

TABLE 1: Components of the DISCUSS-ELL model.

5E	Science inquiry-based instruction	Disciplinary language of science	Socioscientific Issues (SSIs) Strategies
Engage`	<ul style="list-style-type: none"> • Create interest • Raise questions • Elicit prior knowledge • Provide focus 	<ul style="list-style-type: none"> • Elicit prior knowledge • Provide students opportunities for reflection on connections in oral language 	<ul style="list-style-type: none"> • Frame the lesson/unit with SSI • Ask SSI questions related to student home, community, or prior experiences • Use everyday life examples to connect to SSI
Explore	<ul style="list-style-type: none"> • Collaboration without direct instruction • Observe and listen to students • Time for students to puzzle through problems 	<ul style="list-style-type: none"> • Use different science terms and inquiry terms • Draw student attention to science processes and provide feedback on student use of these processes 	<ul style="list-style-type: none"> • Engage students in hands-on activities and socioscientific reasoning practices • Teacher modifies talk considering cultural backgrounds of ELLs
Explain	<ul style="list-style-type: none"> • Students explain using claims, evidence, reasoning [CER] • Consider alternative explanations • Provide definitions, explanations, and new labels 	<ul style="list-style-type: none"> • Provide explicit instruction of key terms • Encourage students to use key terms in speaking and writing • Prompt for CER • Read the work of scientists that explains concepts or presents different viewpoints of the SSI 	<ul style="list-style-type: none"> • Read different arguments/ perspectives on the SSI • Use students' previous experiences as basis for comprehending and explaining concepts
Elaborate	<ul style="list-style-type: none"> • Apply or extend concepts and skills • Support students to use formal labels, definitions, and explanations • Prompt students for alternate explanations 	<ul style="list-style-type: none"> • Scaffold small-group discussions using modeling, summarizing, challenging, debriefing, etc. • Provide examples of strong and weak scientific explanations • Encourage students to use evidence for CER 	<ul style="list-style-type: none"> • Engage students to apply science knowledge to address SSI • Facilitate students in small-group discussions about SSI • Prompt for CER and rebuttal [CERR] to reason about SSI
Evaluate	<ul style="list-style-type: none"> • Assess students' knowledge and/or skills • Apply knowledge to novel setting • Ask open-ended questions 	<ul style="list-style-type: none"> • Encourage students to write scientific explanations • Provide feedback on student construction of scientific explanations 	<ul style="list-style-type: none"> • Use SSI as a culminating activity • Assess students' socioscientific reasoning • Use oral or written argument to assess conceptual understanding