

The Basics

What does the *Amplify Science K-5* curriculum include?

Amplify Science K-5 is a core science curriculum that supports multi-dimensional science teaching and learning.

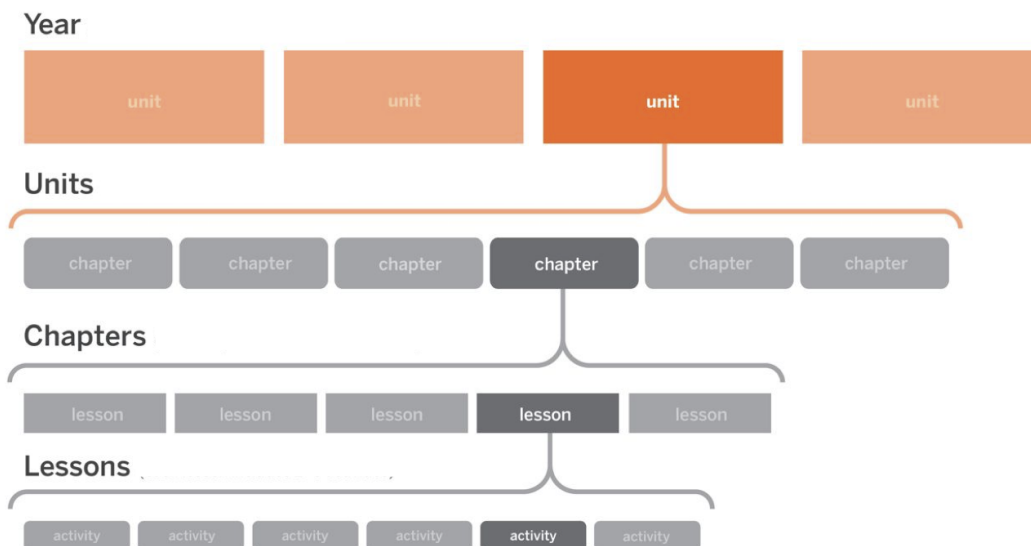
What is in the Amplify Science K–5 program?

Amplify Science is a comprehensive program that is structured around a coherent set of four units per year for grades 3–5 and three units per year for grades K-2. Each individual unit includes:

- **A Teacher’s Guide:** All teacher planning and instructional materials, including lesson plans, differentiation strategies, background materials, media, and more, can be accessed via the Amplify Science curriculum website or printed teacher’s guide.
- **Classroom Slides:** Available to download for every lesson in the program, Classroom Slides offer clearly sequenced, engaging, and easy to follow slide sets with notes that help teachers bring the rich storylines and three-dimensional instruction of Amplify Science to life.
- **An Investigation Notebook:** Each unit’s consumable Investigation Notebook contains instructions for student activities, as well as space for students to record data, reflect on ideas from texts and investigations, and construct explanations and arguments. Teachers also have access to the PDF version of these Investigation Notebooks via their Digital Teacher’s Guide.
- **Robust digital simulations and modeling tools:** Beginning in grade 2, students use digital tools that serve as venues for exploration and data collection, allowing them to explore scientific concepts that might otherwise be invisible or impossible to see with the naked eye.
- **Student books:** A class set of five unique titles (plus one Big Book per title in grades K–1) were written specifically for the Amplify Science unit in which they’re used. Teachers also have access to the digital version of these books via their Digital Teacher’s Guide.
- **A Unit kit:** The unit kits, which accommodate two uses of thirty-six students, contain consumable and nonconsumable hands-on materials for unit investigations; premium print items for the classroom (e.g. Vocabulary words, Unit Questions, Sorting Cards, etc.); one blackline master copy of each unit Investigation Notebook; and the student books mentioned above.
- **Assessments:** To support and guide instruction, a variety of formative and summative assessments are embedded in each unit, along with evaluation guidance.

What does pacing look like?

To understand the pacing of Amplify Science it is important to first know the structure of the program. The content is nested for ease of navigation— each course (or “year”) contains units, which contain chapters, which contain lessons, which contain activities.



In grades 3–5, each grade level has four units, as depicted below in the order they are recommended to be taught.

Richmond Public Schools Unit Recommendations

Grade 3

- Balancing Forces
- Inheritance and Traits
- Environments and Survival
- Ecosystem Restoration

Grade 4

- Vision and Light
- Patterns of Earth and Sky
- Weather and Climate
- The Earth System

Grade 5

- Modeling Matter
- Energy Conversions
- Waves, Energy and Information
- Earth's Features

The number of chapters varies between units, but all units contain twenty 60-minute instructional lessons (with the exception of one 4th grade unit that has 24) plus two full-session assessment days. This works out to 88 lessons per year for grades 3 and 5, and 92 lessons for 4th grade.

Getting Started

Instructional Content

Does the Amplify curriculum include hands-on and interactive digital activities?

