



Curriculum Units by Fellows of the National Initiative
2025 Volume III: Graphic Narratives as Teaching Tools

Comics in the Classroom: Exploring Animal Adaptations

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by Yasmine Collins

Introduction

In today's diverse and inclusive classrooms, traditional approaches to literacy and science instruction often fall short in meeting the needs of all learners. Graphic narratives offer a dynamic alternative that combines visual storytelling with academic rigor, making complex concepts more approachable for students of all abilities (1). Graphic narratives (also referred to as graphic novels and comics) use a series of images embedded with text which engages multiple learning styles by making books both accessible and engaging.

Over the last decade, graphic novels have become one of the most requested genres in elementary and middle school libraries. Beyond being characterized as an “easy read,” these books have proven to be important and engaging educational tools that combine visual literacy, narrative structure, and complex content in ways that reach a wide range of learners (2). The combination of images and purposeful text supports comprehension by breaking down complex concepts and language into something more manageable and accessible for students. This can help reach readers who are more hesitant to pick up a “more challenging” book that is text heavy, while also encouraging students who have moved beyond a “picture book” to access content in meaningful ways. From *El Deafo* to *New Kid* to *Guts*, and even nonfiction texts like the *Max Axiom* series, graphic novels are reshaping the way students engage with both fiction and informational texts. Many books are now also released in graphic novel format to appeal to this range of learners, which has also expanded the accessibility of learning across subjects.

This unit on teaching through the use of graphic narratives is designed to bridge science and literacy, promoting critical thinking, creative expression, and accessibility for students of all learning abilities. Students will complete a research project on animal adaptations and present their findings in the form of an original comic. Through guided instruction, peer collaboration, and class discussion, they will be introduced to the foundational elements of comics to support both reading comprehension and visual literacy (3). This process will have students build research skills while also encouraging students to make real-world connections and foster inclusive participation, particularly for students with disabilities in general education settings (4).

As part of the unit, students will read *A Journey Into Adaptations with Max Axiom* by Agnieszka Biskup, a graphic novel that presents adaptation concepts through short, visually supported sections. Students will analyze how meaning is conveyed through both text and imagery, identify structural elements of graphic narratives, and reflect on how those elements influence their understanding of science content. Having

students participate in this type of close reading will be the stepping stone introduction for a comic they will be creating. Students will model their own comics after the *Max Axiom* format, positioning themselves as “super scientists” to share their research in a narrative, visual format that mirrors the structure and tone of the mentor text. Students will be absorbing the content while also finding their own creativity to communicate what they learned through their own storytelling.

Max Axiom was chosen for this unit plan for its accessibility, science-forward content, and familiar narrative structure. The main character, Max Axiom, uses scientific inquiry to explain adaptation. The book is divided into short, easy-to-read sections, each focused on a different type of adaptation—structural, behavioral, or physiological—making it an ideal scaffold for student research projects. Although the text reads simply, it gets straight to the point in a way that is meaningful and easy to understand, supporting comprehension for students with disabilities and English language learners. The text format offers multiple entry points for discussion, vocabulary instruction, and visual analysis, all of which help students connect prior knowledge to new scientific ideas.

The unit concludes with a research-based comic creation project in which students select a local animal species and apply their learning to design a scientifically accurate and visually engaging narrative. This method supports visual learners and presents science content in a narrative format that is accessible, rigorous, and engaging for all students (5). In addition to academic growth, the unit nurtures students' social-emotional learning by promoting collaboration, creativity, and confidence in their own voices.

Designed for 3rd–5th grade inclusion classrooms in Chicago Public Schools, the unit is easily adaptable across grade levels and subject areas. The integration of graphic novels as both a learning and expression tool can be applied in other content areas beyond science as a means to teach more complex ideas in a way that is accessible to a wider range of students. The creation of student comics builds deep connections to text, allows for individualized demonstration of comprehension, and encourages peer collaboration. This aligns with the Witting method, which emphasizes starting from students' own language and ideas as a foundation for meaningful learning (6). The unit also supports Common Core ELA and NGSS science standards by incorporating research, explanatory writing, and scientific communication in a multimodal format, which is especially important for students with disabilities and English language learners who often need the visual support.

This unit was created with both student engagement and instructional feasibility in mind. My goal was to design a unit that is not only grounded in research-based strategies, but also flexible, inclusive, and replicable in other subjects. What follows is the rationale for this work, grounded in personal experience, instructional need, and the urgent call for equity in inclusive classrooms.

Rationale

This unit was designed to address a critical gap I've observed in the inclusion setting: how to provide equitable access to rigorous science and literacy content for students with disabilities within limited instructional time. As an elementary school special education teacher in Chicago Public Schools (CPS), I work in both inclusion and resource settings. In CPS, “inclusion” refers to a general education classroom with special education teacher support, while “resource” refers to pulling special education students from their

general education setting into a separate setting. However, my time with students is often limited due to frequent scheduling changes across grade levels and classrooms. While the general education language arts block typically spans 120 minutes, I am often in the classroom for only 45–60 minutes due to needing to provide support in other classrooms or settings. This leaves my students without consistent special education support, and many—especially those who are higher functioning and “masters of masking”—begin to fall behind in comprehension. I have taught countless students who seemingly rush through their work just to read their graphic novels and seem to have a love for reading independently when the visuals are present. However, when assigned a text without picture supports, the same students will claim they are “bad at reading” or that they don’t like books. They often feel defeated before they even begin to know what the story may be about. This not only gets in the way of their academic success, but also impacts their confidence and willingness to challenge themselves without having to feel defeated.

To compensate, I often pull small groups to work on IEP goals, but this sometimes means they miss the skill being taught to the rest of the class, which undermines the purpose of inclusion. I needed a way to meet multiple individualized goals without sacrificing content areas and standards due to time constraints. More importantly, my goal is not simply to place students in general education classrooms with modified or separate curriculum, but to ensure they can actively participate in the same curriculum as their peers in their least restrictive environment while still addressing their unique needs.

