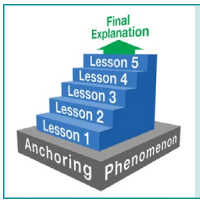


Storyline Viewer Planning Tool

hhmi | BioInteractive

Click & Learn
Educator Materials

OVERVIEW

Storyline Viewer is an interactive tool that helps educators plan, implement, and visualize storylines: coherent lesson sequences with the ultimate goal of explaining an overarching phenomenon. Lessons within storylines are linked by students' questions and are individually driven by insights into smaller-scale phenomena. To develop an explanation for each phenomenon in the storyline, students use the practices of science.

Storyline Viewer packages storylines and their associated resources in a convenient way that can be customized, edited, and shared. This tool also provides convenient scaffolding to articulate student learning goals, science practices, crosscutting concepts, and assessments. Users may download storylines developed by BioInteractive, modify these storylines to reflect local contexts, save and continually edit storylines over time, or build a storyline from scratch.

For instructions on how to use *Storyline Viewer*, watch the tutorial video and/or read the "How to Use the Tool" section below. Additional information can be found on the webpage for *Storyline Viewer*.

An alternative, simpler format for connecting BioInteractive lessons in a coherent way are resource playlists. You can browse BioInteractive's curated playlist collection or build your own playlists if you have a BioInteractive account.

BACKGROUND

Modern science education standards, such as the Next Generation Science Standards (NGSS), emphasize students using science practices to explain real-life phenomena. **Phenomena** are observable occurrences that students can use to generate science questions for further investigation or design solutions to problems that drive learning. They may include an interesting or puzzling event or process. Students interact with phenomena via images, verbal descriptions, media, or even directly interacting with that aspect of nature.

A **storyline** is a sequence of lessons that is driven by students' questions about phenomena. The ultimate goal of a storyline is to explain an **anchoring phenomenon**: a major, overarching phenomenon that grounds and drives the learning within the storyline. The anchoring phenomenon is usually complex and requires multiple science concepts to understand. Students build their understanding of these concepts by exploring **lesson-specific phenomena** (supporting topics that help them progress toward explaining the more complex anchoring phenomenon) and asking **essential questions** (questions about the lesson-specific phenomena that are also tied to explaining the anchoring phenomenon).

Storylines are effective for helping students understand the relevance of their scientific knowledge and practices — a key strategy for supporting the success of all students. The key difference between storylines and other lesson sequences is an emphasis on coherence. A good storyline provides context so that students can see how individual lessons apply to addressing real-world phenomena and to each other. For example, storylines use **linking questions** to connect the key concepts in each lesson to the anchoring phenomenon or key concepts in a previous lesson.

For more details and examples of using storylines at the K–12 level, visit the Next Generation Science Storylines website.

TEACHING TIPS

- It is helpful to give students a summary for each lesson in the storyline as they proceed through the lessons. The summaries can serve as a roadmap to remind students of the "story" of their learning, which is a useful metacognitive tool.
  - Use the "Export" option to create a summary document in *Storyline Viewer*.
- *Storyline Viewer* provides several sample storylines created by BioInteractive. You can edit these storylines to be more relevant for your students and context.
  - Preview the BioInteractive storylines before use, paying careful attention to the details for each lesson and editing them as needed. For example:
    - You may want to adjust the time estimates for the storyline based on your knowledge of your students.
    - The "Reveal Student Thinking" sections in the BioInteractive storylines are based on descriptions from the literature and samples of students from experienced teachers. You may need to update these ideas to match the ideas you hear from your students.
  - Consider sharing your edited storylines with other local teachers.
- Storylines can range widely in length from just a few to many lessons. *Storyline Viewer* includes a calendar function to help plan instructional time.

HOW TO USE THE TOOL

This section describes the parts and functions of the *Storyline Viewer* interface. It is divided into the following subsections:

- Launch the Tool (Landing Page)
- View a Storyline (Storyline View)
- Edit a Storyline (Lesson View)
- Save, Open, or Export a Storyline
- Assign Dates for Lessons (Calendar View)
- Create a New Storyline

Some screens within *Storyline Viewer* have also information icons indicated by the letter "i" (ⓘ), which you can click on for more information.

Launch the Tool (Landing Page)

Go to the *Storyline Viewer* webpage and click the "Launch Tool" button. This will open a landing page for the tool (Figure 1).

