

INTEGRATING EDUCATIONAL COMICS IN HIGH SCHOOL SCIENCE

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Using Educational Comics

Early education uses pictures with little text to teach reading. As grade-level increases, often this is replaced by textbooks with few pictures. Today's students consume content viewing short videos with no reading required. While this method of delivery may be more engaging, it poses a risk to a literate society. Comics blend visual images with text which may promote comprehension while keeping students engaged.

Comics for Education



1949 – Comics developed by the University of Pittsburgh and New York University were introduced into hundreds of American classrooms to evaluate their effectiveness.



1950s and 1960s – Companies like General Electric actually produced educational comics to inform the public about new technologies soon to be available.



2009 – Japanese textbook writers created a physics textbook using comics to primarily teach physics concepts through comic panels and higher level text.

Figure 1 – Examples of Comics from 1949 to 2009

Comics vs. Other Modalities

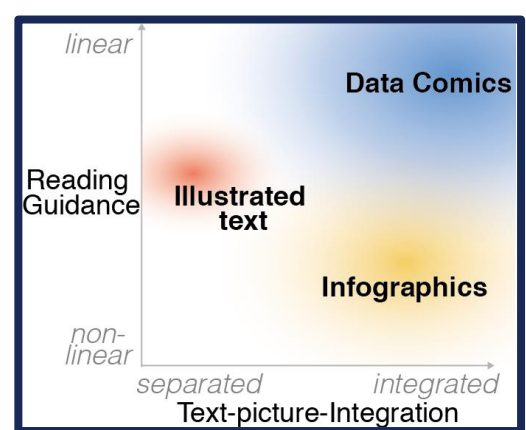


Figure 2 – Comparing Comics to Other Modalities

Comics offers both highest linear reader guidance and text-picture integration over both infographics and illustrated texts.

Comics offers the greatest retention over both infographics and illustrated texts.

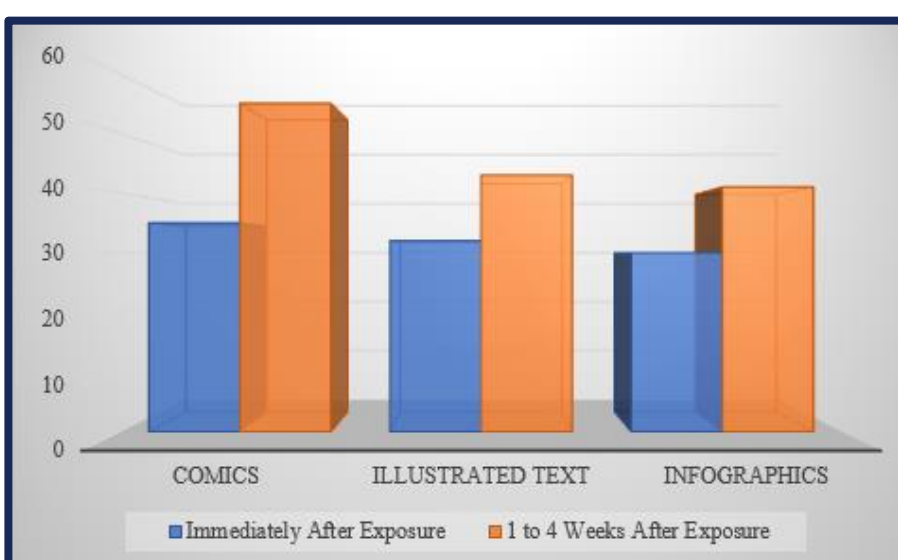


Figure 3 – Retention Percentages Between Modalities

Integrating Comics into Lessons

Comic panels can be integrated within aspects of existing 5E lessons. Using templates, comics can easily be inserted into images and text are sourced to identify misconceptions, introduce concepts, as checks for understanding, formative assessments, and for concept reviews.

Check for Understanding

Template used to check understanding about moon phases.

