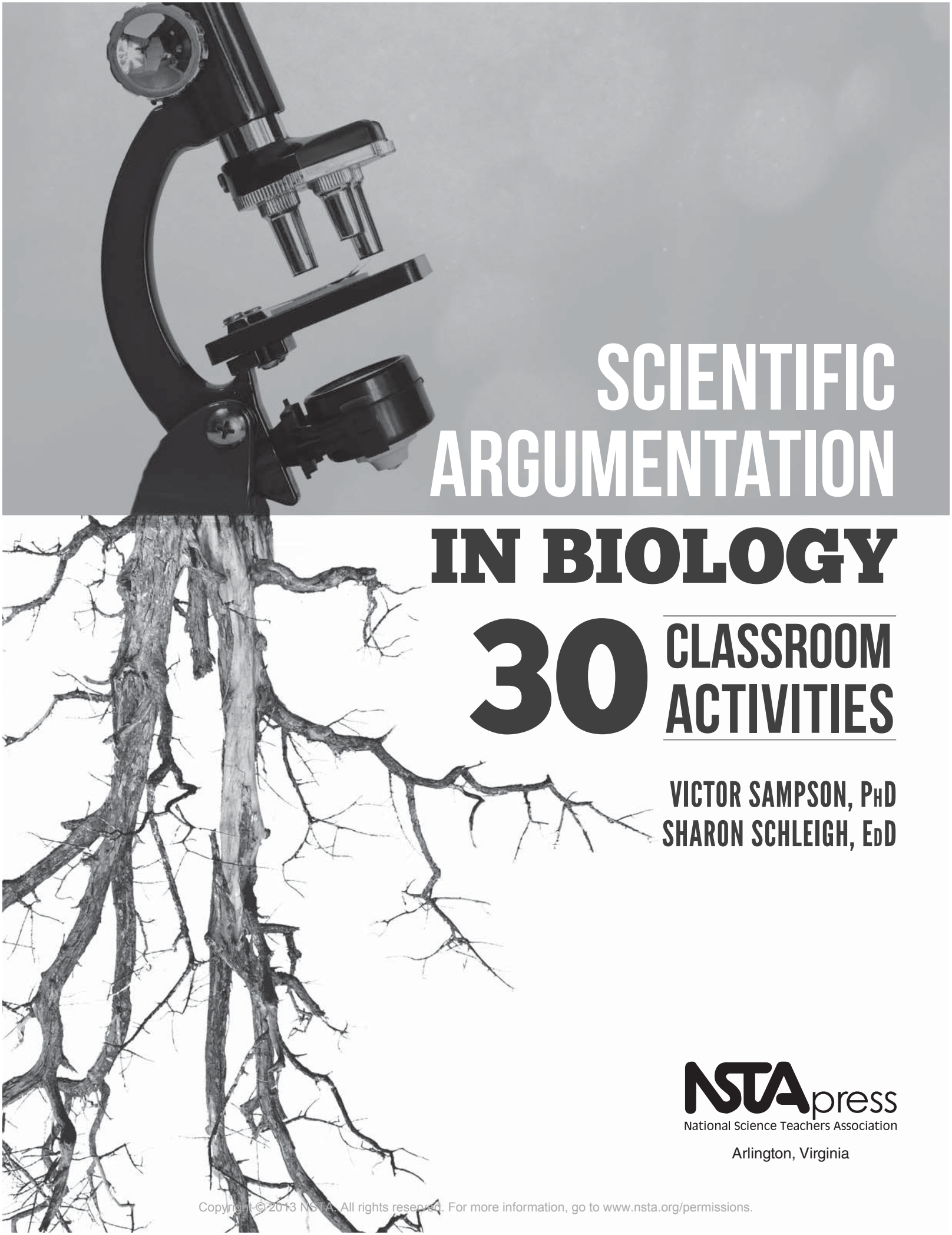

SCIENTIFIC ARGUMENTATION IN BIOLOGY

30 CLASSROOM ACTIVITIES

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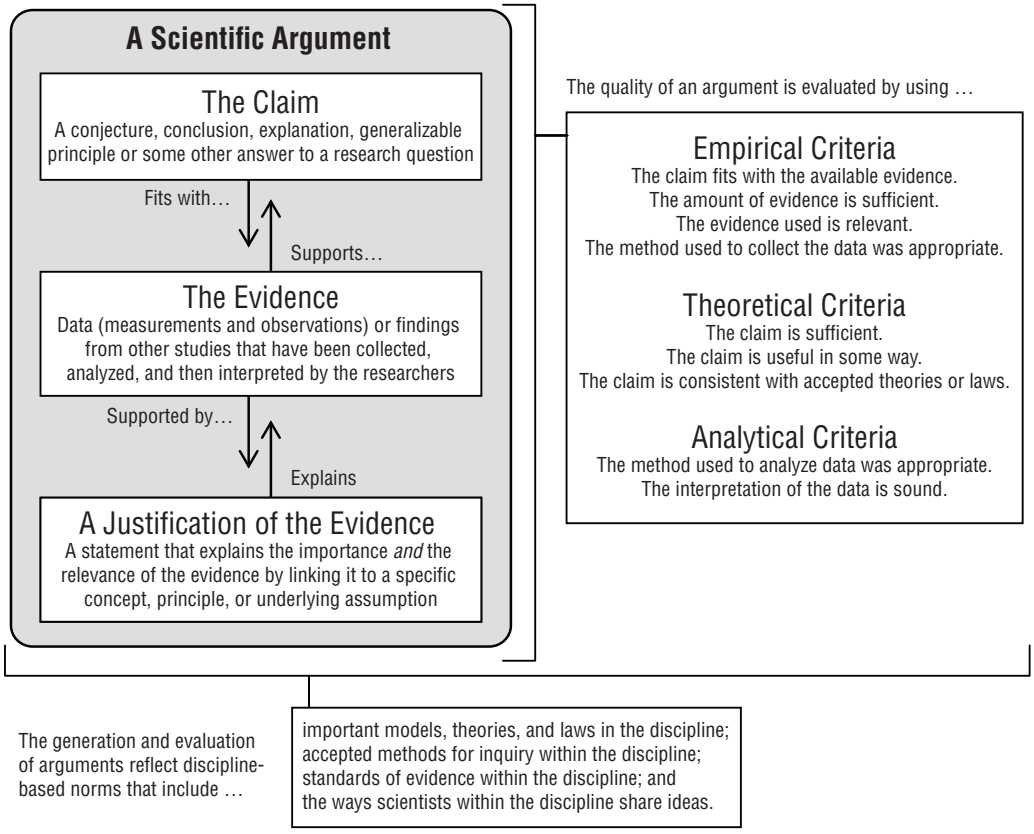
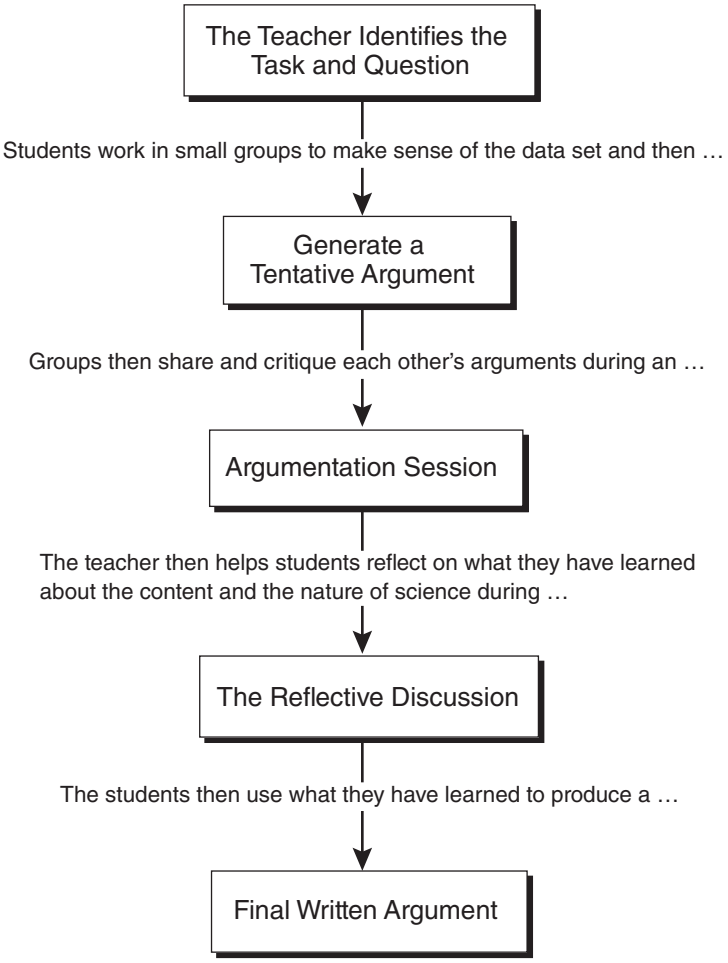
Figure 1. A Framework That Can Be Used to Illustrate the Components of a Scientific Argument and Some Criteria That Can and Should Be Used to Evaluate the Merits of a Scientific Argument



(c) a relationship between variables, and then they interpret their analysis in light of their research question, the nature of their study, and the available literature. Finally, the justification of the evidence component of the argument is a statement or two that explains the importance and the relevance of the evidence by linking it to a specific principle, concept, or underlying assumption.

It is also important for students to understand that some forms of evidence and some types of reasons are better than others in science. An important component of scientific argumentation involves the evaluation of the acceptability and

Figure 2. Stages of the Generate an Argument Instructional Model



used to judge argument quality (e.g., the sufficiency of the explanation, the quality of the evidence, and so on). The classroom teacher should have a different student read each section of the activity aloud and then pause after each section to clarify expectations, answer questions, or provide additional information as needed. Once all the students understand the goal of the activity, the teacher should divide the students into small groups (we recommend three students per group), and move on to the second stage of the model.

Stage 2: The Generation of a Tentative Argument

The next stage of the instructional model calls for students to use the raw data that is supplied during the first stage of the model to develop an answer to