Graphic narratives make that possible. They reduce reading-level barriers without sacrificing content rigor, offering all students, especially those with disabilities, a more equitable entry point into complex concepts (2). In resource settings, students often take more risks and participate openly; they are frequently more successful in meeting their goals in that smaller, “safer” environment. Regardless of the student's disability, they deserve to be given the opportunity to find the same success in the general education classroom as they do in the separate setting. While designed with students with disabilities in mind, this unit also benefits general education learners by engaging them with multiple modalities of learning. The visuals, concise language, and narrative framing provide all students with accessible entry points, regardless of reading level or background knowledge. The barrier is not ability—it’s access.

There have been many concerns brought to my attention from parents about the books their child is reading. They feel that the graphic novels they gravitate toward are not challenging them enough and are holding them back. They often ask for my suggestions to encourage their child to gravitate away from these types of books. Initially, my response was to suggest students read two books: one graphic novel for fun and a “more serious” chapter book for learning. I have now come to understand that graphic novels are just as rigorous as traditional texts. They require decoding skills to interpret visual cues, sequencing events, and synthesizing information across multiple panels (1). When used intentionally, graphic novels can deepen content comprehension (2). Traditional novels or scientific texts, particularly nonfiction, can discourage special education students who lack the support necessary for comprehension. Many of my students have strong listening comprehension and actively participate in science experiments, but disengage when asked to read independently. Graphic novels change that dynamic. By combining concise text with meaningful visuals, they align closely with accommodations in many students’ IEPs, and they do so without singling students out. These texts allow students who struggle with fluency to access content independently, boosting confidence, engagement, and a sense of belonging in the classroom (3).

As schools have been shifting towards the inclusion model for special education, it is important to understand what this means. Many interpret it in different ways, which is why you can walk into any inclusion classroom and see it run completely differently in each one. Inclusion, as defined by Allen and Schwartz, is about

belonging and being part of a community of friends, a school, or a neighborhood (4). Ainscow emphasized the distinction between placement and participation, noting that true inclusion must involve meaningful opportunities for students to engage and learn alongside their peers (7). Rose echoed this sentiment, suggesting that exploring how children experience learning together offers a powerful lens into whether inclusion is actually taking place (8). The intention of how this unit was created was to ensure that inclusion is maximized with collaboration through comic creation, peer feedback, and student presentations. Students of all learning abilities will be able to contribute their voice in their classroom community. The unit incorporates multimodal learning strategies by embedding visuals into the lessons, having collaborative discussion, including a hands-on component with creating and so on to reach students of all learning abilities. The way this unit is designed is particularly to create an inclusive classroom setting where every student's strength is celebrated and valued at different steps of the process. Even students who struggle with the academic content can show their strength in collaboration by building social skills with their peers as they continue to academically grow.

To create true inclusion, we must do more than modify a worksheet with fewer answer choices, or provide word banks etc.—we must design instruction from the outset to be accessible to all learners. By embedding visual and narrative support directly into the curriculum, we give every student a pathway to participate, connect, and thrive. When the curriculum is designed purposefully with equity and access in mind for students with disabilities from the outset, we move closer to a true inclusion model where all students feel seen, challenged, and capable. This unit is a small step toward that larger goal.

Background Knowledge and Content

Student Engagement with Graphic Novels

Many of my students are already drawn to graphic novels but struggle with attention and motivation when reading traditional texts. I will often find them with a *Dogman* or *Diary of a Wimpy Kid* book and they will be able to tell me every detail about the story. If I had those same students read a one-page short story without the use of pictures at the same reading level, they were often unable to tell me the main idea or an accurate general summary of what they read. What surprised me the most was when one of my high-performing students, who was able to read at a 6th grade level in 3rd grade, began to have a meltdown when asked to read a chapter book that was at about a 4th grade reading level. The student said this type of book was too hard for them and they preferred to read books with pictures. When the student was given a moment to go to the classroom calming area, the student immediately gravitated to the library and picked up a graphic novel instead. Although the graphic novel the students chose was the same reading level as what was presented, it seems that the book served as a form of comfort to the student, possibly due to the perceived reduced mental load and a more direct way to comprehend. Rather than resisting their evolving learning styles and reading preferences, educators can harness the visual nature of graphic narratives to meet students where they are, using them as a tool for literacy growth.

Visual Literacy and Motivation

Miller notes that graphic novels support differentiated instruction, build literacy skills, and allow students to demonstrate comprehension through multiple modalities (3). Graphic novels significantly boost student

motivation and visual literacy, making learners more likely to complete readings and engage deeply with multimodal content (2).

In today's fast-paced world where students are constantly bombarded with short videos, snippets of information, and instant digital feedback, it has become increasingly difficult for them to slow down, sit with their thoughts, and engage deeply with content. As educators, as difficult as it may be for us to fully comprehend, we can either resist the way their brains have adapted or lean into it by offering tools that meet them where they are and gently guide them into more reflective, creative thinking through modeling and support. Graphic novels offer a unique opportunity to do exactly that by combining the instant visual craving they have along with a narrative structure. The graphic novel formatting naturally slows the reader down as they have to absorb all that is in each panel, which is a skill that can be transferred into other academic areas.

Reading through a graphic novel might initially feel like more of a leisure activity and much quicker than reading traditional text, but when embedded in an instructional setting with intentional questioning and visual analysis, students are prompted to stop, reflect, and dig into both the images, the words, and the meaning behind them. With enough modeling and support, this form of reading can train students to approach other texts with an open creative mind with the same patience and depth.

Expecting students to know how to slow down without modeling or opportunity is often a privilege we take for granted. Children from more affluent backgrounds are typically exposed to leisure time, artistic outlets, and adults who model stillness through reading, painting, music, or even quiet hobbies like fishing. Students who haven't had access to those experiences, especially those who have experienced trauma, may live in a chronic state of fight-or-flight. For them, stillness might feel unsafe. Activities like video games or scrolling endlessly on social media, though often seen and dismissed as a "waste of time," may actually feel more neurologically safe because of their predictable structure and dopamine-reward feedback. This is important to understand when designing a unit that provides equitable instruction. Graphic novels can possibly serve as a bridge to trauma-informed teaching by providing a safe, structured environment where students can take academic risk. The graphic novels are a building block to helping students build the stamina and self regulation skills needed to access and engage with complex concepts.

Teaching Panel Transitions and backgrounds

This is where teaching with the use of graphic novels as a tool can serve as a powerful bridge. When students are given the space to create and analyze their own visual narratives, they're not just practicing academic skills but they are reclaiming the cognitive space to slow down and sit with their thoughts. They will learn how to sequence ideas, attend to detail, and express themselves with purpose.