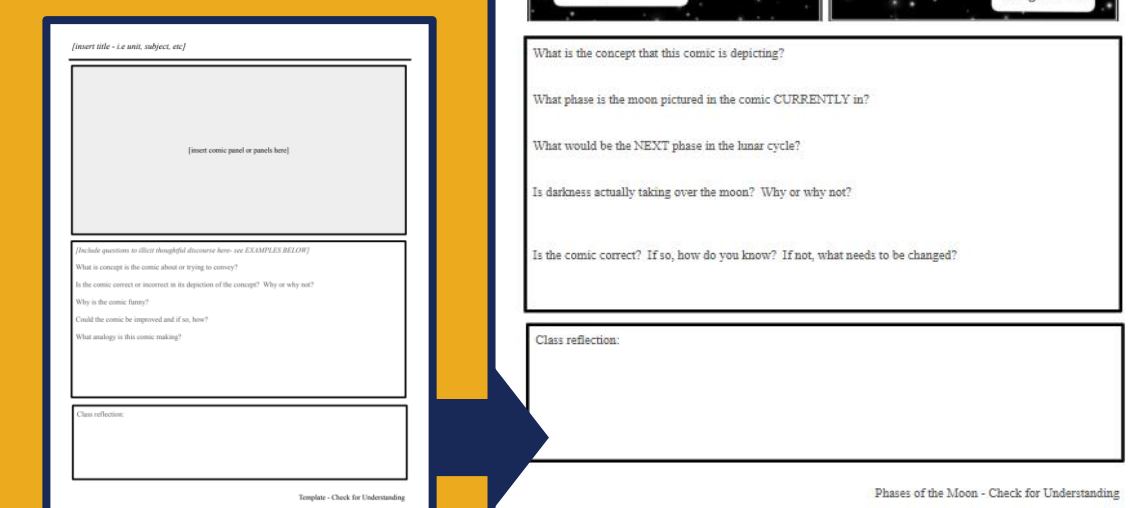


Figure 4 – Template and Example of a Check for Understanding

Concept Review

Template used to create a review on groundwater.

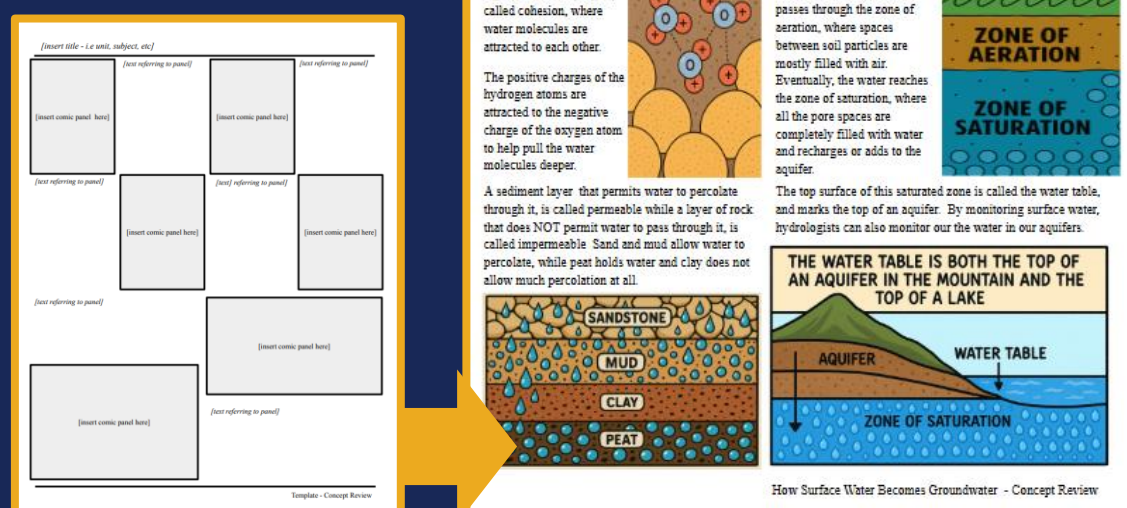


Figure 5 – Template and Example of a Concept Review

Concept Introduction

Template used to introduce the moon's formation.