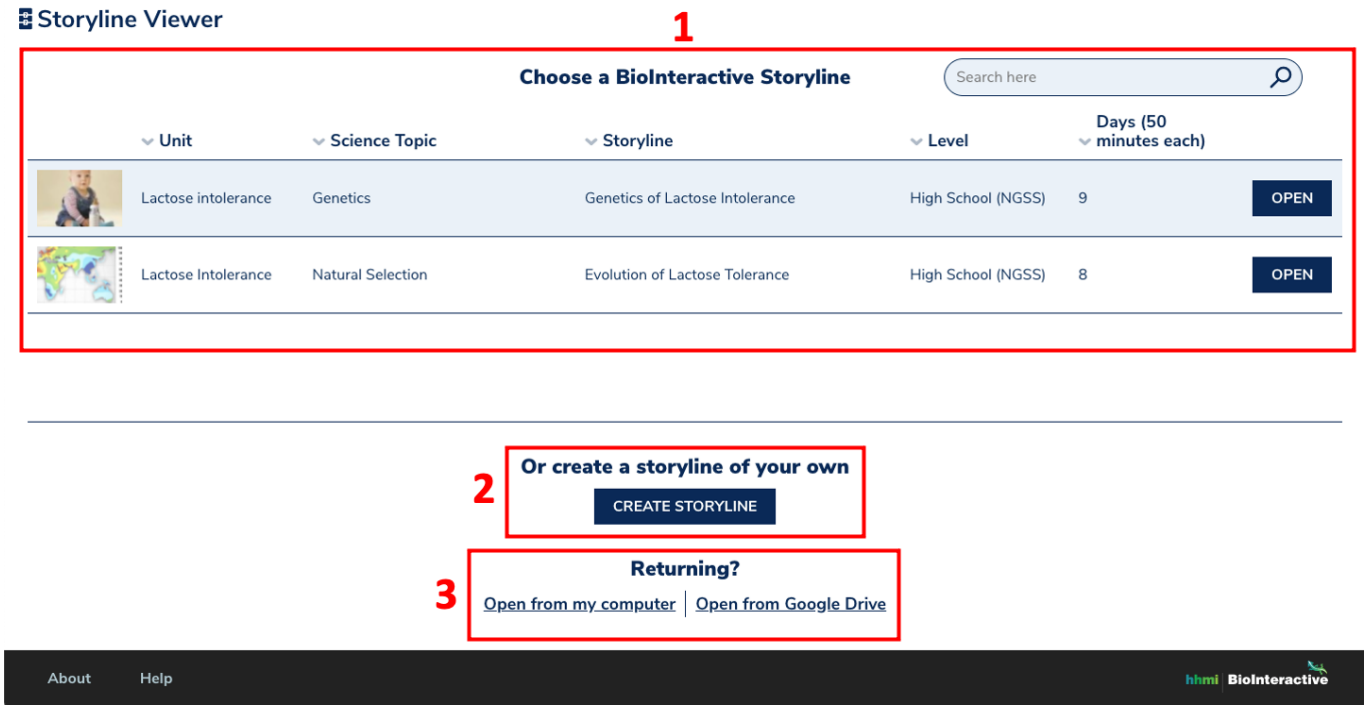


Figure 1. The landing page of *Storyline Viewer* with the following sections labeled: 1) choose a BioInteractive storyline, 2) create a storyline of your own, and 3) options for returning users.

The landing page has the following sections:

1. **Choose a BioInteractive storyline.** This section lists the storylines created by BioInteractive and shows information on their names, topics, levels, and time requirements. You can use the search bar at the top to search for a specific storyline. Use the "Open" button to view an existing storyline of your choice.
2. **Create a storyline of your own.** Use the "Create Storyline" button to create a new storyline from scratch.
3. **Options for returning users.** This section allows returning users to open a previously saved storyline. Use the corresponding options to open a storyline saved on your computer or in Google Drive.

View a Storyline (Storyline View)

Opening a storyline will take you to the default view for the storyline, called **Storyline View**, which highlights the connections among lessons (Figure 2).

