



Using Fables to Teach Science

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Teachers, parents and counselors could start every day and every lesson with a provocative idea that causes critical thinking, while also building character. Don't you think we should go out of our way to find ideas that are beautiful, wise or inspirational? The way I have taught since 1975 is to try to do just that. I often use something like a *FABLE*. Do you know how you feel after you have learned something that provokes you to see things in a new way? And not just new -



Bickart's Just-in-Time Fables

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Provocative conversation starters for children and adults encouraging critical thinking while building character with illustrations that stimulate the imagination. Free on bickart.org, also available from [Amazon](https://www.amazon.com).

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but also exciting and inspiring? I think all teaching should engender this. Every lesson should go beyond informative to be provocative, encourage critical thinking, and build character. This

program, [Using Fables to Teach Science](#), in conjunction with

[Bickart's Just-in-Time Fables](#) (Bickart, 2020a, Volume 1; 2020b, Volume 2; 2020c, Volume 3) does this. It combines the Socratic method of teaching concepts with the time-honored traditions of teaching character as in [[Fable #38](#)]. When you were a student, wouldn't it have been great if teachers exposed you to the wisdom of the parables of the *Bible*, verses in the *Tao*, teachings of *Socrates*, *Plato*, and *Aristotle*, sayings of *Confucius* and *Buddha*, or the proverbs of the ancient indigenous peoples from all over the world? Well, that is what these fables have been taken from. They cross the boundary between conflict resolution and joyful, free play. So, whether you are a parent, teacher, or a counselor using a fable as an anchor for a discussion may be wise.

So, you might ask, what does that have to do with putting a fable into the middle of a science lesson?

Science lessons could be more articulate and more fun with FABLES!

If we can entertain provocative ideas that are poetic and story-like, *while* learning a scientific principle, then both hemispheres of our brains will be firing at full tilt! You know, after consulting on adult education in the corporate world to Fortune 500 companies, I taught for seven years in a high school that had students who were largely emotionally disturbed. Then I taught in a men's, then women's prison. I have taught in different parts of the world from Shanghai, China to Peewaukie, Wisconsin. My courses have reached internationally from Sydney, Australia to London, England and in the U.S. from New York City to Washington D.C., Chicago, San Francisco, and Atlanta. Throughout my life I have marveled at how much more resilient students can be when they can handle both left brain critical thinking and large, right brain ideas that make the heart swell. And I must say that when people have had traumatic experiences, they do this better. In an effort to change from trauma back to calmness, we handle new and paradoxical ideas better than people who are mildly satisfied or complacent about changing themselves. To my observation, people who are not in significant pain might desire status quo, but those in discomfort become seekers and their minds open up. So, I ask this provocative question, "Could humankind be in trauma right now? Are we becoming emotionally disturbed on a global scale?" If so, then perhaps we need to change our teaching to make sure we add the heart thought of fables to the head thought of normal science.

Results of Using Fables to Teach Science

Did you know that a good bit of the world, other than the industrial west, have always been able to handle a scientific explanation and a myth at the same time? They can handle the paradox of explaining the origin of plants scientifically while also handling a creation myth like [\[Fable #130\]](#) (Bickart, 2020c, Volume 3), even though these paradoxical ideas seem to be exclusive opposites. This makes their critical thinking very strong. It is the very core of the thinking a scientist needs in order to conceive of time and space in Einstein's Theory of Relativity or the phenomena of the observer effect, complementarity, entanglement, or co-location in Quantum Physics. And more than this, fables and ancient wisdom challenge one to consider the awe-inspiring thought that perhaps humans can participate in natural tendencies that are not physical - spiritual causes of the physical world! If you want your thinking to become stronger by provoking yourself to consider larger pictures and more possibilities, you must stretch beyond logical thought only.

Some provocative conversation starters from ...

Fables & Science Lessons

- ***Could Aristotle's Four Elements Be Alive?*** ... the genius of ancients and the ancients before them
- ***Becoming a Great Observer*** ... how to know the difference between observing and analyzing ... left, right, & whole brain thinking
- ***Interrogation and Observation*** ... questions that limit nature's answers, projecting our emotions onto our science

- ***Lions and Tigers and Bears - Oh My!*** ... naming, labeling, and categorizing
- ***Falling and Getting Back Up*** ... gravity, Einstein's curved space, turning, spinning, falling motion
- ***You Must Be Your Own Teacher*** ... taking things into your own hands
- ***It is Time to Re-write Legends*** ... The Legend of the Two Wolves
- ***What Lens Do You Use?*** ... *speaking in fables* - the language of wonder and beauty
- ***Another View of Time*** ... we don't get it - Fairy Gate
Sympathetic vibration, pendula, clocks, seeing change vs. meditating
- ***What Not to Wear - to Meet Quantum Physics*** ... handling exclusive opposites, paradox, and the middle way
- ***Do You Remember When a Garden Used to Be All Good*** ... we have to get back to that garden ... favorites, colors, and weeds
- ***Be Careful What You Wish For*** ... *inventions: more machine-like or more plant-like*
- ***Teaching Science has a Social Impact*** ... conquering nature, space, disease, and drug abuse
- ***Who is the Smartest - Humans, Animals, or Plants?*** ... the incredible support of the mycelium network and the trees - does a forest foster competition or cooperation
- ***Participating in Nature*** ... mirror neurons, social and emotional intelligence, and Johann Wolfgang von Goethe
- ***Are We Asking Nature or Torturing Her?*** ... Barbara McClintock, George Washington Carver, Suzanne Simard, and Peter Wohlleben

