

Combining Picturebooks and Poetry as Blended Genres to Teach Life Science

William P. Bintz

Kent State University, Kent, OH

ABSTRACT

This article introduces the concept of combining poetry and picturebooks as blended genres and shares an instructional strategy that K–8 teachers can use with blended genres to help students learn important concepts in ELA and life science. It begins with background on the important relationship between science and literature. Next, it describes fundamental differences between paired text and blended genres and connects blended genres to the Next Generation Science Standards (NGSS) and the Common Core State Standards (CCSS). Then, it shares examples of blended genres and a sample of an instructional strategy that can be used with blended genres to teach important concepts in Life Science. It ends with a final thought.

KEYWORDS

science and literature integration; intertextuality; blended genres, picturebooks and poetry; inquiry-based learning

There is much to be learned from both poetry and science, and when they are combined, the potential for learning grows.

(McClure, 2013, p. 13)

I teach a graduate reading course entitled Reading in the Content Areas. A major goal of the course is for me to demonstrate, and my students to experience, the power and potential of picturebooks as curricular resources to teach content material across the curriculum. I begin each class session by reading aloud a selected picturebook from a different content area and for a specific purpose.

Recently, I read aloud *I Wonder* (Harris, 2013) to highlight wondering as an important process in learning science and introduce the importance of inquiry in learning. This picturebook tells the story of Eva, a little girl who likes to take walks with her mother. On one walk, Eva wonders and poses questions to her mother about gravity, life cycles, and the vastness of the universe. While neither knows the correct answers, her mother reminds Eva that wondering is the first step to understanding and it is always okay to say, “I don’t know.”

Afterwards, I invited students to share their responses to the picturebook. All responses were thoughtful, but one response caught my attention. One student stated,

This picturebook reminded me of taking walks with my grandfather around his farm when I was little. Like Eva, I’d asked lots of questions, too. And like the mother, my grandfather listened, too. It also reminded me of the poem, “I Like to Wonder Off Alone.” I read this poem in high school, and I’ve never forgotten it. As you were reading, I found myself seeing all kinds of similarities between the picturebook and the poem.

This response was interesting and insightful, but not the first of its kind. After reading aloud picturebooks, I often hear students saying they were making personal connections to the picturebook during the read aloud. In this instance, however, this student's response, unbeknownst to her and me at the time, created a paired text. Traditionally, a paired text consists of two texts that are interrelated in some way, and the texts reflect the same or similar genre (Bintz, 2015). Her paired text was different. *I Wonder* (Harris, 2013) and "I Like to Wonder Off Alone" (Wynne, 2023) is a paired text but consist of two different genres, one a picturebook and the other a poem. In many ways, her paired text was a blended genre.

I started to wonder about the idea of blended genres. I have read *I Wonder* several times, but was unfamiliar with the poem, "I Like to Wonder Off Alone." I wondered what connections I would make between the picturebook and the poem. I read the picturebook again, then the poem, and completed an H-Map to record my connections between the two texts (see Figure 1).

I used an H-Map to record my intertextual connections between this blended genre. I wrote the title of the picturebook at the top of the left vertical column, and the title of the poem at the top of the right vertical column. I wrote the heading, Intertextual Connections, at the top of the rectangle to connect the left and right columns. During and after reading, I recorded important ideas from the picturebook in the left column, and important ideas from the poem in the right column. In the middle, I recorded important intertextual connections from this blended genre. I found this instructional strategy helpful for recording and reflecting on my intertextual connections.

Figure 1: H-Map



In the end, this whole experience sparked my curiosity about the idea of blended genres. It generated my interest in developing other blended genres across the curriculum that I could use with students in my own courses. Specifically, I wanted to develop and share blended genres that English/Language Arts (ELA) and science teachers could collaboratively implement in the K–8 classroom.

The purpose of this article is to share picturebooks and poetry as blended genres and an instructional strategy to teach important concepts in ELA and life science. I focus on ELA and science for several reasons. One, I am a former middle and high school English/Language Arts teacher with a personal interest in this content area. Two, I am presently a teacher educator in literacy education with a professional interest in advocating for the use of literature, specifically picturebooks, to support student learning across the K–12 curriculum. Three, to date, I have developed blended genres by pairing picturebooks with poems in English/Language Arts and am currently developing blended genres in English/Language Arts & Social Studies and English/Language Arts & Mathematics. However, I have not developed blended genre in English/Language Arts & Science. This whole experience inspired me to do so.