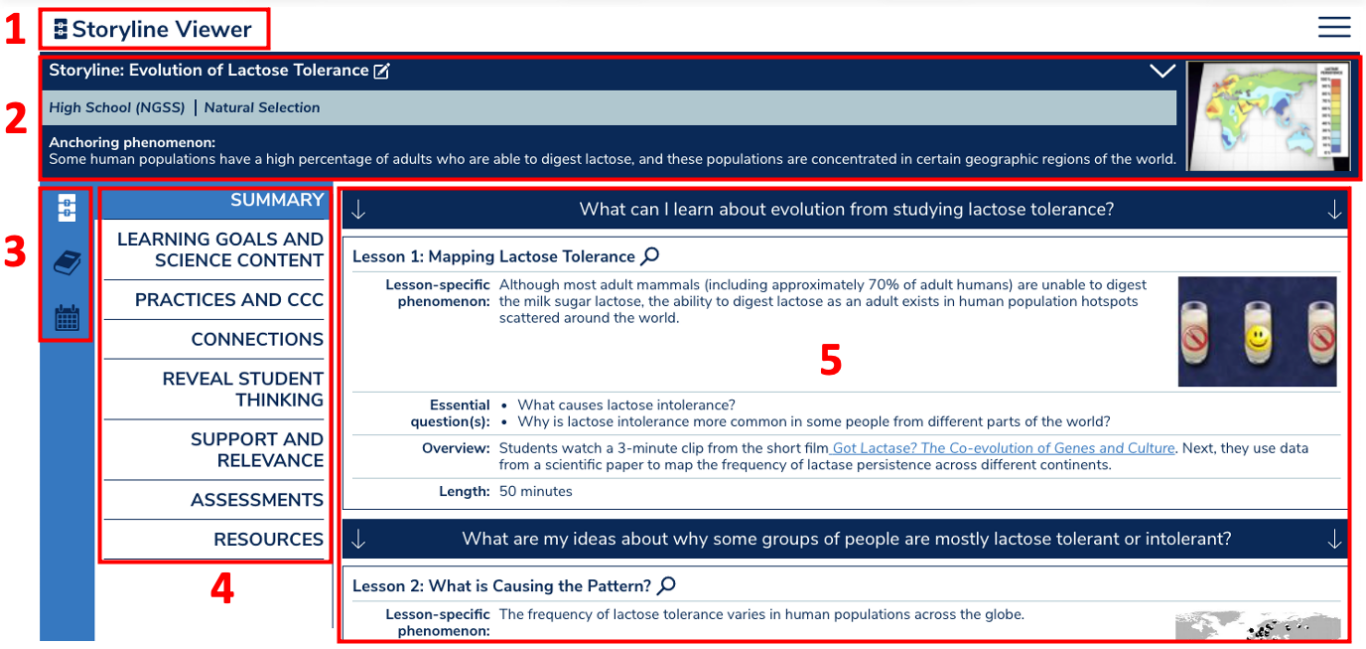


Figure 2. Storyline View of a storyline with the following sections labeled: 1) return to landing page, 2) storyline summary, 3) view options, 4) sidebar menu, and 5) lesson descriptions.

Storyline View has the following sections:

1. **Return to landing page.** Use the "Storyline Viewer" logo in the top-left corner to return to the landing page. If you made edits to the storyline that you want to keep, you will need to save a copy before returning to the landing page.
2. **Storyline summary.** This section summarizes the storyline's key features, including the anchoring phenomenon, main learning goals, time requirement (in 50-minute "days"), and unit. Use the downward arrow ( ) to expand the summary and reveal more information.
3. **View options.** This section has three icons that let you switch between different views of the storyline. The icon with three boxes ( ) takes you to Storyline View, which emphasizes connections among lessons. The book icon ( ) takes you to Lesson View, which shows detailed information for each lesson. The calendar icon ( ) takes you to Calendar View, which allows you to assign dates for each lesson.
4. **Sidebar menu.** This menu provides seven options through which you can explore different sections and connections among the lessons. These options are described in more detail in the next list below.
5. **Lesson descriptions.** This section provides information on each lesson in the storyline. Use the magnifying glass icon ( ) to view the details for a particular lesson in Lesson View.

The main sections of each lesson, which can be examined through the sidebar menu (Section 4 in Figure 2), are as follows:

- **Summary:** The key features of the lesson, including the ***lesson-specific phenomenon*** (the phenomenon that the lesson focuses on), ***essential questions*** (guiding questions about the lesson-specific phenomenon that the lesson answers), an ***overview*** of the lesson, and the lesson's ***length***.
- **Learning Goals and Science Content:** Lesson-specific ***science content standards***. These standards can be entered manually or chosen from options based on the storyline's level:
  - High school (NGSS) storylines have options for NGSS Performance Expectations (PEs) and Disciplinary Core Ideas (DCIs).
  - AP Biology storylines have options for AP Big Ideas and Enduring Understandings (2015 version).
  - College storylines have options for Core Concepts from Vision & Change.

