

EOCEP Biology 2019 Data Review Report

In October 2019 the South Carolina Department of Education convened a panel of experts to review item data on the Spring 2019 End-of-Course Examination Program test in Biology 1. The panel looked at, and discussed, operational items with a low percentage of students answering correctly. In addition to the operational items, the committee reviewed field test items that performed poorly on the spring test.

The panel recognizes the hard work of South Carolina educators and offers the following as suggestions for ways to improve student success. Teachers and district level science specialists on this year's panel felt that previous years' suggestions were still relevant and that teachers should be reminded to look the [2017 Data Review Report](#) and the [2018 Data Review Report](#). The panel offers these suggestions as an addendum to those from previous years.

For Students:

- Read questions carefully to clarify what is being asked.
 - Pull clues out of context.
- Before making a selection, read all answer choices.
 - Weigh options on the **best** answer choice for a given question
- When presented with graphs, data tables, and/or diagrams, read the question first before looking at the other information.

For Teachers:

The panel recommends that teachers reference the [2018 EOCEP Biology Sample Items](#) to assist in the development of classroom instruction and assessments.

- Provide students with opportunities to design and create models of phenomena.
 - Allot time for peer-review and modification of models.
- Give students practice in analyzing and generating more complex tables, graphs/ charts.
- Present students multiple opportunities to create investigations (for example: H.B.2A.2, 2C.2-3, 3A.5) in which the students should be expected to
 - pose the question being asked;
 - develop a hypothesis;
 - generate a procedure and materials list;
 - collect, analyze, and communicate data; and
 - identify errors and/or weaknesses in the design of the investigation.
- Supply more robust, complex, critical-reading passages and experimental scenarios that require students to
 - analyze, summarize, and synthesize information;
 - communicate data found in the text by
 - graphing;
 - identify patterns, relationships, and trends;
 - draw a conclusion based on a specific question; and
 - provide a rationale for the chosen answer.

- During instruction use and require students to use scientific terminology to reinforce content. For example: include the term “differentiation” when discussing stem cell development.
- Review terminology introduced in previous grades to scaffold current content.
For example:
 - review elements and chemical symbols (hydrogen, oxygen, carbon, nitrogen, potassium, sodium, etc.) necessary for understanding essential cellular processes (Standards 2 and 3);
 - review terms such as “marine” to describe a salt-water environment when discussing standards 5 and 6.
- Review Punnett squares to be sure students can work and interpret them (H.B.4C.2).
 - Identify sex-linked, heterozygous, and homozygous traits.
 - Expose students to working with and interpreting dihybrid crosses.
 - Provide explicit examples of how information found in pedigrees and Punnett squares relate to each other.
- Provide frequent opportunities for students to communicate information using the conventions of science writing to
 - explain designs or models;
 - develop conclusions for investigations; and
 - communicate expectations for an investigation.
- Provide opportunities for students to interpret graphs of cellular activity (Standard 3).
For example: Generate graphs of enzyme activity for students to interpret.
- H.B.3A.3 should be taught explicitly.
- Teach, reinforce, and provide multiple models during instruction on biochemical pathways.
 - Allow students to create and analyze models representing aerobic and anaerobic respiration (HB.3A.4).
 - Give students practice developing and explaining their own models.
- Present students with real-world phylogenetic data and allow students to analyze and communicate the data (B.5.5).