With this experience and background in mind, I began by providing background on the relationship between science and literature, describing differences between paired text and blended genres, and connecting blended genres with Next Generation Science Standards (NGSS) and Common Core State Standards (CCSS). Next, I share examples of blended genres and a sample of an instructional strategy to teach important concepts in Life Science. I end with a final thought.

Science & Literature

Storytelling will bring the science to children.

(Kaser, 2001, p. 355)

The value of literature and storytelling to teach and learn science has long been recognized by both science and literacy specialists (Dagher & Ford, 2005). Much research continues to indicate that literature is a valuable tool to support growth and development across science and literacy (Broemmel et al., 2021). Consequently, and fortunately, literature is increasingly being included as an integral component to the science curriculum (Rice, 2002).

Moreover, much research indicates that picturebooks are effective instructional tools to integrate science and literacy (Saul, 2004). Among other things, picturebooks help students “ask and address questions about science content...and build their capacity to engage in scientific reasoning” (Hapgood & Palincsar, 2007, p. 55). Poetry is also an effective tool to integrate science and literacy.

Poetry

Instead of coexisting as parallel lanes without intersection, poetry and science can cross over as one merges lanes.

(Brown, 2015, p. 1)

Historically, poetry has been a popular and flexible literary genre, a way to experiment with rhyme, rhythm, repetition, and a variety of poetic formats. Poetry supports abstract thought and provides a means to communicate “complex ideas in symbolic ways” (Graves, 1992, p. 163). It also helps develop rich vocabulary and explore “poetic devices like metaphor, simile, imagery, alliteration, and rhyme” (Kane & Rule, 2004, p. 665).

Poetry offers many benefits for readers of all ages and backgrounds. One benefit is that poetry is often brief. Vardell and Wong (2015) state,

poetry has an advantage in that it typically consists of fewer words than expository-prose passages, and poems can be read and reread in very little time. The brevity of poetry is less intimidating to children who may be overwhelmed by longer prose and streams of new vocabulary, especially students acquiring English as a new language. (p. 30)

Poetry is also multisensory. It allows readers and writers to experience all five senses, especially through metaphor and imagery. Poetry also supports interdisciplinary teaching and learning across the curriculum (Vardell & Wong, 2015), including science (Kane & Rule, 2004).

Science

Historically, science and poetry have been viewed as dichotomies, or at least “unlikely partners.”

(Vardell & Wong, 2014, p. 15)

In large part, this is because scientists and poets perceive the world through different lenses and reflect different mindsets. Instead of dichotomies, however, science and poetry have had a long symbiotic relationship. Webb (1948) stated,

Poets find science, in the form of nature, more interesting than love...Practically every bird, flower, and tree has been studied with poetic insight. The sea, the mountains, the sky, the fields, the list of nature’s wonders that have inspired poets is almost endless. (p. 30)

More recently, Hoffman (2002) described this relationship as “two luxuriating contra entropic glories of the human spirit walking hand in hand” (p. 137).

Today, much research indicates that science and poetry are interdependent fields of study (Bono, in Kurtz and Loewenstein, 2007), and incorporating poetry in the teaching of science offers many benefits for students (Rule et al., 2004). These benefits are based on three important concepts: transfer, process, and goal. Transfer recognizes that “spontaneous transfer of useful knowledge across domains is a powerful cognitive tool” (Kurtz & Loewenstein, 2007, p. 335). In this case, the domains are science and poetry. Process recognizes that the “processes of science and literacy learning are similar and may help the development of each discipline” (Akerson, in Vardell & Wong, 2015, p. 1). Goal recognizes that science and poetry share a common goal and “emerge from an attempt to understand the universe around us—and from a wish to share that understanding with others in words” (Hoffman, 2002, p. 140). Additional benefits of integrating poetry and science include:

- Poetry plays a role in *humanizing science* and functions as a *creative trespasser* to end the cold war between science and poetry (Watts, in Rule, 2001).
- Poetry uses images and metaphors which can clarify and intensify the meaning of science content (Rule et al., 2004).
- Poetry invites and enables scientists to quickly capture and express new ideas.