In *Understanding Comics*, Scott McCloud describes comics as a form of sequential art (9). He explains that while film may involve the audience by showing vague details, comics engage the reader's imagination even more often. On pages 70–72, he describes six types of panel transitions:

Moment-to-Moment: In these transitions, there is little closure required from the reader, and minimal need for imagination to fill in gaps. This is illustrated through a side-by-side image of a woman with her eyes open, followed by a nearly identical panel in which her eyes are closed. There are no descriptive words or changes to the background. These subtle differences suggest that the woman is blinking. In another example, a boy is shown sleeping with his mouth open, tucked tightly under his blanket. In the next panel, everything remains the same except the spider on his blanket has moved closer to his head. This gradual progression implies that the spider is making its way toward the boy's mouth.

Action-to-Action: These transitions feature a single subject progressing through a sequence of actions. McCloud illustrates this with a baseball player waiting to bat. In the next panel, motion lines and the word “WHAM!” show that the ball has been hit. In another example, he shows a drink being poured, a man sipping it, and finally burping with “BURP!” written above.

Subject-to-Subject: These transitions stay within a scene but require more reader inference. One panel shows a man looking stressed, saying, “What more could go wrong?!” The next shows a woman saying, “Well, at least Jerry never called!” followed by a ringing phone—prompting the reader to connect the dots.

Scene-to-Scene: These transitions jump across time or place. One panel shows a detective saying, “He can’t outrun us forever!” and the next panel jumps to a house “Ten years later...,” implying he was never caught.

Aspect-to-Aspect: These skip time and instead explore different elements of a scene. McCloud shows a Christmas tree with gifts, followed by Santa Claus waving in a snowstorm. The snow adds to the narrative by implying the difficulty Santa faces in delivering that joy.

Non-Sequitur: These have no clear logical connection. McCloud shows a smiling man, a bare tree, and then a black background with swimming goldfish. They make the reader pause and think, even if there’s no intended meaning.

Allowing students to explore these transition types in their own comics can empower them to express ideas more freely. It also scaffolds their ability to think critically about how stories are constructed.

Beyond panel transitions, McCloud also emphasizes the importance of backgrounds. He explains that a background can enhance emotions that may not otherwise be conveyed through the main image alone. It’s important for students to understand that the presence or absence of a background plays a significant role in how their comic is interpreted by the reader.

Using both text and pictures with equal importance

Prior to beginning the unit, it is important for the teacher to understand the importance of both the pictures and words in a graphic novel, and that one must not be prioritized over the other. The teacher must fully buy into the graphic novel as a whole to truly captivate the audience in an authentic manner. Pictures will need equal amounts of time spent in discussion prompts to the text to enhance the reading experience. When students are prompted to discuss beyond the words, they will recognize things they may not have noticed just through the text. When made to sit and think about a picture aloud, students can ignite each other's creativity by noticing aspects of the image that others may have overlooked.

Research shows that explicitly teaching the conventions of comics and engaging with graphic novels as instructional texts improves students’ multimodal literacy skills, particularly in how they comprehend and construct meaning from both images and words (3). This approach not only supports reading comprehension across diverse learners, but also increases motivation and engagement (2). Teaching with graphic novels is comparable to teaching poetry in the same way where you do an initial read, then return to analyze meaning in each part. Incorporating it into the classroom with that in mind can also help you as a teacher to open up to graphic novels in an unexpected way.

Incorporating the graphic novel in the classroom

The graphic novel being used in this unit is *A Journey Into Adaptation with Max Axiom, Super Scientist* by

Agnieszka Biskup (10). Biskup has authored multiple graphic novels in science and social studies. In this book, Max Axiom guides readers through how various animals adapt across environments. It's engaging, accessible, and a perfect model for students to mimic in their own research-based comic projects.

Students will analyze how the author presents complex information through panels and visuals and then use that structure to create their own science comics, essentially transforming what would traditionally be a research paper into an original, multimodal narrative.

For students with disabilities or limited English proficiency, graphic narratives provide visual scaffolds for complex ideas as well as vocabulary terms they may not be familiar with (5). The visuals help make connections to the words, allowing for deeper understanding and reducing linguistic and academic barriers. This instructional strategy enhances comprehension and participation.

Students will create their own version of the Max Axiom comic as a class collaboration by researching a local animal and compiling their comics into a class book. They will be involved in designing the cover, the research, the material, and they'll present their work to peers. They can even depict themselves as the Max Axiom character in their stories. This mimics the structure and tone of the novel they read while reinforcing their learning.

The unit may end with a field trip to a zoo, nature preserve, or botanical garden to see some of the animals they researched. This real-world extension can be set up as a scavenger hunt by checking off from a list of the animals researched by their peers, tying classroom learning to lived experience (11). Student comics can be displayed in a "classroom novel" to be shared with the school community, celebrating academic growth, creativity, and collaboration.

Teaching Strategies

Instruction will follow a gradual release of responsibility model, beginning with teacher-guided exploration of the graphic novel, incorporating formative assessments to check for understanding, and eventually transitioning into student-driven projects where learners research and present their own adaptation comics. Originally introduced by Pearson and Gallagher (12), the gradual release model is designed to shift responsibility from teacher to student over time. It is grounded in social constructivist theories, particularly those of Vygotsky, which emphasize that learning occurs through structured interactions with others, especially when scaffolded intentionally. According to Vygotsky's social development theory, students build knowledge through social interaction and support. Peer collaboration, especially in inclusive settings, creates a zone of proximal development, where students benefit from shared inquiry (13).

To build real-world connections and observational skills, students will research animals native to Illinois. This local focus ensures that learners can relate to the material and recognize these species in their daily lives, fostering more meaningful and memorable learning. Kuwahara (11) found that when students learned about their own environments through place-based science curricula, they developed deeper emotional ties, stronger cultural identity, and a greater understanding of scientific concepts. These outcomes reinforce the importance of grounding science instruction in students' own communities. Learning becomes more authentic and personal, encouraging students to care for their environment in a way that might not emerge when

studying distant or unfamiliar ecosystems.