Yes! Every Amplify unit includes hands-on experiences as one of several modalities students will use to figure out phenomena. Another is visualization through interactive simulations and other digital apps. For example, molecular interaction at the nanoscale is made visible to fifth graders through a digital simulation in the *Modeling Matter* unit. Students also use models (physical and digital) to represent phenomena happening in the natural world.

How does the Amplify curriculum balance print and digital materials?

Digital materials are integrated thoughtfully and purposely throughout the program as part of a powerful blended learning model. In every unit, students will regularly be: collecting firsthand evidence through hands-on investigations, observations of video clips, and/or the use of a digital simulation (“Sim”); participating in student-to-student discussions; actively reading engaging science texts; writing scientific arguments and explanations; and visualizing scientific phenomena in ways never before possible. In fact, in Amplify Science, lessons were written to ensure that students have the opportunity to DO, TALK, READ, WRITE, and VISUALIZE every important idea.

How does the Amplify curriculum connect to the Virginia Standards of Learning for ELA and Math?

The Amplify curriculum addresses a significant number of math and language arts standards as they pertain to science. Throughout each unit, students read science texts, engage in science talk and argumentation, and write evidence-based science explanations. In this way, the curriculum supports vocabulary, language, and reading comprehension development. Students also use measurement tools with precision, record and analyze data, make sense of scientific phenomena, and develop solutions to problems experienced in the real world.

Standards & Assessments

How is the Amplify Science curriculum aligned to the Virginia Standards of Learning?

RPS’ custom scope and sequence for Amplify Science is specifically designed to address

the Virginia Standards of Learning. A set of companion lessons is provided for grades 3, 4, 6, 7, and 8 to bridge several gaps between what students learn in the Amplify Science curriculum and the 2018 Science Standards of Learning.

How do Amplify Curriculum assessments show student progress and proficiency?

The Amplify Science assessment system includes formal and informal opportunities for students to demonstrate understanding and for teachers to gather information throughout the unit — all while giving teachers flexibility in deciding what to score and what to simply review. Built largely around instructionally embedded performances, these opportunities encompass a range of modalities that, as a system, attend to research on effective assessment strategies

Formative Assessments

- **Pre-Unit assessment (formative):** These assessments make use of discussion, modeling, and written explanations to gauge student knowledge prior to starting a unit and form a baseline from which to measure growth over the course of the unit.
- **On-the-Fly assessment (formative):** Designed to provide regular information to the teacher with minimal impact on instructional time, these embedded assessments leverage the formative opportunities in the learning experience students are already engaged in. Each On-the-Fly assessment includes guidance on what to look for in student activities or products of student work, and offers suggestions on how to adjust instruction accordingly or respond to assessment information.
- **Self-assessment (formative):** Once per chapter, students are given a brief opportunity to reflect on their own learning, ask questions, and reveal ongoing wonderings about unit content. Students respond to a consistent set of prompts each time, ensuring that their own progress is visible to them.
- **Critical Juncture assessment (formative):** Usually occurring at the end of each chapter and designed to assess students' understanding of a level of the Progress Build, these signify a point at which student understanding of content is crucial before moving on, ensuring they are well positioned for success in the ensuing instruction. Often taking the form of end-of-chapter explanations or arguments, these three-dimensional performance tasks support students' consolidation of the ideas encountered in the chapter and provide insight into students' developing understanding.

Summative Assessments

- **End-of-Unit assessment (summative):** These assessments employ discussion, modeling, and written explanations or arguments to enable students to demonstrate understanding and growth at the conclusion of a unit.
- **Investigation assessment (summative):** In each grade, there is one opportunity to summatively assess an embedded performance in which students plan and conduct investigations. This three-dimensional assessment enables teachers to assess students' facility with the practices of Planning and Conducting Investigations and Analyzing and Interpreting Data as well as students' understanding of disciplinary core ideas and crosscutting concepts.
- **Portfolio assessment (summative):** Through the portfolio assessment, resources for which are found in the Amplify Science Program Guide, students have an opportunity to reflect on their goals and growth throughout the school year as they compile and reflect on work products from each unit. Guidance is

provided for teachers and students on selecting work and reflecting on and evaluating growth across the year.

Evaluation Guidance

Categories of evaluation guidance found throughout the program include:

- **Assessment guides/rubrics:** Guidance is provided to gauge the level of student performance on the assessment task, with suggestions for student feedback and questioning strategies to advance learning, revise performance, or elicit and clarify student thinking. Assessment guides/rubrics are available as a digital resource in the Lesson Brief for the lesson in which the task occurs.
- **Possible student responses:** Possible student responses are provided to model how evidence of understanding, or partial understanding, may be demonstrated by the student for the specific task. Possible student responses are provided in the Possible Responses tab in the activity where there is an applicable notebook page. Possible student responses also appear in the Assessment Guide for the End-of-Unit Assessment (in Digital Resources).
- **Look for/Now what? notes:** Each On-the-Fly Assessment includes a two-part description of what evidence of understanding would look like for the task (Look for) and how instruction may be adjusted in response (Now what?). These are accessible by pressing the orange hummingbird icon in the activity in which they appear.
- **Assess understanding/Tailor instruction notes:** Each Critical Juncture Assessment includes a two-part description of how the expected level of student understanding may be demonstrated in the task (Assess understanding) and how instruction may be adjusted in response (Tailor instruction) at the class, group, and student level. These are accessible by pressing the orange hummingbird icon for the activity in which they appear.