- **Practices and CCC:** Lesson-specific ***science practices*** (general practices used by scientists or engineers in their work) and ***crosscutting concepts*** (big ideas that apply across multiple domains of science). These sections can be entered manually or chosen from options based on the storyline's level:
  - High school (NGSS) storylines have options for NGSS Science and Engineering Practices (SEPs) and Crosscutting Concepts (CCCs).
  - AP Biology storylines have options for AP Science Practices (2015 version).
  - College storylines have options for Core Competencies and Disciplinary Practices from Vision & Change.
- **Connections:** Connections in the lesson to other concepts in science, mathematics, English Language Arts (ELA), or other fields, such as social studies. High school (NGSS) and AP Biology storylines include options for Common Core Math and ELA.
- **Reveal Student Thinking:** Lesson-specific ***common student ideas*** (students' prior knowledge, misconceptions, experiences, and ways of making sense of the science content), ***common student questions***, and useful ***teacher questions*** to help reveal and guide student thinking. Different types of teacher questions are indicated by the following labels:
  - ***Elicit*:** These questions are usually posed to a whole class and are designed to make students' initial thinking visible to themselves and the teacher. The focus is not on students supplying a scientifically correct answer but instead on engaging student thinking, usually early in a lesson.
  - ***Probe*:** These questions are designed to get more information about a specific student's ideas without leading them to an answer. The goal is to help the student provide more information or clarify their thinking, often in response to an "Elicit" question.
  - ***Challenge*:** These questions are designed to change and scaffold students' thinking to help them develop a deeper understanding of science ideas or make new connections.
- **Support and Relevance:** Strategies in the lesson to ***support all learners*** (including English learners, struggling learners, advanced learners seeking opportunities for extensions, and learners with accommodations and modifications for accessibility), improve ***relevance*** (ways the phenomena can be made relevant to students' lives or interests), and offer student ***collaboration opportunities***.
- **Assessments:** Descriptions or links to available assessments, rubrics, and answer keys for the lesson. May include a summary of what students figure out in the lesson.
- **Resources:** Descriptions or links to teaching materials and other resources that could be used with the lesson. Includes detailed steps for each lesson.
  - This section may end with a list of questions that students still have at the end of the lesson, which can be used for assessments. Students who ask questions that anticipate the concepts in subsequent lessons will likely have a good understanding of the content.

Edit a Storyline (Lesson View)

You can edit an existing storyline (either a BioInteractive storyline or a previously saved storyline) in *Storyline Viewer*. Most editing is done in **Lesson View**, which displays detailed information about each lesson in the storyline. Select the book icon ( ) on the left to enter Lesson View (Figure 3).