In addition to fostering environmental connection, this unit is designed to promote classroom community. Students will engage in peer-to-peer feedback, collaborative comic creation, and presentations to their peers and the broader school community(13). Students will engage in self-reflection and peer feedback activities using a rubric that emphasizes the inclusion of scientific research (either in word or picture format), creativity, and clarity of communication. The final comic will serve as a summative assessment aligned to both science and literacy standards, while daily observations, exit slips, and graphic organizers will serve as formative checkpoints for understanding. These experiences build ownership, shared accountability, and a stronger sense of belonging.

To meet the diverse needs in an inclusion classroom, project differentiation is essential. Students will be provided with a standard-sized (8.5 x 11 inch) comic strip template, featuring four panels per side, offering enough space for illustrations and text. Each page must have at least one speech bubble of their choice. Students with advanced artistic abilities may design their comics independently, while others can use the provided structure. For students who need additional support, digital tools such as StoryboardThat or printed images from magazines may be offered if technology is limited. Students who complete their comics early or demonstrate advanced mastery may be invited to create an additional informational page, develop a “behind-the-scenes” author’s commentary, or design a quiz about their animal for classmates to take. These extensions deepen critical thinking and ownership. This flexible structure aligns with the Universal Design for Learning (UDL) framework (4), which emphasizes providing multiple means of engagement, representation, and expression. The visuals, standard templates, and collaborative learning also play a role in supporting our English Learners, allowing them to engage with complex content while building language proficiency in an authentic and natural form.

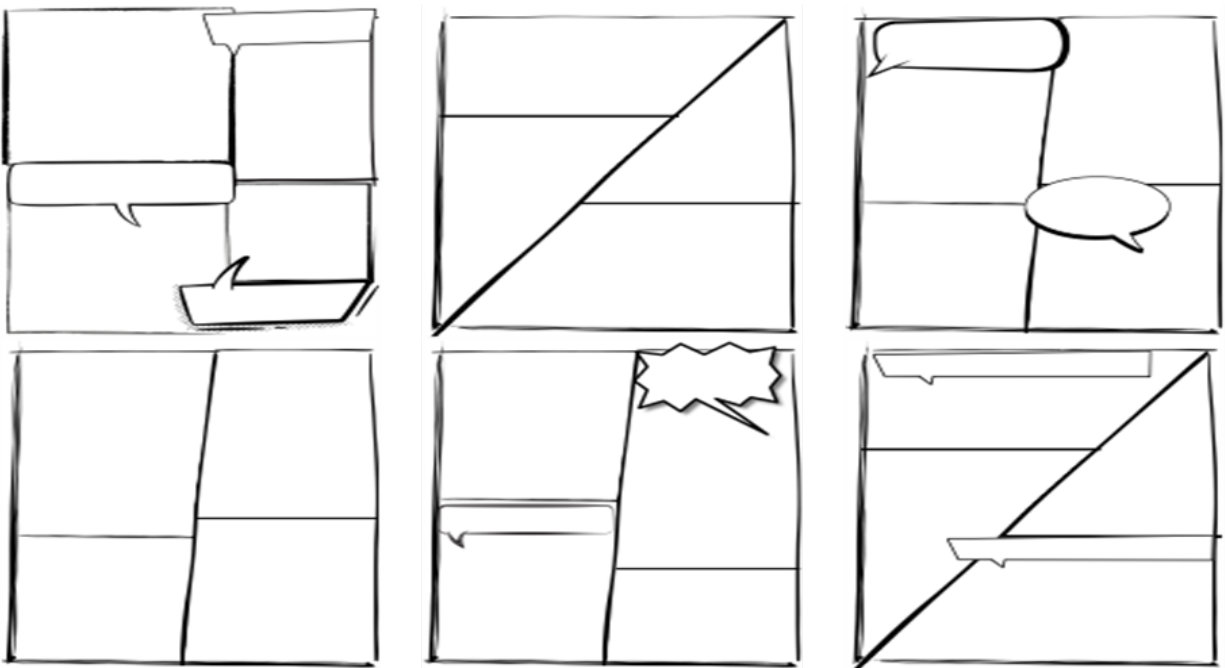


Figure 1: This is a sample of the standard comic pages students can use. Each page has at least four panels. Students can use the same page over and over, or they may choose to use different types of panels as they work on their project. There are options with speech bubbles as well as options without them so that the students can choose how to apply their creativity.

While maintaining academic rigor is essential, flexibility must be built into the project design. Ideally, each student will complete their own comic independently; however, accommodations may be necessary for some students. For instance, a student may draw while their peer writes, or images may be provided for a student to pair with captions. Others may benefit from sentence stems or word banks to support their writing. These scaffolds reinforce the principle that visuals are equally as important as written text in this project (5).

To support focus and task completion during creative work time, clear routines and expectations will be established, including designated materials zones, checklists for each comic page, and timers to scaffold time management. Each student can be given a "job" to promote accountability and responsibility. Have all comic pages in the correct order and have a designated folder specifically for this project. The folder could be as simple as a large construction paper sheet folded in half that is collected from the student work daily to prevent loss and to stay organized. These strategies foster independence and accountability while keeping the classroom calm and productive. These strategies will also keep students prepared, organized, and consistent in their work, which research has proven will impact their learning positively (19).

Encouraging students to take ownership of their learning through creative expression significantly enhances academic development. When students are given choice and the opportunity to create, they develop a greater sense of agency and pride in their work, as well as increased learning engagement and improved performance during peer led activities. Having regularly structured peer instruction in the classroom has proven that these collaborative opportunities enhance understanding of the content as well as building the necessary team building skills needed as they grow (16)(17). Choice-driven projects, like student-created research comics, have been linked to increased motivation and deeper content retention (14). For students with disabilities in particular, improving reading comprehension supports not only immediate classroom success but also long-term outcomes (4). This supports the use of artwork and multimodal projects as meaningful tools for demonstrating understanding.

Feedback is encouraged to be done daily throughout each step of the process such as during research, drafting, and illustration by using graphic organizers, conferencing, and rubric check-ins. This will not only support skill development but helps students internalize the value of revision and growth before feeling defeated. We do not want students to put in tremendous effort into a large amount of work, only to have to redo a large portion of it. When the corrections are made earlier on, they will be less likely to repeat the same mistake. The writing process for the comic should also be scaffolded like a traditional research paper (12). It should include prewriting, drafting, revising, and final presentation. Breaking the project into daily lessons will help make the task feel more manageable, while also providing opportunities for ongoing feedback from peers and the teacher. Emphasize to students that their comic mirrors *A Journey Into Adaptations with Max Axiom*, and that they are stepping into the role of the "super scientist" themselves (10). Each student becomes the narrator of their research, and together, the class will produce a collaborative book filled with unique perspectives and scientific stories.