Does the Amplify curriculum offer Spanish translations to the science texts?

Developed in conjunction with Spanish experts and classroom teachers, Amplify Science provides Spanish language components across the curriculum, including:

- **Teacher resources:** the Spanish digital teacher’s guide gives teachers access to a button that enables them to toggle back and forth between seeing Spanish and English in their Amplify Science accounts. When in Spanish mode, teachers can:
 - Download PDFs of all classroom wall materials, copymasters, assessments, and more
 - Use Spanish projections in class
 - See all model “teacher talk” in Spanish
 - Access digital versions of the Student Books and scientific articles in Spanish

These materials were designed to mirror the English versions in quality and format so that English learners have an equal opportunity to develop a deep understanding of science concepts as well as facility with practices that are essential to the work of scientists and engineers.

How does the Amplify program support English Language Learners and Diverse Learners?

Every lesson of every unit includes embedded teacher and student supports for English language and diverse learners, including a gradual release of responsibility and targeted differentiation strategies for every lesson. These strategies and methods ensure that all students have access to the same content as their peers.

Technology

What type of devices does *Amplify Science* run on?

Amplify Science is device-agnostic. For most devices, you need to just log in to our website from a Safari or Chrome browser. Full technical requirements can be found at:

<https://amplify.com/customer-requirements>.

Do we need devices in class every day?

No! Students in grade 3 use digital tools about once per week (or per 5 lessons), with lessons assuming that students are sharing devices (although one device per student is also supported). The digital tools used at these grade levels help students with modeling, graphing, and sorting information. In grades 4–5, students experience a slight increase in their use of technology, with lessons calling for the use of digital tools roughly 2–3 times per week (or per 5 lessons) for 15–20 minutes at a time (again with students sharing devices or each having their own). Digital tools and Simulations (Sims) at these grade levels are slightly more complex and serve as venues of exploration and a means for collecting data and evidence, while also presenting students with opportunities to make observations and manipulate variables of key scientific processes and mechanisms.

What has to be installed on my computer?

The online content is entirely web-based, so there is nothing needing installation or download by the teacher. There is some “allow list” work that needs to be performed to make sure all of the content is accessible through your district’s firewalls, but that will be taken care of by our Implementation Managers and your tech leadership.

How does your program accommodate students who do not have access to devices/internet access at home?

There are no homework assignments in grades 3–5, so at-home device/internet access will not be an issue. Sometimes there are opportunities for family homework experiences if the teacher would like to assign them, but none of these require technology.

What if schools do not have devices for every student?

While Amplify Science offers technology enhanced activities, it also offers flexibility. Knowing that infrastructure and technology resources vary widely within and across districts, particularly at the elementary

level, Amplify Science was designed to work effectively in a range of settings. We encourage schools to adapt the materials as necessary to meet their context and the needs of their students.

Print supports, including hard copy Teacher’s Guides and Student Investigation Notebooks, make it possible to teach and learn offline for the vast majority of activities in the program. Classroom Slides and “Offline Guides” are also available for download from within the digital Teacher’s Guide, making it feasible for schools that don’t have reliable internet access or device availability to maintain engagement with Amplify Science’s rich science content.

For activities that do call for the use of technology, if student devices are not available, the benefits of the digital tools can be achieved through strategic use of the teacher device. For example, the teacher can project the digital tool and use student input to complete an activity collaboratively or have students “drive” by inviting one or two at a time up to use the projected device while other students observe. Another option is to invite groups up in shifts, giving each group a chance to interact with the digital tool on the teacher’s device while the remaining students work on other activities. These options can provide investigation and sensemaking opportunities and support the fruitful conversations that are most crucial for student learning. Regardless of the implementation option you choose, your students will be empowered to collaboratively visualize otherwise invisible scientific phenomena in new and exciting ways.

What if a school is missing items or wants to return an item?

Please reach out to help@amplify.com if you are missing any of your materials. Your question/issue will be routed to team members knowledgeable about RPS’ implementation.

What if a school wants to purchase additional items?

Please reach out to Michael Kasloff at mkasloff@amplify.com if you have additional purchasing needs.

More Information

Amplify’s Richmond Site - This live website was created for Richmond educators as a source for additional resources that can help you with getting started, planning, and implementing Amplify Science in Richmond. Check back for seasonal updates and upcoming professional learning opportunities.

<https://amplify.com/richmondscience/>.