- Poetry offers a way for scientists to play with language, to reframe concepts, and to engage with aesthetics to capture readers in ways that are not possible with scientific articles (Silverton, 2015).
- Poetry that reflects good science leads to a fuller inquiry, interpretation, and appreciation of science.

Paired Text and Blended Genres

All texts are tinted with echoes and reverberations of other texts.

(Bakhtin, 1986, p. 91)

Traditionally, a paired text consists of two texts that are conceptually related in some way (Harste, Short, Burke, 1988). It is a curricular resource and instructional tool to teach the concept of intertextuality, a term commonly referred to as making connections between texts (Harvey & Goudvis, 2017). Intertextuality is an important concept in reading and learning. For example, one College and Career Readiness Reading Anchor Standard (National Governors Association Center for Best Practices and Council of Chief State School Officers, 2010) states the need for students to “Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take” (Integration of Knowledge and Ideas section, para. 3). Paired text is one way to put intertextuality into action and address this standard in the classroom. A blended genre is also a paired text. It consists of two texts with each text representing a different literary genre. For example, the picturebook *The Life Cycle of an Emperor Penguin* (Kalman, 2006) and the poem “Dark Emperor” (Sidman, 2010) is an enjoyable and informative blended genre that focuses on the topic of life cycle.

Blended Genres, CCSS, and NGSS Standards

The Next Generation Science Standards (NGSS, 2013) states that “literacy skills are critical to building knowledge in science” (see Appendix M, p. 1). Similarly, the Common Core State Standards (CCSS) in literacy identify skills for high proficiency in literacy, and the Common Core Reading Anchor Standards (CCRAS) identify skills for high proficiency in reading. To ensure consistency, NGSS identifies connections between CCSS literacy and CCRAS reading skills and science content demands in grades 6–12. Blended genres is a curricular resource that, when used with instructional strategies, can integrate NGSS, CCSS, and CCRAS standards.

Blended Genres and Instructional Strategies

In this section, I share an example of a blended genre and a sample of an instructional strategy that teachers can use to teach important content area material in Life Science. I created this sample to share specifically with K–8 ELA and science teachers, but the instructional strategy can be used with any blended genre across the curriculum.

First, however, I want to share a two-step process that teachers can use to teach this strategy, along with the other strategies, to help students make intertextual connections between the two texts in any blended genre. The two-step process involves teacher demonstration and student engagement. For demonstration, teachers can do the following: 1) organize students in pairs or small groups (3–4) to support collaboration and discussion, 2) prepare and distribute a blank copy of the instructional strategy to each student, 3) display a selected blended genre to students and introduce each text with a picturewalk, introduction, book chat, etc., 4) demonstrate

the instructional strategy by reading aloud both texts, pausing at strategic times, e.g., major episodic changes in the text, 5) identify examples of intertextual connections between the texts and record these connections on the instructional strategy displayed to the entire class, e.g. PowerPoint, and 6) as a culminating experience, invite student discussions on the paired text, reflections on the intertextual connections, and questions about completing the strategy on their own. For engagement, teachers can follow the same procedure with a different blended genre, but this time inviting students to identify, discuss, and record intertextual connections between the two texts.

Life Science

Summer Birds: The Butterflies of Maria Merian (Engle, 2010) is a picturebook biography of Maria Merian, naturalist, field scientist, and artist. Born in 1647, she secretly captured, fed, and observed insects that at the time people considered “beasts of the devil.” She observed that many insects, especially butterflies, go through developmental life cycles. Over time and with persistent observation, she discovered metamorphosis and nine new species of butterflies.

“Maria Sibylla Merian, January 1670” (Ackerman, 2020) is a biographical poem about Maria Merian. Here is an excerpt.