To conclude the unit, students will present their comics to the class. This peer-sharing experience encourages learning through shared inquiry, expanding students' exposure to multiple animals and scientific concepts beyond their individual projects. Even students who did not research a particular species will benefit from the presentations. Peer instruction has been shown to enhance engagement, participation, and comprehension, especially in inclusive settings (15). After presentations are complete, the students can reflect on their learning either in writing or verbal discussion. Encourage students to reflect on their research, their effort, and their role in peer feedback.

This project is also intended to nurture students' social-emotional growth. Through collaborative peer review, public presentations, and personal expression, students practice empathy, confidence-building, and perseverance. They learn to give and receive constructive feedback, celebrate peer successes, and recognize their own voices as valuable contributors to a learning community. Having these structured activities and opportunities as a means for peer interactions will not only enhance their social skills (to embed SEL into the lessons), but it will also keep them engaged academically by giving each student a form of accountability and responsibility (17).

Instructional overview:

Prior to beginning the novel, the unit will begin with a pre-teaching lesson. First, students will learn what a graphic novel is. They'll discuss what they think a graphic novel is and how it differs from a comic.

The book is divided into four sections: Adapting to Survive, Adaptation Through the Ages, Physical Adaptations and Behavioral Adaptations. Each section of the lesson includes:

- A pre-teaching vocabulary lesson
- A whole-group reading activity
- A guided discussion with comprehension tasks
- Differentiated worksheets
- A vocabulary and comprehension quiz

Section 1: Adapting to Survive

Students will discuss what habitats look like and list predictions for what animals need to survive. The teacher will guide a class discussion and project student responses.

Vocabulary: adaptation, reproduce, habitat, carnivorous

Students will define words and draw pictures. Then, read pages 4-6 aloud. Students will record examples of adaptations, habitats, and survival traits using visuals for support. Conclude with a quiz.

Section 2: Adaptation Through the Ages

Review vocabulary and content from Section 1. Introduce Section 2 with a prediction prompt.

Vocabulary: specimen, generation, extinct, predator

A short background on Charles Darwin will be included either through a video or brief discussion. Students will read pages 8-13, pausing to discuss key ideas (like Darwin's finches and moth evolution). End with a quiz.

Section 3: Physical Adaptations

Pre-reading questions: "What do you think physical adaptations mean?" and "Can only animals adapt?"

Vocabulary: climate, bacteria, camouflage, mimic, prey

Discuss how a philodendron adapts in a rainforest versus a home. Read pages 14-21. Emphasize mimicry and visual evidence. Conclude with a quiz.

Section 4: Behavioral Adaptations

Pre-reading questions: “What do you think behavioral adaptations are?” and “What’s the difference between individual and social behaviors?”

Vocabulary: hibernate, migration

Read pages 22–27. Students log and discuss animal behaviors. End with a quiz.

Animal Research Project

After the four sections are completed, students will work in small groups, each assigned to a section of the book. They’ll identify and analyze visual evidence of adaptation, presenting findings to the class. Emphasis will be placed on uncovering insights not found in the text but revealed through illustrations. This activity will allow the teacher to assess the students' understanding of a graphic novel and if they are ready to create their own.

Afterward, students will take a vocabulary and comprehension test covering all sections of the novel.

Animal Research Project: Student Comics

To conclude the unit, students will research an animal or insect native to the Chicago area. They will choose from a provided list and use graphic organizers to gather details such as the following:

- Topic- What is your animal? Describe your animal, is it a mammal, amphibian etc.? Color, Size, does it have fur or scales etc.?
- Habitat- Where does this animal live? Give the location and describe the way it lives (in a nest, in a cave, underground etc.)
- Year-round vs. seasonal presence- Does it stay in Illinois all the time or does it migrate?
- Physical and behavioral adaptations- Does your animal have any predators? What is your animal a predator of? Are there any environmental factors that put your animal at risk? How does your animal adapt to its surroundings?
- Diet- Is the animal a carnivore, herbivore, or omnivore?
- Interesting facts- give at least 2 interesting facts about your animal.

Once the research is complete, students will apply comic techniques learned in the unit to create a short comic about their animal. Each student will present their comic, and the class will compile them into a book on a voted on student created title. For example: *"A Journey into Adaptations in Chicago"*

Classroom Activities

This unit will be approximately 21-30 days long, depending on the needs of your students. The activities are broken up by day, but the unit is intended to be a supplement and can be extended. This unit is designed to help students achieve the following objectives:

Content Objectives

By the end of this unit, students will be able to:

1. Conduct research on animal adaptations using print and digital sources.
2. Analyze and interpret information from a graphic novel, identifying textual and visual features.
3. Communicate scientific concepts through the creation of an original comic narrative.
4. Demonstrate understanding of key vocabulary through discussion, writing, and illustration.

Language Objectives

By the end of this unit, students will be able to:

1. Use content-specific vocabulary (e.g., adaptation, habitat, mimicry) in both spoken and written formats.
2. Interpret and explain meaning from multimodal texts (graphics and print) through discussion and written responses.
3. Collaborate with peers to give and receive feedback using academic language (e.g., “I noticed...”, “I wonder if...”).
4. Present research findings in a multimodal format (oral, visual, and written) to a peer audience.

WIDA Standards Alignment

Standard 1: Social and Instructional Language – Students engage in classroom discussions and collaborative tasks related to the unit.

Standard 4: Language of Science – Students use language to describe animal adaptations and explain scientific processes.

Standard 5: Language of Language Arts – Students analyze literary structure, produce original narratives, and use grade-appropriate grammar and vocabulary.

