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*
___ Use feedback about their thinking and progress to revise their ideas and understandings (S61) ✪

Evidence Checklist	**Core Practice:** Develop distinct classroom community and culture

When accomplished STEM teachers
support students making connections across models, arguments, and ideas,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask students to clarify and expand on their thinking and the thinking of others (T104) ___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)	___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ ___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ ___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116) ___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪ * ___ Consistently clarify and expand on student thinking (T93)	___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139) ___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ ___ Redirect questions of other students' thinking back to students to consider and answer (T88) ___ Name models, arguments, and ideas as typical or common (T70)	___ Invite and expect all students to ask questions about each others' ideas (T78) ✪ Δ * ___ Invite and expect all students to evaluate their ideas by comparing them to the ideas of others (T79) ___ Support students discussing similarities and differences among ideas/thinking (T129) ___ Make connections among student ideas (T97) ___ Work to facilitate students taking up and building on each others' ideas (T131)

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

___ Answering others' questions (S30)
___ Articulating if they agree or disagree with a presented/shared claim (S20)
___ Asking questions of the teacher and other students to push their peers' understandings (S12) ✪
___ Critically analyzing and assessing the validity and reasonableness of others' models, arguments, and ideas (S25) Δ
___ Identifying the similarities or differences among presented/shared ideas (S29)
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*
___ Use feedback about their thinking and progress to revise their ideas and understandings (S61) ✪

When accomplished STEM teachers
pose purposeful questions,
they may do one or more of the following:

___ Ask many "why?" questions that require justification or elaboration (T2)
___ Ask one question at a time (T3)
___ Ask open-ended questions of all students (T4)
___ Ask probing questions and follow-up questions of all students (T5)*
___ Ask questions of designated reporters (T6)
___ Ask questions of the whole class (not only to individual students) (T7)
___ Ask questions they don't know the students' answer to (e.g., "how do you know your answer is right?") (T10)*
___ Ask questions that cannot easily be reduced to closed questions (T8)
___ Ask questions that will help students go deeper in their explanation (T9)
___ Ask questions with an appropriate tone of voice (T11)
___ Ask yes/no questions sparingly or not at all (T12)
___ Ask students to clarify and expand on their thinking and the thinking of others (T104)
___ Provide ample think time (T101)
___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪*
___ Support students articulating what they understand and/or showing what they can do (T128)
___ Use/Refer to prepared questions (when appropriate/necessary) (T135)
___ Ask students to synthesize ideas (T105)

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

___ Answering others' questions (S30)
___ Answering questions with confidence (S10)
___ Holding each other accountable to asking questions of one another (S48)
___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
pose purposeful questions,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask students to synthesize ideas (T105) ___ Ask many "why?" questions that require justification or elaboration (T2) ___ Ask probing questions and follow-up questions of all students (T5)* ___ Ask questions that cannot easily be reduced to closed questions (T8) ___ Ask students to clarify and expand on their thinking and the thinking of others (T104) ___ Ask questions with an appropriate tone of voice (T11)	___ Ask one question at a time (T3) ___ Ask questions they don't know the students' answer to (e.g., "how do you know your answer is right?") (T10)* ___ Ask yes/no questions sparingly or not at all (T12) ___ Provide ample think time (T101) ___ Support students articulating what they understand and/or showing what they can do (T128)	___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪* ___ Use/Refer to prepared questions (when appropriate/necessary) (T135) ___ Ask questions of the whole class (not only to individual students) (T7) ___ Ask questions of designated reporters (T6) ___ Ask open-ended questions of all students (T4)	___ Ask questions that will help students go deeper in their explanation (T9)

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

___ Answering others' questions (S30)
___ Answering questions with confidence (S10)
___ Holding each other accountable to asking questions of one another (S48)
___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Spontaneously asking questions about and building on each others' ideas (S37) Δ*

When accomplished STEM teachers
use student ideas to make strategic decisions about next instructional steps,
they may do one or more of the following:

___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ
___ Ask a variety of students to share ideas, when appropriate (T1) ✪
___ Clearly know critical information about all groups' progress and thinking (T21) ✪
___ Consistently gather information about the nature and content of small group work (T16)
___ Make and test conjectures about students' current understanding (T22)
___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69)
___ Explicitly encourage movement/development along a trajectory of mastery for a particular concept (T49)
___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)
___ Draw on knowledge of students' previous work and thinking (T125)
___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪
___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ
___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ
___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ
___ Strategically pick students or student work to share out in ways that help the class meet the goal(s) of the discussion (T154)
___ Take time to make the right/best, next pedagogical choice (T142)
___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)
___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)
___ Deviate from a plan based on evidence of student understanding (T150)

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

___ Reflecting on and reporting about their learning with respect to valued goals (S54)
___ Reflecting on the cognitive demand of an activity and seeking help to adjust it, as needed (e.g., asking to share developing ideas with a partner) (S55)

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
use student ideas to make strategic decisions about next instructional steps,
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14) ___ Intervene in small group work minimally and intentionally (e.g., to redirect student work or press on student thinking) (T86)	___ Deviate from a plan based on evidence of student understanding (T150) ___ Draw on knowledge of students' previous work and thinking (T125) ___ Take time to make the right/best, next pedagogical choice (T142)	___ Ask a variety of students to share ideas, when appropriate (T1) ✪ ___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69) ___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ	___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ ___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ ___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ ___ Strategically pick students or student work to share out in ways that help the class meet the goal(s) of the discussion (T154) ___ Make and test conjectures about students' current understanding (T22) ___ Consistently gather information about the nature and content of small group work (T16) ___ Clearly know critical information about all groups' progress and thinking (T21) ✪ ___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147) ___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪ ___ Explicitly encourage movement/ development along a trajectory of mastery for a particular concept

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

___ Reflecting on and reporting about their learning with respect to valued goals (S54)
___ Reflecting on the cognitive demand of an activity and seeking help to adjust it, as needed (e.g., asking to share developing ideas with a partner) (S55)

When accomplished STEM teachers
unpack curricula and standards to establish meaningful learning goals
they may do one or more of the following:

___ Explicitly emphasize and value conceptual understanding and reasoning (T46)
___ Explicitly encourage movement/development along a trajectory of mastery for a particular concept (T49)
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*
___ Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90)
___ Engage students in whole class discussion intentionally with respect to particular learning goals (T151) ✪
___ Interact with groups with a purpose and in relation to learning goals (T138) ✪
___ Strategically pick students or student work to share out in ways that help the class meet the goal(s) of the discussion (T154)

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

___ Building more complete/accurate understandings from current understandings (S22)
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Supporting each other to name, reflect on, and/or revise learning goals (S59)

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
unpack curricula and standards to establish meaningful learning goals
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Invite and expect all students to share developing and incomplete ideas (T80) ✪*	___ Manage and direct the discussion only when appropriate, and always toward clear learning goals (T90)	___ Explicitly emphasize and value conceptual understanding and reasoning (T46) ___ Interact with groups with a purpose and in relation to learning goals (T138) ✪	___ Engage students in whole class discussion intentionally with respect to particular learning goals (T151) ✪ ___ Strategically pick students or student work to share out in ways that help the class meet the goal(s) of the discussion (T154) ___ Explicitly encourage movement/ development along a trajectory of mastery for a particular concept

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

___ Building more complete/accurate understandings from current understandings (S22)
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Supporting each other to name, reflect on, and/or revise learning goals (S59)

When accomplished STEM teachers
anchor instruction in complex and puzzling natural events
they may do one or more of the following:

___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28)
___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139)
___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ

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

___ Continuing to engage with the given task(s) even when feeling stuck, frustrated, and/or on the wrong track (S63) ✪ *
___ Defining and clarifying the task(s) at hand for themselves or others (S3) ✪
___ Demonstrating genuine curiosity in new ideas (S46)
___ Designing ways to investigate questions or complete tasks, including choosing appropriate variables, techniques, and tools to gather, record, and analyze givens/data (S4) ✪
___ Generating questions, models, and theories to investigate (S5)
___ Planning and carrying out investigations or solution strategies (S7)

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
anchor instruction in complex and puzzling natural events
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Explicitly encourage and celebrate curiosity, inquisitiveness, and an inquiry stance to STEM content and learning (T28)	___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ ___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ * ___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ	___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139)	___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ

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

___ Continuing to engage with the given task(s) even when feeling stuck, frustrated, and/or on the wrong track (S63) ✪ *
___ Defining and clarifying the task(s) at hand for themselves or others (S3) ✪
___ Demonstrating genuine curiosity in new ideas (S46)
___ Designing ways to investigate questions or complete tasks, including choosing appropriate variables, techniques, and tools to gather, record, and analyze givens/data (S4) ✪
___ Generating questions, models, and theories to investigate (S5)
___ Planning and carrying out investigations or solution strategies (S7)

When accomplished STEM teachers
analyze, choose, and modify tasks for specific learning goals
they may do one or more of the following:

___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117)
___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133)
___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139)
___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ
___ Use organizational routines or activity structures with respect to specific tasks (T145)
___ Explicitly emphasize and value conceptual understanding and reasoning (T46)
___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87)
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Scaffold and support students without decreasing cognitive demand (T92)
___ Draw on knowledge of students' previous work and thinking (T125)
___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)
___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114)
___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ
___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118)
___ Use color strategically when collecting student thinking (T123)
___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)
___ Deviate from a plan based on evidence of student understanding (T150)

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

___ Defining and clarifying the task(s) at hand for themselves or others (S3) ✪
___ Demonstrating genuine curiosity in new ideas (S46)
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Planning and carrying out investigations or solution strategies (S7)
___ Supporting each other to name, reflect on, and/or revise learning goals (S59)

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
analyze, choose, and modify tasks for specific learning goals
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Use organizational routines or activity structures with respect to specific tasks (T145) ___ Ensure that a variety of shared ideas are represented physically in ways that remain visible/accessible to all students (T126)	___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ ___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ * ___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ ___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ ___ Provide just enough information, encouragement or questions to keep students thinking (e.g., praise-prompt-leave interaction) (T87) ___ Scaffold and support students without decreasing cognitive demand (T92) ___ Draw on knowledge of students' previous work and thinking (T125) ___ Deviate from a plan based on evidence of student understanding (T150)	___ Provide models, arguments, and ideas to compare and contrast (e.g., provide examples and non-examples for simultaneous consideration) (T139) ___ Explicitly emphasize and value conceptual understanding and reasoning (T46) ___ Use color strategically when collecting student thinking (T123)	___ Provide rich data (e.g., a natural, puzzling event) (T134) Δ ___ Pose questions, puzzling events, tasks, and activities that are "groupworthy" (i.e. require/benefit from many minds working together) (T133) ___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ ___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117) ___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114) ___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118) ___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)

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

___ Defining and clarifying the task(s) at hand for themselves or others (S3) ✪
___ Demonstrating genuine curiosity in new ideas (S46)
___ Naming, reflecting on, and/or revising learning goals (S53) Δ
___ Planning and carrying out investigations or solution strategies (S7)
___ Supporting each other to name, reflect on, and/or revise learning goals (S59)

When accomplished STEM teachers
anticipate a wide variety of student strategies and thinking
they may do one or more of the following:

___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ
___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ *
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ
___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ
___ Ask a variety of students to share ideas, when appropriate (T1) ✪
___ Make and test conjectures about students' current understanding (T22)
___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)
___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪
___ Invite and expect all students to evaluate their ideas by comparing them to the ideas of others (T79)
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116)
___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪*
___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ
___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ
___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)

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

___ Comparing and contrasting ideas (S24)
___ Providing all or a majority of the new information and ideas that emerge (S35)
___ Sharing their ideas in forms/ways they choose (S36)
___ Analyzing and interpreting data effectively (S1)

Evidence Checklist	**Core Practice:** Elicit, represent, and capitalize on student ideas

When accomplished STEM teachers
anticipate a wide variety of student strategies and thinking
they may do one or more of the following:

ALWAYS	**STRATEGICALLY**	
	More Straightforward:	*More Challenging:*
___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ ___ Pose questions, puzzling events, tasks, and activities that have multiple methods for making sense of or solving them (T99) ✪ Δ * ___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ ___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ ___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116) ___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ ___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ ___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ ___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)	___ Ask a variety of students to share ideas, when appropriate (T1) ✪ ___ Ascribe ownership for students' ideas in exposition, when appropriate (e.g., "Tenaya's theory") (T77) ✪ ___ Provide students with time to think or write carefully about a posed question before engaging with others' ideas (T119) ✪ * ___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44) ___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ	___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ ___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ ___ Invite and expect all students to evaluate their ideas by comparing them to the ideas of others (T79) ___ Make and test conjectures about students' current understanding (T22)

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

___ Comparing and contrasting ideas (S24)
___ Providing all or a majority of the new information and ideas that emerge (S35)
___ Sharing their ideas in forms/ways they choose (S36)
___ Analyzing and interpreting data effectively (S1)

When accomplished STEM teachers
organize sequence(s) of learning experiences
they may do one or more of the following:

___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ
___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ
___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ
___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140)
___ Set up the physical environment appropriately and/or implement speedy transitions of physical space (T141)
___ Use organizational routines or activity structures that allow all students to participate equitably and that directly address issues of status (e.g., complex instruction) (T144) ✪
___ Use organizational routines or activity structures with respect to specific tasks (T145)
___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69)
___ Explicitly emphasize and value conceptual understanding and reasoning (T46)
___ Scaffold and support students without decreasing cognitive demand (T92)
___ Draw on knowledge of students' previous work and thinking (T125)
___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116)
___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪
___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ
___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ
___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137)
___ Deviate from a plan based on evidence of student understanding (T150)

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

___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)
___ Sharing their ideas in forms/ways they choose (S36)

Evidence Checklist	Core Practice: *Plan for Engagement with Important STEM Ideas*

When accomplished STEM teachers
organize sequence(s) of learning experiences
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Use organizational routines or activity structures with respect to specific tasks (T145) ___ Set up the physical environment appropriately and/or implement speedy transitions of physical space (T141)	___ Use organizational routines or activity structures that allow all students to participate equitably and that directly address issues of status (e.g., complex instruction) (T144) ✪ ___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116) ___ Scaffold and support students without decreasing cognitive demand (T92) ___ Draw on knowledge of students' previous work and thinking (T125) ___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ ___ Deviate from a plan based on evidence of student understanding (T150)	___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69) ___ Explicitly emphasize and value conceptual understanding and reasoning (T46) ___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ	___ Set up and reinforce roles for individual group members (e.g., recorder, reporter) (T140) ___ Ensure small group work is an appropriate activity structure for the focal task(s) (T137) ___ Create and protect space for students to make decisions about how they will engage with each other (T148) Δ ___ Create and protect space for students to make decisions about how they will engage with the content (T149) Δ ___ Create and protect space for collaborative reflection on emerging ideas and understandings (T124) Δ ___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪

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

___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)
___ Sharing their ideas in forms/ways they choose (S36)

Evidence Checklist	Core Practice: *Collect, Make Sense of, and Respond to Evidence of Student Learning*

When accomplished STEM teachers
collect and use diverse evidence of student learning
they may do one or more of the following:

___ Anticipate and validate different approaches to a task (T83)
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Ask questions that will help students go deeper in their explanation (T9)
___ Make and test conjectures about students' current understanding (T22)
___ Explicitly encourage movement/development along a trajectory of mastery for a particular concept (T49)
___ Take all student ideas and contributions seriously (T82) ✪*
___ Consistently make student thinking visible (T94) Δ
___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)*
___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ *
___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109)
___ Create or facilitate students' creating public records of ideas (T110) Δ
___ Follow along (listen) closely and actively to conversations between/among students (T95)
___ Follow along (listen) closely and actively to student explanations (T96)
___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ
___ Record student ideas verbatim as shared (T102)
___ Use typical or common student ideas strategically (T130)
___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)
___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*
___ Use errors and misconceptions as formative assessment (T19)
___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59)

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

___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Providing all or a majority of the new information and ideas that emerge (S35)

___ Taking obvious pride in their work (S60)

Evidence Checklist	Core Practice: ***Plan for Engagement with Important STEM Ideas***

