

Computer Use by Students

Digital media allows students to explore science concepts and practice science skills through text, visual, audio, and interactive modes. While digital media is engaging to students, its use needs to be purposeful within the context of required knowledge and skills. Each time a student uses a digital resource, they should have a specific purpose that aligns with the targeted outcomes of the lesson. Providing students with advanced organizers, such as Essential Questions or challenge questions, focuses the student to seek out the essential knowledge.

An important aspect of Discovery Education Science is that students have individual accounts with logins and passwords. This allows the teacher to assign resources directly to students and, as needed, to differentiate instruction by assigning specific resources to specific students. When students log in, they go to their student center, where the assigned resources are waiting for them. Each lesson has an assignment already prepared to be distributed. Assignments can also be copied to the teacher's content folder and modified before assignment to students.

While all digital media within Discovery Education Science can be used in whole class or group settings, individual or small group access to the digital resources ideally utilizes a computer with high-speed Internet connection. Computer stations may be located in the classroom, a media center or computer lab, or the student's home. Many after school programs also utilize a school's computers. Portable laptop labs with wireless Internet connections avoid time lost in transitioning students to a central lab. In a classroom, media center, or lab setting, inexpensive headphones will help maintain students' concentration.

It is not essential for there to be a one-to-one relationship between students and computers. A mix of print and on-screen resources allows teachers to provide a variety of media to students. On days when a lab is not available, a common organizational scheme is to put students in rotating groups with some working on reading passages, others doing hands-on under teacher direction, and a third group working with digital media on computer stations in the classroom.

Reading Passages

- Distribute printed copies of the passages to students; utilize computers for students with special needs who require eBooks.

Images

- Use a computer with a projection device to show the image to the entire class at once, or, if practical, distribute printed copies of the images to students.

- Students can also use the images in student digital products such as reports or presentations.

Video Segments and Interactive Glossary Terms

- If only one computer is available, use a projection device to play the video or animation for the entire class at once.
- If several computers are available, divide students into small groups and assign each group to a computer; use a rotation system if necessary to limit group size.

Explorations

- Distribute printed copies of the Student Worksheets to students. Create a transparency of the Student Worksheet or display it using a projection device.
- Note that the questions come first on the worksheet. This is meant to provide an advance organizer for students prior to working with the Exploration.
- If only one computer is available, use a projection device to guide students through the Exploration, inviting students to make selections or answer questions as appropriate, first independently or in small groups, then as a class. Note the results of each selection and record the answers to each question on a transparency of the Student Worksheet.
- If several computers are available, divide students into small groups and assign each group to a computer; use a rotation system if necessary to limit group size.

Virtual Labs

- Prepare copies of the student planning sheets and the student data sheets. Utilize the teacher guide for each lab to help plan the instruction. The same general whole class use and student assignment process may be used for these resources as is used for Explorations. However, because Virtual Labs are meant to give students practice in designing and conducting investigations, student planning time using the planning sheets should be built into the instruction. Time on the computer needs to be such that students can run multiple trials and record data; typically this is most of a class period.
- Prior to students using the lab on their own, teachers will want to introduce the lab as a whole class experience and guide students in planning out their investigations. Each lab's teacher guide provides a scenario for introducing that particular lab. Then assign the lab to students to work on in small groups or individually, allowing time for planning, multiple trials, and data analysis. After students collect and analyze their data, the teacher should again show the lab to the whole class as students share and explain their findings while referring to the lab on the screen.

Integrated Science Simulations

- Found only in DE Science for middle school, these resources can be used with the whole class in a similar manner as Explorations and Virtual Labs, or assigned to individuals and small groups. ISS typically require longer time on the computer than Explorations. The teacher may wish to introduce the simulation to the whole class.

Assessments

- Online selected response assessments are completed by students one at a time. However, each assessment can be printed out and used as a paper/pencil assessment. A teacher version of the assessment with correct answers marked is also available. Online student self-check concept assessments typically can be completed in about five minutes or less. Prepared unit online assessments will take longer. Results from the online versions are available for the teacher to view as reports in Assessment Manager.
- Note that all online assessments can be customized by the teacher or Assessment Manager can be used to develop your own online assessment locating and choosing items from the DE Science item bank using a keyword or state standards search.
- Brief constructed responses (open ended science items) can be printed out for student use. A scoring tool for the teacher is provided.
- After students have completed one or more of them, consider using a Virtual Lab as a means of assessing students' ability to design and conduct an investigation. Without directing them, allow them to complete the planning sheet and conduct the investigation on their own. This will provide a measure of their understanding of science investigative process.
- For students who are ready, the MythBusters series found in the Process Skills Library offers a chance for students to demonstrate their understanding of science process by critiquing the duo's exciting science investigations. Observation sheets can be printed out to help students organize the review and critiquing process.