This unit begins with a pre-teaching lesson before students read the novel. On Day 1, students will explore what a graphic novel is and compare it to a comic book. Students can be asked what they know about comics and be encouraged to share anything they have experienced about them. This introductory activity serves as an opportunity for the teacher to assess students’ background knowledge and familiarity with the genre, while also drawing in student engagement in an exciting way for a topic they are likely interested in. Students will engage in the discussion first in small groups and as a whole group complete a Venn diagram comparing and contrasting comics and graphic novels. The Venn diagram can be done either collaboratively on chart paper or individually using pre-printed handouts. Students can be encouraged to write on the diagram to increase involvement while intentionally including a movement break for those who may require one subtly. To extend the activity, the class will brainstorm and list familiar comic or graphic novel titles, which will be displayed as an evolving classroom reference. This anchor chart can remain visible in the classroom library throughout the school year to encourage reading as well.

Next, students will learn essential vocabulary terms related to graphic novels. Key terms include “icon” (an image used to represent a person, place, thing, or idea) “panel” (a single, framed image that captures a moment in time within a comic’s narrative) and “word balloons” (visual representations of sound, including narration, dialogue, and thought), as introduced by Scott McCloud in *Understanding Comics* (9). These terms will be introduced through direct instruction and have examples from familiar texts. Students will also explore

the structural features of a graphic novel, including the table of contents, glossary, and index. A related activity will be to have students use a graphic novel they are currently reading and partner up or work in a group to find examples of the vocabulary terms and structure. Through teacher-guided navigation of the mentor text, students will begin learning how to interpret and make meaning from the unique combination of visual and textual elements.

On Day 2, instruction focuses on vocabulary for Section 1 of *Max Axiom Adaptations* (10). The vocabulary for this lesson includes: adaptation, reproduce, habitat, carnivorous. Students will hypothesize the definition of each word prior to being provided with the definition to write down and draw an image of their choosing to reinforce understanding.

The teacher will then introduce the title of the section being read, “Adapting to Survive”, and engage students in a discussion to hypothesize what the section may be about. Working in small groups, students will brainstorm a variety of habitats and predict what animals need in order to survive in each one. Their predictions will be compiled on a projected display or anchor chart for whole-group reflection and comparison.

The class will then begin reading pages 4–6 of the book aloud together. It is recommended to project the book so students can view the images closely while the teacher models fluent reading. Students will use a structured worksheet to record examples of adaptations, habitats, and survival traits. The worksheet will prompt them to document the animal’s name, adaptations, unique features, and corresponding page numbers. A guided class discussion will follow, helping students connect the visuals and text while deepening comprehension of scientific content.

Day 3 begins with a review of vocabulary and comprehension from Section 1. Students will be encouraged to use their notes and worksheets to provide textual evidence during class discussion. The section will conclude with a short quiz designed to assess both vocabulary and comprehension skills. To differentiate, students could be given an option to use their book or notes to help them.

The teacher will then introduce Section 2, “Adaptation Through the Ages”, with a prediction activity. Students will work with partners to make educated guesses about the content of this new section based on the title and illustrations. Vocabulary words for this section are: specimen, generation, extinct, predator. Students will hypothesize the definition of each word prior to being provided with the definition to write down and draw an image of their choosing to reinforce understanding.

Next, students will receive a brief background lesson on Charles Darwin. The teacher will lead a discussion using prompts such as: “Do you think all animals adapt over time?” and “If an animal’s environment changes dramatically, what might happen to the species?” This will help set the stage for deeper thinking and making connections during discussions on adaptation and evolution.

On Day 4, the class will review Darwin’s background and begin reading “Adaptation Through the Ages” on pages 8–13. Once again, project the book and model how to read the pages. A student can be called up to do this as well to begin gradually releasing responsibility. After reading page 9, have students pause to identify the three types of finches and describe their characteristics with a partner. Pages 10–11 will focus on environmental change and the extinction of dinosaurs, while pages 12–13 will compare two types of moths and how their traits helped them survive. Students will complete a chart comparing the moths’ features using both images and text for support.

Day 5 begins with a review of Section 2 vocabulary and content, with an emphasis on the finch and moth

examples. Students will then complete a quiz on section 2 to assess their understanding. Students may need to use their notes as reference. Following the quiz, the teacher introduces Section 3: “Physical Adaptations.” Students will respond to pre-reading questions such as, “What do you think physical adaptations mean?” and “Can only animals adapt, or can humans too?” Vocabulary words include climate, bacteria, camouflage, mimic, and prey. As with prior sections, students will predict, define, and illustrate each word.

“Physical Adaptations” will be found on pages 14–21 and will be projected, but read by students. The students will pause and be prompted to analyze how a philodendron adapts to both rainforest and indoor environments. The concept of mimicry will be a focus during group discussions. Students will collaborate in small groups to complete their worksheets, then share their findings with the class to reinforce comprehension and encourage observation.

Day 6 will include a comprehensive review of Section 3 followed by a quiz. The class will then transition to Section 4: “Behavioral Adaptations.” Pre-reading questions such as, “What do you think behavioral adaptations are?” and “How do social behaviors differ from individual ones?” will set the stage for new content. Vocabulary words include hibernate and migration. Students will make their predictions, complete definitions, drawings, and have partner discussions. “Behavioral Adaptations” will be found on pages 22–27 and will be projected and read aloud by the students. The students will pause occasionally to record examples of animal behaviors and to share insights.

Day 7 begins with a review and quiz on Section 4. Following the assessment, students will be grouped heterogeneously and assigned one section of the book (sections 1–4) to analyze. Their challenge will be to identify adaptations using only the illustrations, without relying on the text. This helps students develop observation and inference skills while strengthening visual literacy. Groups will present their findings, highlighting evidence visible in the images that may not be explicitly stated in the text. They can use the words to help them, but their evidence must be clear in the pictures. This fosters deeper interpretation and higher-level thinking.

Day 8 is dedicated to review of all unit vocabulary and adaptation concepts. Students will then take a cumulative unit test. You may choose to dedicate the full lesson to the review and give the text the following day depending on time constraints. Differentiated versions of the test may be provided, including use of notes or additional visuals, to support diverse learners.

On Day 9, students will be introduced to their research project. Each student will choose an animal native to the Chicago area from a curated list. Students with cultural or personal connections to animals from other regions may be approved to research an alternative species. The teacher will outline expectations and final project components. Emphasize to the students that their project is going to be the class version of *Max Axiom Adaptations*. Students will be given the opportunity to explore the list of animals online to find descriptions or videos before ranking their top three choices to reduce repetition. Doing this not only gives the students autonomy, but they are going to engage themselves unintentionally learning about different species as they research. Teachers may limit use of each animal to no more than two students for variety. Students should have their animal chosen by the end of this lesson.