An Example of how to Using Fables to Teach Science is Lesson #1: [*Interrogation and Observation*](#) which uses [[Fable #4](#)] [[Fable #60](#)] [[Fable #92](#)] [[Fable #128](#)] [[Fable #146](#)] (Bickart, 2020a, Volume 1; 2020b, Volume 2; 2020c, Volume 3) on www.bickart.org.

What is the method of Using Fables to Teach Science

“Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand.” Chinese Proverb

Over the years I found myself developing a pattern of teaching. Although I don’t mean to describe a rigid formula, the lessons could be said to tend toward a simple approach: 1) tell the students what you are going to do, 2) do it, 3) replay the event in the mind, then 4) step back to do some critical thinking and deeper reflection. The use of fables can be before step 1) or as part of step 4).

1) Tell what science is coming by setting the mood, not explaining concepts, yet.

2) Show (Outer Observation) Observe a live demonstration or video or description, so that students can mindfully attend the experience, without too much explanation. Conceptual thinking, analyzing, and discussing does not come in, yet. The students are concentrating with intense attention.

3) Repeat (Inner Observation) Observe the experience by replaying it in your mind, still not analyzing or naming or categorizing. This is the most important step for *speaking-in-fables*. Just re-create it with your imagination, like a movie. In this recreation, nothing of your own ego or self is added or modified. The observer is still just that. This is a very active role. It is hard to observe without commenting, thinking about ideas that are triggered, or passing judgement. It is as if the demonstration is being done live, but it is totally in consciousness, only.

4) Reflect on what happened. This is done either within the lesson, or perhaps later – even the next day. If the students took it in mindfully, then you wait a day, they may have had depth added to their perspective in the last night’s sleep. These reflections can include descriptions of what happened physically, why it happened, how we can use or control it, or even how to make money from it. Be careful not to simply see science as an exploration into the world’s resources as if everything was made for humankind, only. And skirt the tendency to ask, “What can this do for me.” Instead, these reflections might transcend the mechanical explanation or the profit motive to honor the *wonder* and *awe* in an event. To appreciate something for its intrinsic value like beauty and elegance, is to leave the self and embrace the whole.

Quotes

“For out of the overflow of his heart his mouth speaks.” (Christ)

“And if a house be divided against itself, that house cannot stand.” (Bible, Mark 3:25)

“*UNION IS STRENGTH*” (Aesop, Jones, & Rackham, 2013, p. 69)

“See the false as false - the true as true. Look into your heart.” (Buddha)

“Everything has beauty, but not everyone sees it.” Confucius

“SOCRATES: ... there is no such thing as teaching, only remembering.” (Plato, Ferrari, & Griffith, 2000/circa 400 BC, Meno)

“No compulsory learning can remain in the soul. . . In teaching children, train them by a kind of game, and you will be able to see more clearly the natural bent of each.” (Plato et al., 2000/circa 400 BC, Book VII)

“He who knows the Tao does not speak about it; he who is ever ready to speak about it does not know it.” (Tzu, 2012/circa 500 BC, Verse 56)

“Words that are strictly true seem to be paradoxical.” (Tzu, 2012/circa 500 BC, Verse 78)

“A friend is one soul abiding in two bodies.” (Aristotle, 1984/circa 350 BC)

“For a friend with an understanding heart is worth no less than a brother”
(Homer, The Odyssey)

“To see a World in a Grain of Sand
And a Heaven in a Wild Flower
Hold Infinity in the palm of your hand
And Eternity in an hour

A Robin Red breast in a Cage
Puts all Heaven in a Rage

...

God Appears & God is Light
To those poor Souls who dwell in Night
But does a Human Form Display
To those who Dwell in Realms of day” (William Blake)

“I believe a leaf of grass is no less than the journeywork of the stars,
And the pismire is equally perfect, and a grain of sand, and the egg of the wren,

And the tree-toad is a chef-d’oeuvre for the highest,
And the running blackberry would adorn the parlors of heaven,
And the narrowest hinge in my hand puts to scorn all machinery,
And the cow crunching with depressed head surpasses any statue,
And a mouse is miracle enough to stagger sextillions of infidels,
And I could come every afternoon of my life to look at the farmer’s girl
boiling her iron tea-kettle and baking shortcake.
I find I incorporate gneiss and coal and long-threaded moss and fruits and
grains and esculent roots,
And am stucco’d with quadrupeds and birds all over,
And have distanced what is behind me for good reasons,
And call anything close again when I desire it.” (Whitman, Morley, & Daniel,
1940)

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