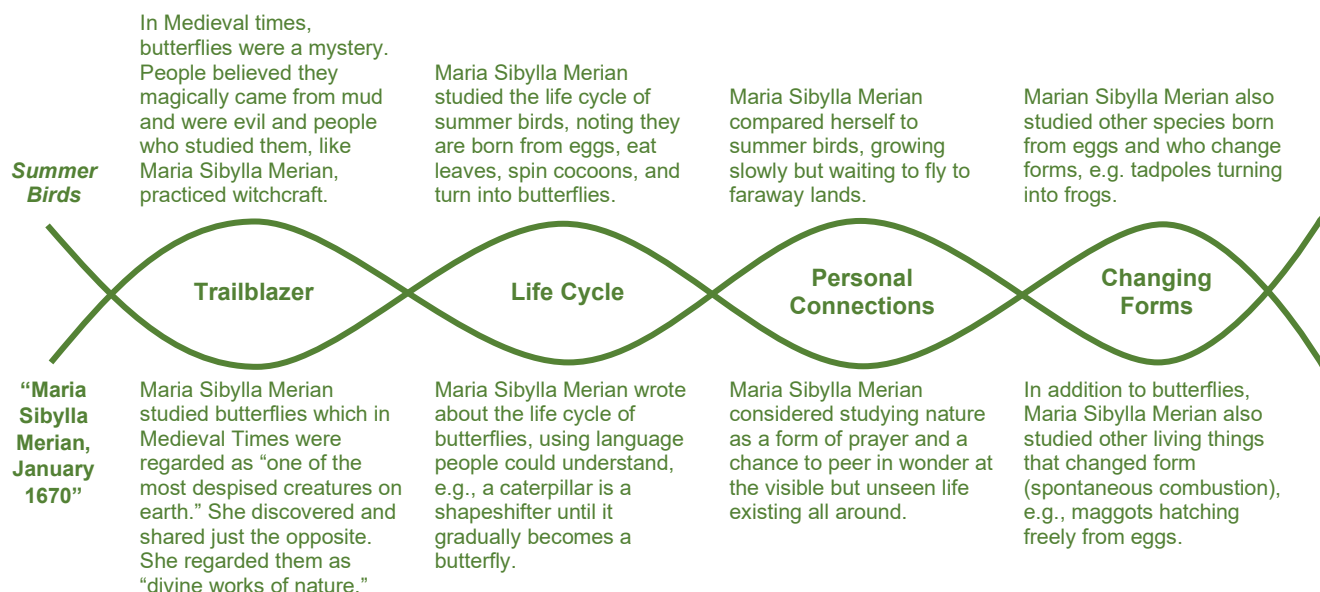
Maria Sibylla Merian, January 1670

There was a way of beholding nature
that was like a form of prayer.
When she painted a caterpillar,
she limned the whole bracing saga of its life
from birth, instars, and metamorphosis...
She chose to reveal the smallest,
most despised creatures on earth
as divine works of nature...
and peer in wonder at the visible
but unseen life all around them,
dining, sparring, molting, mating...
Here is a caterpillar's eye, her paintings said,
look how cleverly it's designed!
Here is a spider's toe with tiny hairs.
Can you imagine how they tread?
Here is time elapsing inside a chrysalis,
where caterpillar becomes butterfly,
shape-shifting with infinite gradualness
from one unlikely form to another,
its behavior and purpose radically changed.
Come closer, I will show you.

Figure 2 illustrates Interwoven Intertextual Connections as an instructional strategy to represent intertextual connections between this blended genre (for additional strategies, see Bintz, 2015). This strategy invites individual students, pairs of students, or small groups of students to create and represent intertextual connections they consider most important across the blended genre. Afterward, students share their connections with the whole class, noting and discussing similarities and differences between connections.

Teachers can also use this strategy to create and represent their own intertextual connections and share them with the class. This is important for three reasons. One, it demonstrates active engagement by teachers. Second, it allows students to see and understand connections different from their own. Third, in the event students do not recognize some important connections, it allows teachers to bring those connections to the attention of students.

Figure 2: Interwoven Intertextual Connections



Final Thought

According to Vardell and Wong (2015), "Science is rich in content and poetry offers powerful language. Together they can both inform and inspire" (p. 15). The student vignette at the beginning of this article inspired me to develop blended genres for use in the English/Language Arts and science classrooms. I hope this article will inform and inspire ELA and science teachers to use blended genres of picturebooks and poems as an instructional tool not only to teach life science, but also earth and space, and physical science. In addition, I hope this article will inspire students and teachers to develop and use their own blended genres.