Day 10 introduces the research graphic organizer. Students will document information on their animal’s habitat, seasonal presence, survival behaviors, physical and behavioral adaptations, diet, and unique features. They may use online platforms like Britannica Kids or National Geographic Kids, or access printed materials as appropriate. The teacher will model proper research strategies and help students navigate digital tools. It may be necessary to spend the entire lesson teaching students how to research, or students who need that

additional support can be broken into smaller groups.

Day 11 will be a continuation of the research process. Students will finalize their findings, receive targeted feedback, and begin organizing their information in preparation for the comic creation.

Day 12 begins comic planning. Students will work independently or in small groups to brainstorm and sketch comic layouts. Teachers will help students decide how they plan to present their work—whether individually or with a partner. Comic strip templates will be provided for the students who need that support, and students may choose to draw their comics by hand or use digital tools like StoryboardThat. Students will be required to use a standard size sheet of paper with at least four panels on each page. This planning phase mirrors the prewriting phase in the traditional writing process. Teachers will model expectations and share student samples if available. Remind students that this is their version of the adaptations book and that all of their work will be compiled together into a class book.

On Day 13, students begin their first comic panel. Using the National Writing Project’s “Writing with Pictures” guide, the teacher will instruct students in combining visual and textual storytelling. The first panel will include the animal name as a title, a drawing of the animal, the student’s name as the author, and—optionally—a self-portrait mirroring Max Axion as the “super scientist” observing the animal. Students will share with a partner and receive feedback on clarity, creativity, and visual detail.

Day 14 focuses on panel two, a detailed description of the animal. Students are encouraged to “zoom in” on specific features. They could do this by drawing the animal as if it were up close, or even be given an example of showing the whole animal, and using a magnifying glass on an area to zoom in on. If the animal undergoes physical changes, students may use multiple panels to illustrate those changes. Peer review will follow to check for accuracy and engagement.

On Day 15, students will create a panel about the animal’s habitat and seasonal presence. Drawings should reflect research findings and may include multiple habitats if applicable. Peer review continues to ensure students are on track and receiving ongoing feedback.

Days 16–18 are going to have a focus on illustrating physical and behavioral adaptations, as well as dietary habits. This section will likely require several panels and will be broken down into clear steps. Students will use both images and words to convey their findings. Teachers and peers will check work at each stage before students proceed to the next panel.

Day 19 will focus on wrapping up the comic. Students can include panels featuring interesting facts and a “conclusion” panel that signals the end of their story. A final peer review will allow for last-minute revisions. Students will share their work in small groups and receive celebratory feedback. Students who have finished earlier than others can be encouraged to add a “behind the scenes” type of addition to their comic.

On Days 20–21, students will present their comics to the class. These presentations provide opportunities for peer learning, increased public speaking confidence, and reinforcement of key concepts. To conclude the project, students will vote on a class title for their final anthology, such as *A Journey Into Adaptations in Chicago with 3rd Grade Scientists*. Once the title has been voted on and decided on, students can engage in a competition for the book cover. Students will submit their cover with the title and a drawing and students can vote on the cover. The compiled comics may be displayed in the classroom, shared with families, or submitted for schoolwide display.

Additional Teacher Resources

This unit was intended to be written as a baseline unit and an introduction to graphic novels while keeping students of different learning abilities in the general education setting in mind. It can be adapted to other content areas such as science and social studies, or extended using similar graphic novels that promote multimodal learning and support both content and language objectives. Below are some recommended titles:

Additional Max Axiom Graphic Novels (Science-Focused)

These books follow the same structure and scientific storytelling style as *A Journey Into Adaptations with Max Axiom* and can be used for cross-unit connections:

- *The World of Food Chains with Max Axiom, Super Scientist* by Liam O'Donnell
- *Investigating the Scientific Method with Max Axiom* by Donald B. Lemke
- *The Amazing Work of Scientists with Max Axiom* by Agnieszka Biskup
- *Understanding Photosynthesis with Max Axiom* by Liam O'Donnell
- *The Solid Truth About States of Matter with Max Axiom* by Agnieszka Biskup
- *The Attractive Story of Magnetism with Max Axiom* by Andrea Gianopoulos

Other Subject Area Graphic Novels

These texts follow a similar format and can be used to apply this unit's methods to other subjects:

Social Studies:

- *Rosa Parks and the Montgomery Bus Boycott* (Graphic Library) by Connie Rose Miller
- *The Boston Tea Party* (Graphic Library) by Matt Doeden

Math:

- *Sir Cumference* series by Cindy Neuschwander

Health/SEL:

- *Guts* by Raina Telgemeier

Language Arts:

- *El Deafo* by Cece Bell
- *When Stars Are Scattered* by Victoria Jamieson and Omar Mohamed
- *Smile* by Raina Telgemeier
- *New Kid* by Jerry Craft

Annotated Bibliography

1. Schwarz, Gretchen. "Graphic Novels for Multiple Literacies." *Journal of Adolescent & Adult Literacy* 46, no. 3 (2002): 262-65. <https://doi.org/10.1598/JAAL.46.3.6>.

Discusses how graphic novels can promote multiple literacies by combining visual and textual elements, making them valuable for diverse classrooms.

2. McLaughlin, Maureen, and Jodi Pilgrim. "The Potential of Graphic Novels to Support the Literacy Development of Young Adults." *The Reading Teacher* 71, no. 3 (2018): 229-39. <https://doi.org/10.1002/trtr.1623>.

Discussed how graphic novels can engage reluctant readers and improve comprehension through multimodal learning strategies.

3. Miller, Debbie. *Using Graphic Novels in Education: A Guide for Teachers*. National Association of Comic Arts Educators, 2012.

Provides strategies for integrating graphic novels into the curriculum to support differentiated instruction and visual literacy.

4. Allen, Kathleen A., and Deborah Schwartz. *What Is Inclusion?*. London: National Association for Special Educational Needs, 2001.

Defines inclusion as a form of belonging and community for all learners, and how to implement equitable classroom practices.