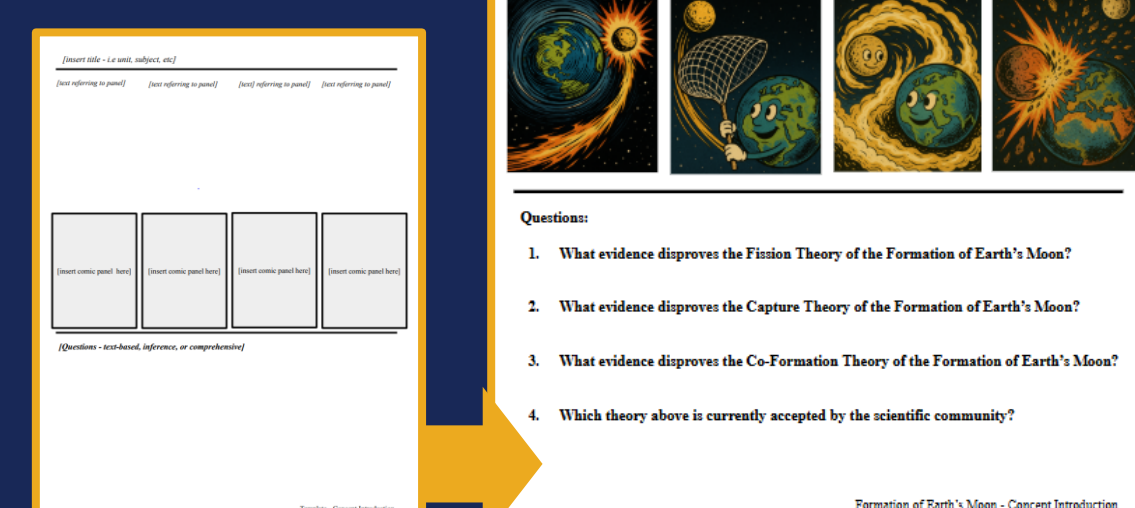


Figure 6 – Template and Example of a Concept Introduction

Formative Assessment

Template used to check understanding about moon phases.

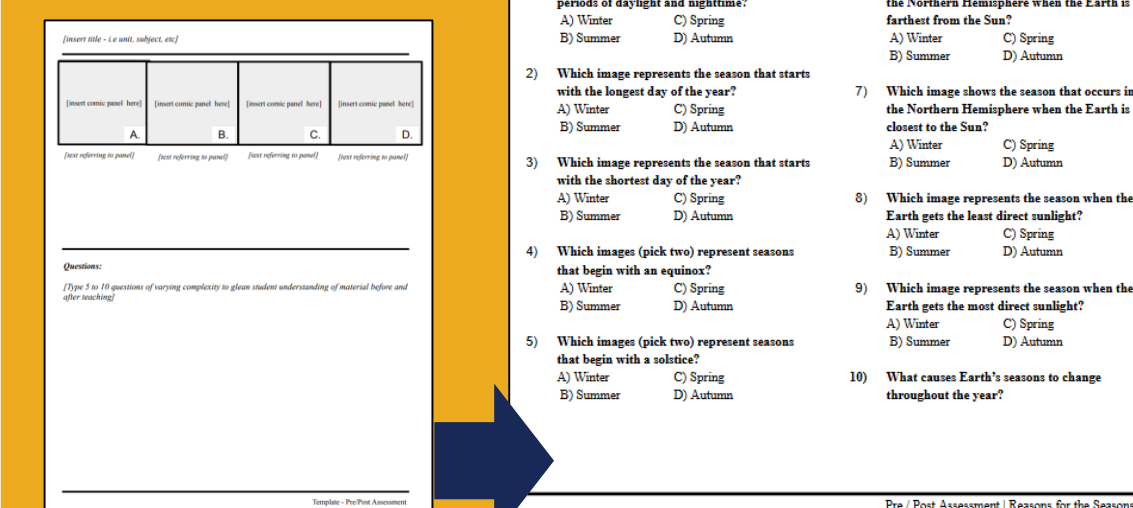


Figure 7 – Template and Example of a Formative Assessment

Identifying Misconceptions

Template used to identify misconceptions about uplift.