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Table 1: Additional Blended Genres in Life Science

	Topic	Picturebook	Poetry
Grade Band K-4	Charles Darwin	<i>The Tree of Life: Charles Darwin</i> (Sis, 2016)	Darwin (Gunawardana, 2016)
	Charles Darwin	<i>When Darwin Sailed the Sea</i> (Long, 2020)	Charles Darwin (Monem, 2019)
	Charles Darwin	<i>One Beetle Too Many</i> (Lasky, 2012)	Forgiven (Milne, 1927)
	Evolution	<i>The Story of Life: A First Book About Evolution</i> (Barr, 2015)	Evolution (Scieszka, 2004)
	Evolution	<i>Grandmother Fish: A Child's First Book of Evolution</i> (Tweet, 2016)	Evolution Song (Wing, 2005)
	Natural Selection	<i>Galapagos George</i> (George, 2014)	The Loneliest Creature (Lewis, 2007)
	Life Cycle	<i>The Life Cycle of an Emperor Penguin</i> (Kalman, 2006)C	Dark Emperor (Sidman, 2010)

	Life Cycle	<i>The Ugly Butterfly: An Imaginative Story About the Life Cycle of a Caterpillar</i> (Espinoza, 2021)	Chrysalis Diary (Fleischman, 1988)
	Life Cycle	<i>Spring Peepers are Calling</i> (Billings, 1978)	Listen for Me (Sidman, 2005)
	Life Cycle	<i>Beavers</i> (Gibbons, 2014)	Under Ice (Sidman, 2014)
	Life Cycle	<i>Song of the Water Boatman and Other Poems</i> (Sidman, J., 2005)	Water Boatmen (Fleischman, 1988)
	Life Cycle	<i>Coral Reefs: A Journey Through an Aquatic World Full of Wonder</i> (Chin, 2016)	How Coral Reefs are Made from Tiny Animals (polyps) not Much Bigger than a Pinhead (Lewis, 2007)
Grade Band 5–8	Life Cycle	<i>Cicada</i> (Tan, 2019)	Cicadas (Fleischman, 1988)
	Life Cycle	<i>The Emperor's Egg</i> (Jenkins, 1999)	If I Were an Egg (Sidman, 2000)
	Life Cycle	<i>And the Bullfrogs Sing: A Life Cycle Begins</i> (Harrison, 2020)	Bullfrog (Lewis, 1998)
	Life Cycle	<i>The Tiny Seed</i> (Carle, 2005)	The Seed (Hopkins, 1999)
	Life Cycle	<i>The Peregrine's Journey: A Story of Migration</i> (Dunphy, 2008)	Egg Business (Sidman, 2000)
	Snakes	<i>Snakes!</i> (Yost, 2013)	Snake's Lullaby (Sidman, 2014)
	Seasons & Weather	<i>Why the Butterfly: Why do Seasons and Weather Change?</i> (Recao, 2021)	Life Like a Butterfly (Pulsifer, n.d.)
	Seasons & Weather	<i>The Story of Snow: The Science of Winter's Wonder</i> (Cassino, 2009)	The Six-Cornered Snowflake (Nims, 1990)
	Seasons & Weather	<i>The Very Hungry Caterpillar's First Spring</i> (Carle, 2022)	First Burst of Spring (Lewis, 1998)
	Five Senses	<i>My Five Senses</i> (Ailiki, 2015)	The Senseless Lab of Professor Revere (Scieszka, 2004)
	Five Senses	<i>My First Book About the Five Senses</i> (Wynne, 2017)	Senses (Silverstein, 1981)
	Food Chain	<i>Dory Story</i> (Pallotta, 2000)	Food Chain (Scieszka, 2004)
	Food Chain	<i>Pass the Energy, Please!</i> (McKinney, 2000)	Food Chain (Scieszka, 2004)
	Food Chain	<i>Food Chain</i> (Robertson, 2009)	Food Chain (Scieszka, 2004)
	Metamorphosis	<i>Summer Birds: The Butterflies of Maria Merian</i> (Engle, 2010)	Maria Sibylla Merian, January 1670 (Ackerman, 2020)
	Metamorphosis	<i>Moth & Butterfly: Ta da!</i> (Petty, 2021)	Changes (Scieszka, 2004)
	Metamorphosis	<i>The Very Impatient Caterpillar</i> (Burach, 2019)	Conversation on a Leaf (Lewis, 2005)
	Metamorphosis	<i>Waiting for Wings</i> (Ehlert, 2001)	Metamorphosis (AmberLynne, 2014)
	Metamorphosis	<i>Caterpillar's Journey to Metamorphosis</i> (Padmini, 2021)	Changes (Scieszka, 2004)
	Metamorphosis	<i>Butterfly House</i> (Bunting, 1999)	Butterfly Metamorphosis (Mr. R's, n.d.)
	Hibernation	<i>Bear Snores On</i> (Wilson, 2002)	Bubba Bear's Cozy Hibernation Haven (Krutsinger, 2022)
	Migration	<i>Gotta Go! Gotta Go!</i> (Swope, 2000)	Mystical Migration of the Monarch Butterflies (Sunprincess, 2013)