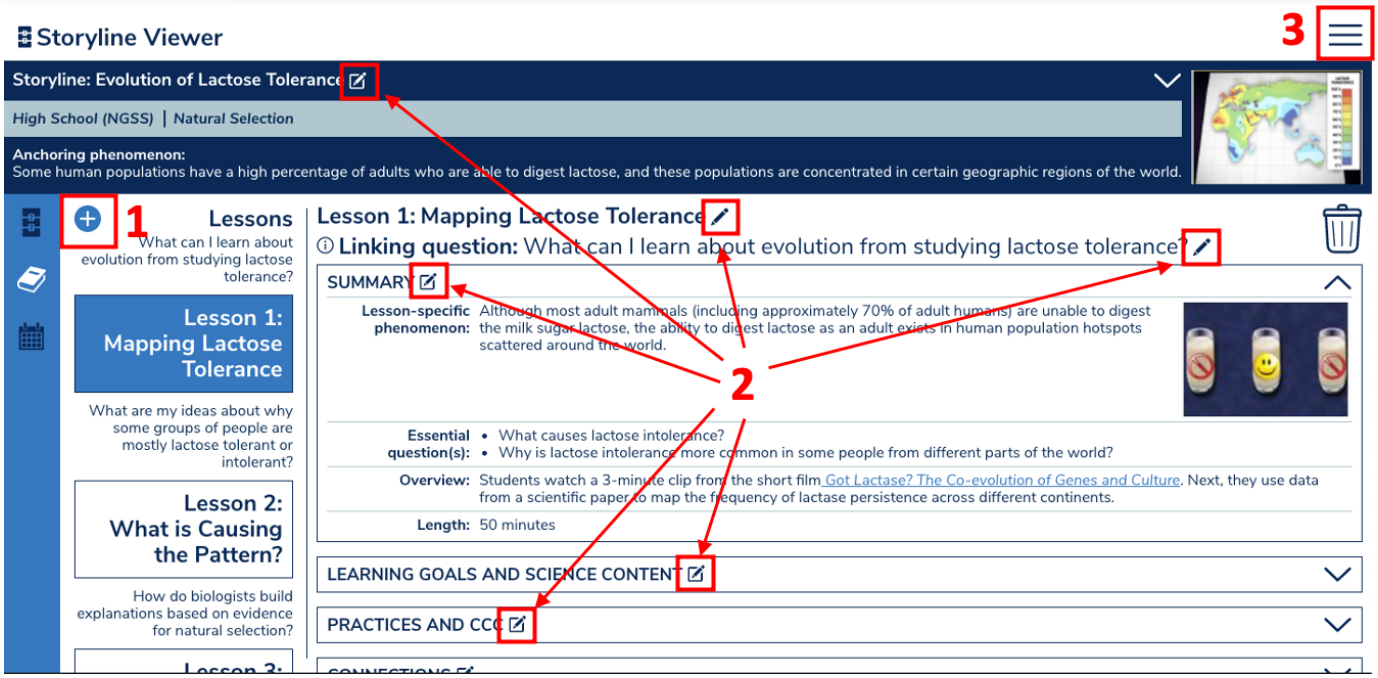


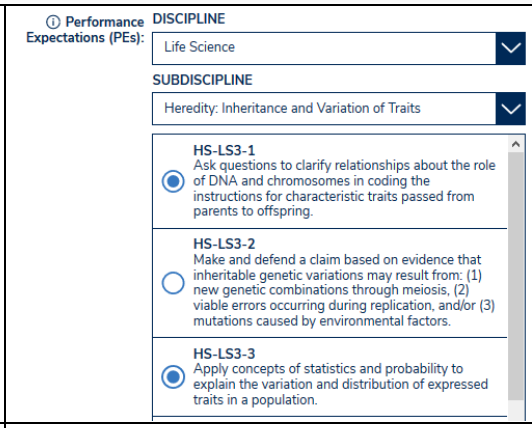
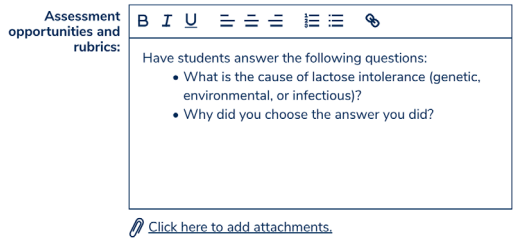
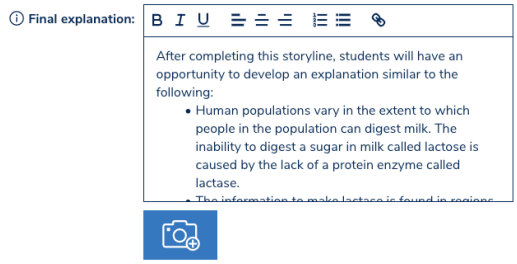
Figure 3. Lesson View of a storyline with the following icons labeled: 1) plus icon to add new lessons, 2) pencil icons to access editable fields, and 3) hamburger menu icon to access the save menu.

The sections in Lesson View correspond to the sidebar menu options in Storyline View. Use the downward arrow icon (⌄) to expand the details for each section of the lesson. Use the upward arrow icon (⌃) to hide the details.

You can add new lessons using the plus icon (⊕) at the top of the lesson list. You can also reorder lessons by clicking and dragging the lessons to new positions. The lessons are automatically renumbered based on their positions in the list.

You can edit most of the sections within each lesson. Look for pencil icons (✎ or ✐) to access the editable fields. The editing interface includes the following types of parts:

Type	Example Image	How to Use
Large textbox	ⓘ Lesson-specific phenomenon: B I U The frequency of lactose tolerance varies in human populations across the globe.	Add or edit the text in the textbox. Use the buttons above the textbox to format text and add links.
One-line textbox	ⓘ Essential question(s): Adding a new essential question ⊕ Over thousands of years, the frequency of lactose tolerance in ⊖	Add a new line of text using the plus icon (⊕). Press "Enter" or select the plus icon again to confirm changes. Select the minus icon (⊖) to delete a line of text.