5. Hammond, Heather K. *Graphic Novels and Multimodal Literacy: A Reader Response Study*. PhD diss., University of Minnesota, 2009. <https://conservancy.umn.edu/handle/11299/55084>.

Discusses how students interpret and respond to graphic novels, emphasizing the role of visual elements in comprehension.

6. Swärd, Annica, and Monica Reichenberg. *Understanding the Witting Method: Teaching Reading from Students' Own Language*. Translated by David Shipton. Sweden: Gothenburg University, 2024.

Explains what the Witting Method is: a student-centered approach that builds literacy by starting with learners' own language and ideas.

7. Ainscow, Mel. "Understanding the Development of Inclusive Schools." Falmer Press, 1999.

Talks about what inclusion is and how it has shifted over time from being physically present to becoming meaningful participation in the classroom.

8. Rose, David. "Inclusive Classroom Practices." In *Inclusive Education: Readings and Reflections*, edited by Keith Ballard, 173-92. London: RoutledgeFalmer, 1999.

Discusses how children's lived experiences in classrooms have an impact on inclusion.

9. McCloud, Scott. *Understanding Comics: The Invisible Art*. New York: Harper Perennial, 1993.
Analyzes the structure of comics and how visual storytelling conveys meaning.
10. Biskup, Agnieszka. *A Journey into Adaptation with Max Axiom, Super Scientist*. North Mankato, MN: Capstone Press, 2010.
Introduces scientific concepts of adaptation through an engaging graphic novel format ideal for elementary learners.
11. Kuwahara, Jennifer L. H. *Impacts of a Place-Based Science Curriculum on Student Place Attachment in Hawaiian and Western Cultural Institutions at an Urban High School in Hawai'i*. PhD diss., University of Hawai'i at Mānoa, 2011.
Explores the benefits of place-based science curricula in fostering student engagement and connection to learning.
12. Gallagher, Margaret C., and P. David Pearson. "The Instruction of Reading Comprehension." *Contemporary Educational Psychology* 8, no. 3 (1983): 317-44.
Outlines effective reading comprehension strategies that can be adapted for diverse learners.
13. Beekes, Wendy. "The Effects of Peer Teaching on Student Engagement." *International Journal of Teaching and Learning in Higher Education* 18, no. 2 (2006): 147-52.
Demonstrates that peer teaching can significantly increase student participation and motivation.
14. Krashen, Stephen D. *The Power of Reading: Insights from the Research*. Portsmouth, NH: Heinemann, 2004.
Gives evidence on how extensive reading improves literacy, language acquisition, and academic achievement.
15. Duncan, Todd. "Peer Instruction Benefits in Content Understanding." *Journal of College Science Teaching* 34, no. 4 (2005): 20-24.
Explores how peer instruction techniques enhance comprehension.
16. Lasry, Nathaniel, Eric Mazur, and Jonathan Watkins. "Peer Instruction and Student Performance." *The Physics Teacher* 46, no. 9 (2008): 528-31.
Shows that peer instruction improves both conceptual understanding and student performance.
17. Lucas, Amy. "Engaging Students through Peer Interaction." *Innovative Higher Education* 33, no. 3 (2009): 157-63.
Highlights the role of structured peer interaction in fostering engagement and deeper learning.
18. Porter, Leo, Cynthia Bailey-Lee, and Beth Simon. "Effects of Peer Instruction on Learning Outcomes." *ACM SIGCSE Bulletin* 45, no. 1 (2013): 127-32.

Examines the positive impact of peer instruction on academic performance across different subjects.

19. Block, R. *Teachers' Attitudes Toward Graphic Novels in the Classroom*. Master's thesis, East Tennessee State University, 2013.

Investigates educators' perceptions of graphic novels as legitimate instructional tools.

Appendix on implementing district standards

CCSS.ELA-LITERACY.RI.4.3 Key Ideas and Detail

Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

In this unit, students closely read *A Journey Into Adaptations with Max Axiom* to understand scientific concepts such as animal survival, behavior, and physical traits. They use graphic organizers and guided questions to explain how and why animals adapt, with support from both text and visuals.

CCSS.ELA-LITERACY.RI.4.7 Integration of knowledge and ideas

Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements) and explain how the information contributes to an understanding of the text in which it appears.

This standard is central to the unit, as students must analyze images and diagrams in a graphic novel to support scientific understanding. During peer group discussions and visual inference tasks, students practice interpreting visuals as part of building meaning.

CCSS.ELA-LITERACY.W.4.2 Text types and purposes

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Students will demonstrate mastery of this standard through the creation of a research-based comic that explains animal adaptations. Their writing process includes prewriting, drafting, revising, and publishing. It mirrors a traditional explanatory writing assignment, but is presented in a multimodal format that includes visual storytelling.

CCSS.ELA-LITERACY.SL.4.4 Presentation of knowledge and ideas

Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Students present their completed adaptation comics to the class, explaining their research and creative choices. This fosters public speaking, confidence, and the ability to communicate complex scientific

information in a student-friendly, accessible format.

Notes

1. Schwarz, Gretchen. "Graphic Novels for Multiple Literacies." *Journal of Adolescent & Adult Literacy* 46, no. 3 (2002): 262–65. <https://doi.org/10.1598/JAAL.46.3.6>.
2. McLaughlin, Maureen, and Jodi Pilgrim. "The Potential of Graphic Novels to Support the Literacy Development of Young Adults." *The Reading Teacher* 71, no. 3 (2018): 229–39. <https://doi.org/10.1002/trtr.1623>.
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9. McCloud, Scott. *Understanding Comics: The Invisible Art*. New York: Harper Perennial, 1993.
10. Biskup, Agnieszka. *A Journey into Adaptation with Max Axiom, Super Scientist*. North Mankato, MN: Capstone Press, 2010.
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12. Gallagher, Margaret C., and P. David Pearson. "The Instruction of Reading Comprehension." *Contemporary Educational Psychology* 8, no. 3 (1983): 317–44.
13. Beekes, Wendy. "The Effects of Peer Teaching on Student Engagement." *International Journal of Teaching and Learning in Higher Education* 18, no. 2 (2006): 147–52.
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19. Block, R. *Teachers' Attitudes Toward Graphic Novels in the Classroom*. Master's thesis, East Tennessee State University, 2013.

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