Human Heart	<i>Cardiology for Kids: A Fun Picture Book About the Cardiovascular System</i> (Pham, 2022)	You Can't Beat Your Heart (Wolf, 2003)
Human DNA	<i>Rosalind Franklin</i> (Senker, 2003)	Rosalind Franklin (Mahtrow, 2006)
Human DNA	<i>DNA is Here to Stay</i> (Balkwill, 1993)	DNA Test (n.d.)
Human Cells	<i>Cell Wars</i> (Balkwell, 1993)	Cell theory (Reniscience Education, n.d.)
Human Cells	<i>Cells are Us</i> (Balkwell, 1990)	Fifty Million Cells (Lewis, 2007)
Human Bones	<i>The Bones You Own</i> (Baines, 2009)	Human Bones Poem (Mr. R's, n.d.)
Genes	<i>What a Family!</i> (Isadora, 2006)	My Genes (Hough, 2011).
Chromosomes	<i>My Name is James Madison Hemings</i> (Winter, 2016)	Chromosome poem (Lewis, 2007)
Chromosomes	<i>Amazing Schemes Within Your Genes</i> (Balkwill, 1993)	Chromosome Poem (Lewis, 2007)
Human Bones	<i>Give Me Back My Bones!</i> (Norman, 2019)	Boneless (Wolf, 2003)
Human Circulatory System	<i>The Circulatory Story</i> (Corcoran, 2010)	Shy Silent Rivers (Wolf, 2003)
Human Lungs	<i>Lungs</i> (Brown, 2022)	Lungs (Wolf, 2003)
Human Germs	<i>Under the Microscope: Earth's Tiniest Inhabitants</i> (Professor, 2024)	Under the Microscope (Hopkins, 1999)
Human Germs	<i>Cell Wars</i> (Balkwill, 1993)	Germ (Nash, 1937)
Germs	<i>Germs Make Me Sick!</i> (Berger, 1985)	Germ (Nash, 1937)
Germs	<i>Operation Achoo!</i> (Humowitz, 2020)	Germ (Nash, 1937)
Germs	<i>Body Battles</i> (Gelman, 1992)	White Blood Cells (SilentFairyNat, 2011)
Viruses	<i>A Little Spot Stays Home: A Story About Viruses and Safe Distancing</i> (Alber, 2020)	Untitled poem about COVID-19 (Vilma, 2020)
Parasites	<i>What's Eating You? Parasites, the Inside Story</i> (Davies, 2009)	Mary had a... (Scieszka, 2004)
Allergies	<i>The Sneezzy Breeze</i> (Loper, 2020)	Allergies (Smith, 2022)
Human Heart	<i>The Heart: All About Our Circulatory System</i> (Simon, 2006)	Heart to Heart (Dove, 2004)
Human Body	<i>Human Body Book: Introduction to the Respiratory System</i> (Professor, 2017)	Respiratory Failure (Bagert, 2006)
Viruses & Pandemics	<i>A Little Spot Stays Home: A Story About Viruses and Safe Distancing</i> (Alber, 2020)	In the time of Pandemic (O'Meara, 2020)