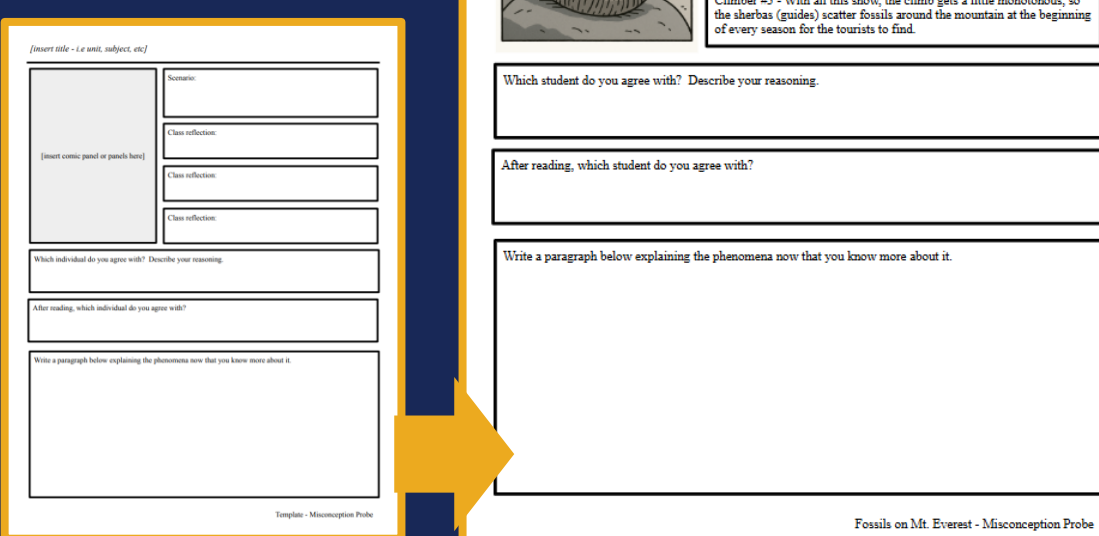


Figure 8 – Template and Example of a Misconception Probe

Comics Used As Assessments

Constructing a Concept Wall

Students can be given a rubric and create a comic on their assigned topic using a template of their choice.