Drop-down menu		Use the downward arrow icon ( ) to expand the list of options. Select all the options that apply.
Attachment upload		Select the paperclip icon ( ) or the text “Click here to add attachments” to choose a file from your computer to upload into the storyline.
Photo upload		Select the camera icon ( ) to choose an image file from your computer to upload into the storyline. It is recommended to use a JPG image that is 200×200 pixels.

After editing the fields on a page, scroll to the bottom of the page and select “Done” to temporarily save your changes. Make sure you save the storyline to a new file to permanently preserve your edits.

Save, Open, or Export a Storyline

If you edit any part of a storyline or lesson therein, you will need to save a copy to your computer or Google Drive to preserve your edits. The storylines on BioInteractive will remain unchanged for others to use.

To save a copy of your storyline or to open a previously saved copy, use the hamburger menu icon (☰) that appears in the top-right corner of *Storyline Viewer* (Icon 3 in Figure 3). This icon will open a menu with three options:

- **Save:** Saves the current version of the storyline. You will get an option to save the storyline to your computer or to Google Drive.
  - Saving the storyline to **your computer** will download the storyline as a ZIP file. You can share your storyline with colleagues by sending them this ZIP file.
    - You do *not* need to unzip the file to reopen it in *Storyline Viewer*, because *Storyline Viewer* works directly with ZIP files.
    - You can unzip the file to get local copies of all the files (e.g., PDFs) that were attached to the storyline. However, *Storyline Viewer* will not be able to open an unzipped file.
  - Saving the storyline to **Google Drive** will store the storyline in a Google account of your choice. You can use this Google account to access the storyline on other devices.

  - Storylines saved to Google Drive cannot be shared. You must save the storyline to your computer as a ZIP file in order to share it.
- **Open:** Opens a previously saved storyline, either from your computer or from Google Drive.
  - You can open a storyline that someone else has shared with you as a ZIP file. Do *not* unzip the file or *Storyline Viewer* will be unable to open it.
- **Export:** Creates an overview of the storyline to share with students or colleagues. This overview shows a summary of each lesson on a different page. You will have the option to save the overview as a PDF file or print it directly.

Assign Dates for Lessons (Calendar View)

Selecting the calendar icon ( ) on the left will show the storyline in **Calendar View**, which allows you to input dates for implementing each lesson in the storyline (Figure 4).