When accomplished STEM teachers
collect and use diverse evidence of student learning
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Consistently make student thinking visible (T94) Δ ___ Record student ideas verbatim as shared (T102) ___ Follow along (listen) closely and actively to student explanations (T96) ___ Follow along (listen) closely and actively to conversations between/among students (T95) ___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)	___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ ___ Anticipate and validate different approaches to a task (T83) ___ Take all student ideas and contributions seriously (T82) ✪ * ___ Create or facilitate students' creating public records of ideas (T110) Δ ___ Use errors and misconceptions as formative assessment (T19)	___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ ___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59) ___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪ *	___ Create and protect space for students to articulate, justify, evaluate, and revise their ideas (T107) ✪ Δ * ___ Create and protect space for students to restate, clarify, and evaluate others' ideas (T109) ___ Create and protect space for incorrect or incomplete ideas to be examined and discussed (T106)* ___ Ask questions that will help students go deeper in their explanation (T9) ___ Use typical or common student ideas strategically (T130) ___ Make and test conjectures about students' current understanding (T22) ___ Explicitly encourage movement/ development along a trajectory of mastery for a particular concept

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

___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Providing all or a majority of the new information and ideas that emerge (S35)

___ Taking obvious pride in their work (S60)

Evidence Checklist

Core Practice: *Collect, Make Sense of, and Respond to Evidence of Student Learning*

When accomplished STEM teachers
check for understanding in multiple, strategic forms
they may do one or more of the following:

___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117)
___ Ask a variety of students to share ideas, when appropriate (T1) ✪
___ Ask many "why?" questions that require justification or elaboration (T2)
___ Ask open-ended questions of all students (T4)
___ Ask probing questions and follow-up questions of all students (T5)*
___ Ask questions they don't know the students' answer to (e.g., "how do you know your answer is right?") (T10)*
___ Move among and interact with small groups in order to make sense of how students' ideas are developing (T13) ✪
___ Consistently clarify and expand on student thinking (T93)
___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪*
___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114)
___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116)
___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118)
___ Support students articulating what they understand and/or showing what they can do (T128)
___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)
___ Check for other students' understandings of a presented and/or recorded idea (T15)
___ Ask students to synthesize ideas (T105)

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
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Reflecting on and reporting about their learning with respect to valued goals (S54)

Evidence Checklist	Core Practice: ***Plan for Engagement with Important STEM Ideas***

When accomplished STEM teachers
check for understanding in multiple, strategic forms
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Ask students to synthesize ideas (T105) ___ Ask many "why?" questions that require justification or elaboration (T2) ___ Ask probing questions and follow-up questions of all students (T5)* ___ Assess students' understanding in multiple formats (verbally, in writing, publicly, non-verbally) during lesson (T14)	___ Ask questions they don't know the students' answer to (e.g., "how do you know your answer is right?") (T10)* ___ Provide consistent, diverse opportunities for students to process information in multiple formats (T116) ___ Ensure all students have multiple opportunities to share, critique, and revise ideas (T111) ✪* ___ Support students articulating what they understand and/or showing what they can do (T128) ___ Consistently clarify and expand on student thinking (T93) ___ Check for other students' understandings of a presented and/or recorded idea (T15)	___ Ask a variety of students to share ideas, when appropriate (T1) ✪ ___ Ask open-ended questions of all students (T4) ___ Move among and interact with small groups in order to make sense of how students' ideas are developing (T13) ✪	___ Provide consistent, diverse opportunities for students to provide, justify, confirm, or revise conclusions (T117) ___ Provide consistent, diverse opportunities for students to consider the reasonableness of their explanations (T114) ___ Provide consistent, diverse opportunities to offer evidence-based explanations (T118)

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
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Reflecting on and reporting about their learning with respect to valued goals (S54)

Evidence Checklist	Core Practice: *Collect, Make Sense of, and Respond to Evidence of Student Learning*

When accomplished STEM teachers
make sense of student thinking to inform instruction
they may do one or more of the following:

___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ
___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69)
___ Redirect questions of other students' thinking back to students to consider and answer (T88)
___ Scaffold and support students without decreasing cognitive demand (T92)
___ Consistently clarify and expand on student thinking (T93)
___ Consistently make student thinking visible (T94) Δ
___ Create or facilitate students' creating public records of ideas (T110) Δ
___ Draw on knowledge of students' previous work and thinking (T125)
___ Restate or summarize student ideas, as appropriate (T121)
___ Support students discussing similarities and differences among ideas/thinking (T129)
___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪
___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ
___ Take time to make the right/best, next pedagogical choice (T142)
___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪*
___ Use errors and misconceptions as formative assessment (T19)
___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147)
___ Deviate from a plan based on evidence of student understanding (T150)

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪*
___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)
___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *

Evidence Checklist	Core Practice: *Plan for Engagement with Important STEM Ideas*

When accomplished STEM teachers
make sense of student thinking to inform instruction
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Consistently make student thinking visible (T94) Δ	___ Consistently clarify and expand on student thinking (T93) ___ Scaffold and support students without decreasing cognitive demand (T92) ___ Draw on knowledge of students' previous work and thinking (T125) ___ Create or facilitate students' creating public records of ideas (T110) Δ ___ Use errors and misconceptions as formative assessment (T19) ___ Take time to make the right/best, next pedagogical choice (T142) ___ Deviate from a plan based on evidence of student understanding (T150)	___ Redirect questions of other students' thinking back to students to consider and answer (T88) ___ Explicitly call out a change in the planned classroom activity based on emerging student ideas (T69) ___ Circle back to students who made errors or held misconceptions to assess how their thinking has changed (T20) ✪ * ___ Have plans in place for students who demonstrate mastery early that relate to learning goals (T152) Δ	___ Support students discussing similarities and differences among ideas/thinking (T129) ___ Quickly weigh the benefits, costs, and implications of focusing on some students' ideas over others (T153) Δ ___ Restate or summarize student ideas, as appropriate (T121) ___ Adjust the cognitive demand of a task to meet the needs of a particular group of students (T147) ___ Adjust next steps in instruction based on errors and misconceptions that arise (T146) ✪

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Clearly expecting and ready to be asked questions about their thinking (S45) ✪ *
___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)

___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *

Evidence Checklist

Core Practice: *Collect, Make Sense of, and Respond to Evidence of Student Learning*

When accomplished STEM teachers
provide targeted oral and written feedback
they may do one or more of the following:

___ Clearly know critical information about all groups' progress and thinking (T21) ✪
___ Consistently gather information about the nature and content of small group work (T16)
___ Explicitly encourage movement/development along a trajectory of mastery for a particular concept (T49)
___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ*
___ Pause discussions to name instances in which valued norms are being upheld appropriately (T72)
___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73)
___ Provide digital, written and/or oral feedback after public sharing (T17) Δ
___ Track student contributions (T18)
___ Use errors and misconceptions as formative assessment (T19)
___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59)
___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74)
___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ
___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63)
___ Provide individual feedback to students on the ways they participate (or not) in whole class discussions (T64)
___ Provide individual feedback to students on their engagement in an organizational routine or activity structure (T65)
___ Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67)
___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ
___ Reflect with students on the use of a particular organizational routine or activity structure (T76)

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Building more complete/accurate understandings from current understandings (S22)
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Monitoring and evaluating their progress toward a specific goal and changing course as necessary (S50)
___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Reflecting on and reporting about their learning with respect to valued goals (S54)
___ Use feedback about their thinking and progress to revise their ideas and understandings (S61) ✪

Evidence Checklist	Core Practice: *Plan for Engagement with Important STEM Ideas*

When accomplished STEM teachers
provide targeted oral and written feedback
they may do one or more of the following:

ALWAYS	**STRATEGICALLY**	
	More Straightforward:	*More Challenging:*
___ Use errors and misconceptions as formative assessment (T19)	___ Track student contributions (T18) ___ Pause classroom work to name instances in which valued norms are being upheld appropriately (T71) Δ* ___ Pause discussions to name instances in which valued norms are being upheld appropriately (T72) ___ Pause small group work to name instances in which valued norms are being upheld appropriately (T73) ___ Name instances in which one or more students reached a new understanding or a-ha by persevering (T59) ___ Provide digital, written and/or oral feedback after public sharing (T17) Δ ___ Provide individual feedback to students on the ways they articulate their thinking and press on the thinking of others (T62) Δ ___ Provide individual feedback to students on their engagement in an organizational routine or activity structure (T65) ___ Provide individual feedback to students on the ways they participate (or not) in whole class discussions (T64) ___ Provide individual feedback to students on the ways they participate (or not) in small group work (T63) ___ Provide whole-group feedback on the quality, nature, and/or structure of a discussion (T67) ___ Provide group-specific feedback on the quality, nature, and/or structure of group work (T74) ___ Reflect with students on the use of a particular organizational routine or activity structure (T76)	___ Consistently gather information about the nature and content of small group work (T16) ___ Clearly know critical information about all groups' progress and thinking (T21) ✪ ___ Explicitly encourage movement/development along a trajectory of mastery for a particular concept (T49) ___ Record and share observational evidence of student interactions, productivity, thinking, and learning (T75) Δ

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

___ Analyzing the effectiveness of a strategy or process and adapting it when necessary (S19)
___ Building more complete/accurate understandings from current understandings (S22)
___ Continuing to try when faced with a roadblock or dilemma (S64) Δ
___ Monitoring and evaluating their progress toward a specific goal and changing course as necessary (S50)
___ Naming or trying to name things they understand and do not understand (S52) ✪ Δ *
___ Reflecting on and reporting about their learning with respect to valued goals (S54)
___ Use feedback about their thinking and progress to revise their ideas and understandings (S61) ✪

When accomplished STEM teachers
offer detailed, relatable explanations
they may do one or more of the following:

___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪
___ Model what constitutes an evidence-based explanation in STEM disciplines (T40)
___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)
___ Explicitly emphasize and value conceptual understanding and reasoning (T46)
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ
___ Provide ample think time (T101)
___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ

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

___ Analyzing and interpreting data effectively (S1)
___ Communicating information clearly (S2)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪
___ Restating others' ideas in their own words (S57)

Evidence Checklist	Core Practice: *Plan for Engagement with Important STEM Ideas*

When accomplished STEM teachers
offer detailed, relatable explanations
they may do one or more of the following:

ALWAYS	**STRATEGICALLY**	
	More Straightforward:	*More Challenging:*
___ Provide ample think time (T101) ___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ	___ Model what constitutes an evidence-based explanation in STEM disciplines (T40) ___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪ ___ Explicitly emphasize and value conceptual understanding and reasoning (T46) ___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)	___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ ___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ

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

___ Analyzing and interpreting data effectively (S1)
___ Communicating information clearly (S2)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪
___ Restating others' ideas in their own words (S57)

When accomplished STEM teachers
develop models, analogies, and examples
they may do one or more of the following:

___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪
___ Model what constitutes an evidence-based explanation in STEM disciplines (T40)
___ Use organizational routines or activity structures with respect to specific tasks (T145)
___ Call out their own mistakes and model their use as learning opportunities (T43)
___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)
___ Explicitly emphasize and value conceptual understanding and reasoning (T46)
___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ
___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ
___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ
___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ
___ Restate or summarize student ideas, as appropriate (T121)
___ Ask students to synthesize ideas (T105)

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

___ Analyzing and interpreting data effectively (S1)
___ Asking questions of the teacher and other students to clarify their own thinking (S11) ✪ Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Communicating information clearly (S2)
___ Demonstrating genuine curiosity in new ideas (S46)
___ Explaining others' models, arguments, and ideas (S27)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪

Evidence Checklist	Core Practice: ***Use STEM Content Knowledge Strategically***

When accomplished STEM teachers
develop models, analogies, and examples
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Use organizational routines or activity structures with respect to specific tasks (T145) ___ Ask students to synthesize ideas (T105)	___ Provide scientific or mathematical expertise, background, or vocabulary only when no other student can do so (T81) Δ ___ Call out their own mistakes and model their use as learning opportunities (T43)	___ Model what constitutes an evidence-based explanation in STEM disciplines (T40) ___ Model what a "good" justification, evaluation, or revision of a model, argument, or idea looks/sounds like (T39) ✪ ___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ ___ Explicitly emphasize and value conceptual understanding and reasoning (T46) ___ Demonstrate and reinforce the use of shared knowledge and terms (e.g., ground a discussion in shared knowledge and terms) (T44)	___ Restate or summarize student ideas, as appropriate (T121) ___ Create and protect space for students to construct and/or reconstruct their own understandings (T108) Δ ___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ

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

___ Analyzing and interpreting data effectively (S1)
___ Asking questions of the teacher and other students to clarify their own thinking (S11) ✪ Δ
___ Being willing to put ideas on the table regardless of whether they are correct or fleshed-out (S62) ✪ Δ *
___ Communicating information clearly (S2)
___ Demonstrating genuine curiosity in new ideas (S46)
___ Explaining others' models, arguments, and ideas (S27)
___ Making and defending all evaluative claims with mathematical or scientific evidence (S6) ✪

When accomplished STEM teachers
recognize and respond to common patterns in student thinking
they may do one or more of the following:

___ Name models, arguments, and ideas as typical or common (T70)
___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ
___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ
___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ
___ Draw on knowledge of students' previous work and thinking (T125)
___ Explicitly focus students' attention on common/typical models, arguments, explanations, and ideas (T127)
___ Use typical or common student ideas strategically (T130)

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

___ Actively using mistakes as learning opportunities (S8) ✪*
___ Identifying and analyzing mistakes and misconceptions (S28)
___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)

Evidence Checklist	Core Practice: *Use STEM Content Knowledge Strategically*

When accomplished STEM teachers
recognize and respond to common patterns in student thinking
they may do one or more of the following:

ALWAYS	**STRATEGICALLY**	
	More Straightforward:	*More Challenging:*
___ Draw on knowledge of students' previous work and thinking (T125) ___ Anticipate and validate different ideas and ways of expressing those ideas (T84) Δ ___ Anticipate and validate myriad ways of making sense of, solving, explaining, and justifying ideas (T85) Δ ___ Anticipate and create space for common errors and misconceptions to arise and be explored (T136) Δ	___ Name models, arguments, and ideas as typical or common (T70) ___ Explicitly focus students' attention on common/typical models, arguments, explanations, and ideas (T127)	___ Use typical or common student ideas strategically (T130)

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

___ Actively using mistakes as learning opportunities (S8) ✪*
___ Identifying and analyzing mistakes and misconceptions (S28)
___ Making connections between prior content/learning and current content/learning (i.e., demonstrating transfer) (S31)

When accomplished STEM teachers
connect multiple representations to one another
they may do one or more of the following:

___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ
___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ
___ Use organizational routines or activity structures with respect to specific tasks (T145)
___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ *
___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ
___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ
___ Restate or summarize student ideas, as appropriate (T121)
___ Support students discussing similarities and differences among ideas/thinking (T129)
___ Make connections among student ideas (T97)

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

___ Demonstrating genuine curiosity in new ideas (S46)
___ Identifying the similarities or differences among presented/shared ideas (S29)

Evidence Checklist	Core Practice: ***Use STEM Content Knowledge Strategically***

When accomplished STEM teachers
connect multiple representations to one another
they may do one or more of the following:

ALWAYS		**STRATEGICALLY**	
More Straightforward:	*More Challenging:*	*More Straightforward:*	*More Challenging:*
___ Use organizational routines or activity structures with respect to specific tasks (T145)	___ Pose questions, puzzling events, tasks, and activities that have multiple entry points (T98) Δ ___ Pose questions, puzzling events, tasks, and activities that have multiple solutions, explanations or justifications (T100) Δ ___ Position students (instead of themselves) as the authorities on and evaluators of developing ideas (T91) ✪ Δ *	___ Present multiple pieces of student thinking in order to engage students in discussions about similarities and differences between/among them (T113) Δ	___ Provide consistent, diverse opportunities for students to draw conclusions (T115) Δ ___ Support students discussing similarities and differences among ideas/thinking (T129) ___ Make connections among student ideas (T97) ___ Restate or summarize student ideas, as appropriate (T121)

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

___ Demonstrating genuine curiosity in new ideas (S46)
___ Identifying the similarities or differences among presented/shared ideas (S29)