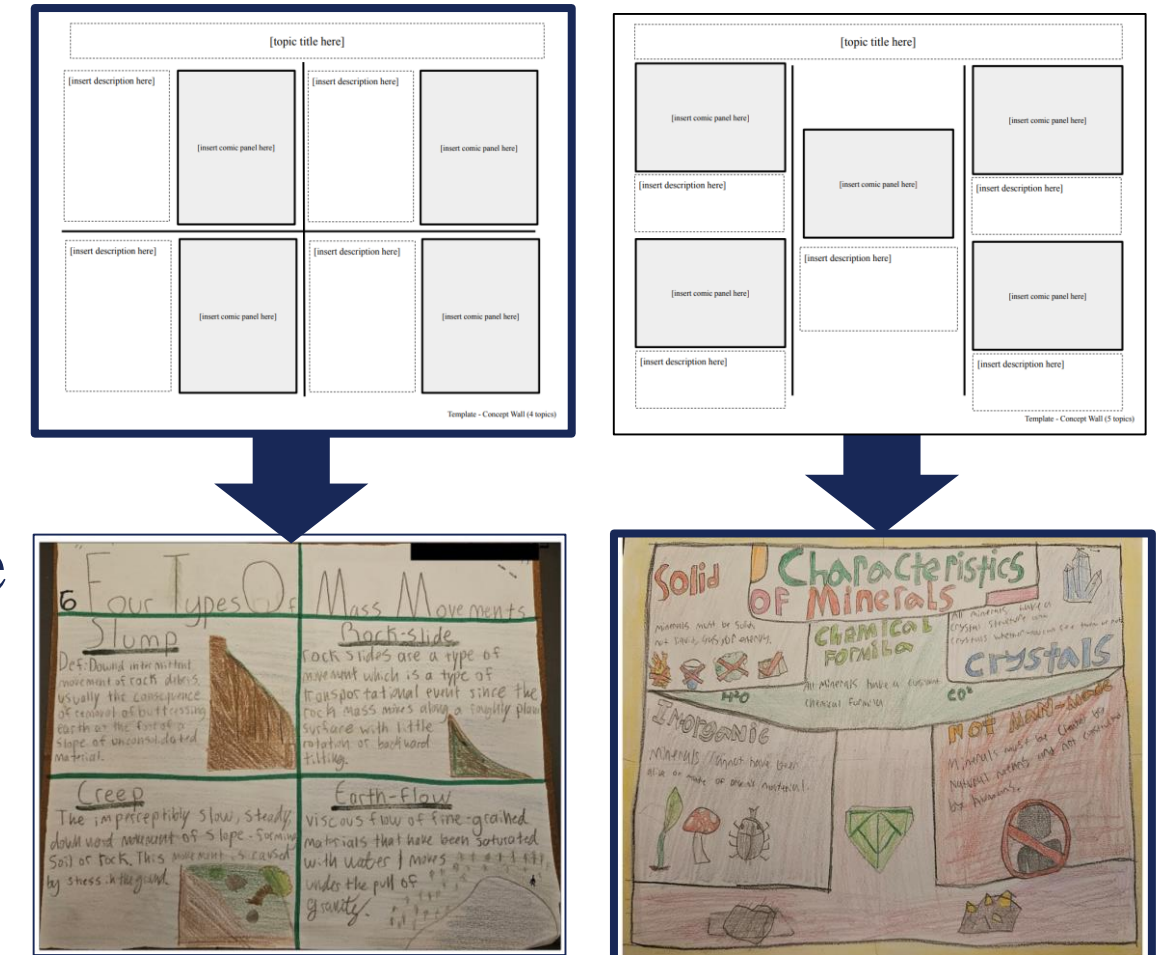


Figure 11 – Concept Wall Templates and Examples

CONCEPT WALL FLYER		of 15 points possible	
TITLE	Empty worksheet	Meets all criteria	Does not meet 1 of the criteria
TOPIC HEADERS	Correct spelling	Meets all criteria	Does not meet 1 of the criteria
BORDER	Meets all criteria	Does not meet 1 of the criteria	Does not meet 1 of the criteria
NARRATIVE (one per topic)	Correct spelling	Meets all criteria	Does not meet 1 of the criteria
PICTURES	One pic per topic	Meets all criteria	Does not meet 1 of the criteria

Figure 10 – Example of a Concept Wall Rubric

Student Gallery Walk

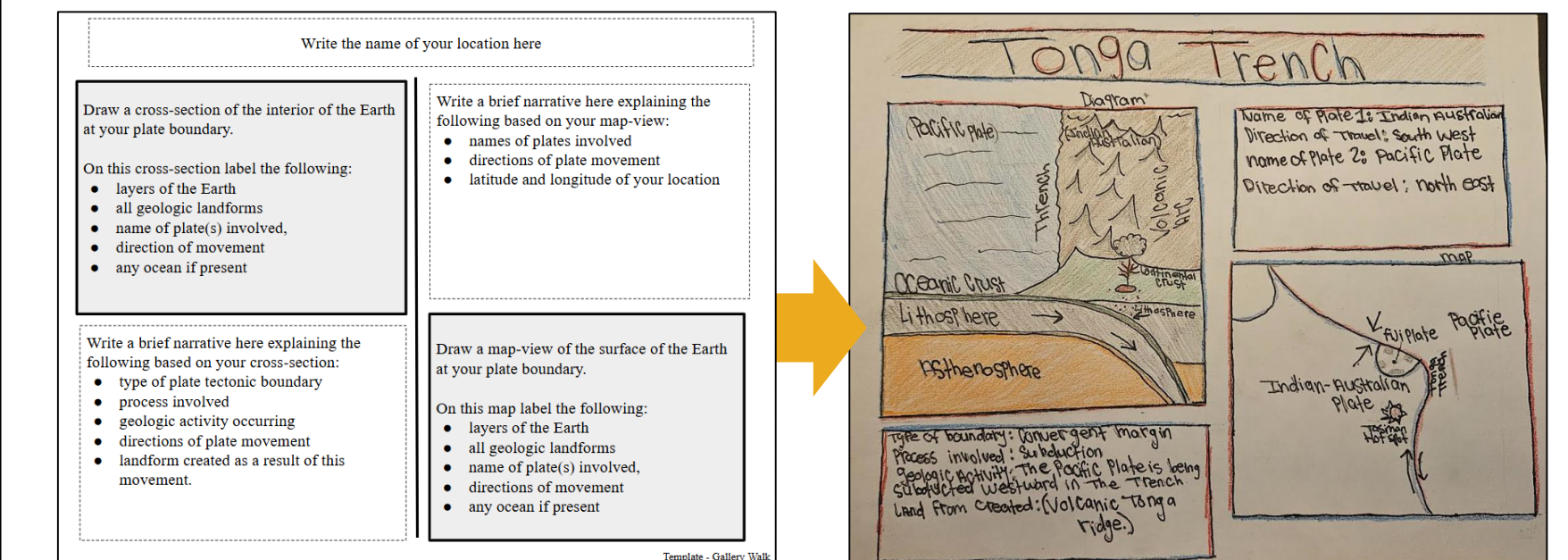


Figure 12 – Template and Example of a Student Comic Created for a Gallery Walk

Students can be given a template asked to create a comic based on the plate tectonics of their assigned location.

Tools for Creating Comics

TEXT SOURCES

- Articles or textbooks
- Informational websites
- ChatGPT providing that the teacher can verify its accuracy.

It is important that the text within the comic be of the appropriate Lexile level to support and improve student literacy and comprehension.

IMAGE SOURCES

- Existing cartoons
- Hand-drawn diagrams
- AI websites: ChatGPT, Toonrafter, CanvaAI, ComicGen, Leonardo AI, and StoryboardHero.ai.