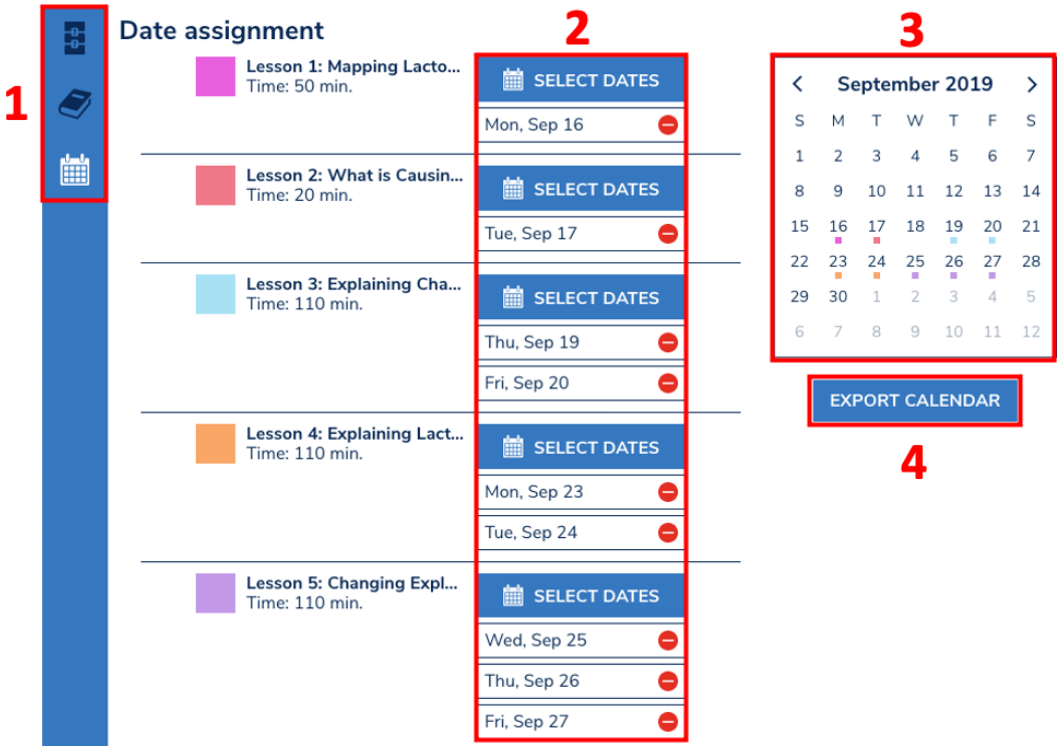


Figure 4. Calendar View of a storyline with the following sections labeled: 1) view options, 2) select dates, 3) master calendar, 4) export calendar.

Calendar View has the following sections:

1. **View options.** This section has three icons that let you switch between different views of the storyline. The icon with three boxes ( ) takes you to Storyline View, the book icon ( ) takes you to Lesson View, and the calendar icon ( ) takes you to Calendar View.
2. **Select dates.** Use the "Select Dates" button to choose dates for teaching each lesson. You can select multiple dates if needed. To remove a date, select the corresponding minus icon ( ).
3. **Master calendar.** This calendar shows the dates for each lesson. The squares on the calendar are color-coded by lesson.
4. **Export calendar.** Use the "Export Calendar" button to save a PDF file of the calendar.

You should save a copy of the storyline in order to save your assigned dates. If you exit *Storyline Viewer* or return to the landing page without saving, your dates may be lost.

Create a New Storyline

If you want to create your own storyline from scratch, it is strongly recommended to write and save it in a separate word processing document first, then cut and paste the text into *Storyline Viewer*. Once you are ready to put your text into *Storyline Viewer*, select the "Create Storyline" option from the landing page. This will take you to a data entry page for your new storyline (Figure 5).

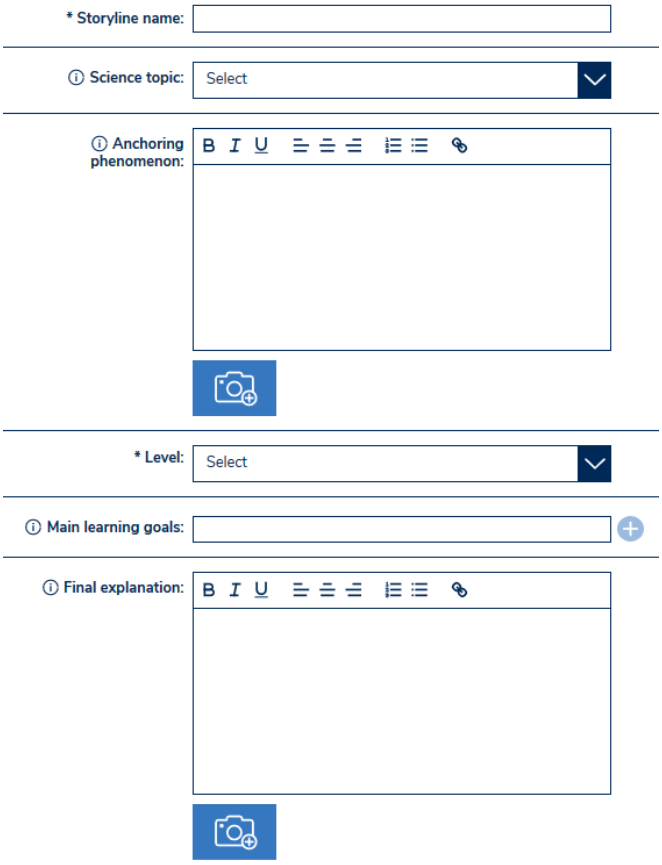


Figure 5. Interface for creating a new storyline.

As shown, you will need to fill in information related to an overview of your entire storyline. Many of the fields are optional, but a storyline name and level (high school NGSS, AP Biology, or college/other) are required.

Once you have filled in your fields, scroll to the bottom of the page and select "Done." You can then edit your storyline to add lessons and additional information. Save your storyline regularly to avoid losing work.

CREDITS

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