



## How to Use Friction to Your Advantage: *with help from Ralph Waldo Emerson*

By JOHN BICKART, Ph.D. | **Science Education and  
Spiritual Transformation** / Chapter 6: Friction

*"Every natural fact is an emanation, and that from which it emanates is an emanation also, and from every emanation is a new emanation. If anything could stand still, it would be crushed and dissipated by the torrent it resisted, and if it were a mind, would be crazed; as insane persons are those who hold fast to one thought, and do not flow with the course of nature. Not the cause, but an ever novel effect, nature descends always from above. It is unbroken obedience."*

- Ralph Waldo Emerson

## What is friction?

Friction is two things. The first definition that the Merriam Webster Dictionary gives is "**1 a : the rubbing of one body against another**", or "**b : the force that resists relative motion between two bodies in contact.**" Of course this is the physical definition that deals with the physics or mechanics of friction. But there is also a second definition, the psychological one. That one describes the non-physical, spiritual, or emotional use of the word, friction. It is, "**2 : the clashing between two persons or parties of opposed views.**"

On the physical side, if one were to probe exhaustingly the question, "What, exactly is this friction?", and relentlessly pursue the truth, an inquiry might sound something like this ...

Truth Seeker: "What, exactly is this rubbing force we call friction?"

Patient Physicist: "It is the resistance bodies experience when moving relative to one another while in contact."

Truth Seeker: "What causes the resistance?"

Patient Physicist: "The fact that no objects in the physical world are perfectly smooth. Every object is like sandpaper to some degree."

Truth Seeker: "Even smooth materials?"

Patient Physicist: "Yes. The smoothest polished mirror still has molecular size bumps. When the bumps rub against each other, friction is the resistance of the molecules not giving way."

Truth Seeker: "Why don't they give way?"

Patient Physicist: "The atoms in the molecules bond to each other and hold on."

Truth Seeker: "Why? What are bonds?"

Patient Physicist: "Bonds come from electromagnetism. "

Truth Seeker: "Does that mean electricity and magnetism?"

Patient Physicist: "Yes."

Truth Seeker: "Where does the electricity and magnetism come from?"

Patient Physicist: "From the protons that are positively charged and the electrons that are negatively charged. Charges attract and oppose each other. And moving charges cause magnetic fields, which attract and oppose each other."

Truth Seeker: "So, are you telling me that because there is electromagnetism holding the atoms and molecules and objects of our physical world together ... we have friction?"

Patient Physicist: "Yes, I guess so."

## Physics and Psychology

What if everything you see in the physical world began as an idea in the spiritual world. It is this way with friction. Friction is a physical reality - but it begins as a tendency, a principal, a non-physical, spiritual entity. What if this is true for every physical fact in the physical world. What if every fact - every phenomenon has many psychological twins.

Take the physical elementals of fire, earth, air, and water. With physical **fire**, maybe one twin is a fiery temperament. With solidity of matter or **earth**, there could be an immovable opinion. I've heard people say that their partner is as precious as the **air** they breathe. And **water** is often likened to love - gentle as rain and strong enough to move mountains.

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***"A Fact is the end or last issue of spirit."  
- Emerson***

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So, I propose a little game. Let's suppose that there really is a psychological correlative to every physical fact and

earnestly look at one. Let's look at **friction**. The game is to study the physical attributes of friction, then pair them to psychological counterparts. In this way, we can use everything we observe in the world around us that has friction, to give us clues of how to navigate our psychological world. Every animal, plant, or natural occurrence can come alive and give us advice about our behavior by showing us how we rub up against each other and cause relationships of all sorts.

If you watch water pouring from a faucet, you can look for a lesson in life that may have the power to make you stronger or wiser. If you are a tree lover like me, you may ask the oak to demonstrate how to move through the darkness of soil as a tiny seed to reach great heights in the air above. In other words, this game - along with the belief that there may be wisdom in this pairing of the natural facts to psychological ones - opens the world before you into a wealth of lessons - or, said another way - a shopping mall of great variety, where all of the price tags read, FREE.

## **To Earnestly Study Friction ... Imagine It's Gone!**

What would we do without friction?

The other day I was watching a movie where a car came to a screeching halt right at the edge of a cliff. It was comical - and barely believable. The car tires skidded, barely reaching within an inch of totally destroying the car and its inhabitants - but stopped. Some would say, "Thank goodness that no one was hurt." Others might say, "Thank goodness that movie scene is over." I say, "Thank goodness for friction."

If there was no friction, the car would go over the cliff. But actually, if there was no friction, the people would slip and slide and not be able to get into the car. Actually, they would not be able to get dressed or hold anything. Actually, their molecules would not be able to hold onto each other. Friction is behind much more than you might think.

We need friction. It's what holds us together. It's the resistance in the world that makes gym equipment work, whipped cream hold its air bubbles, and physical touching possible. **Dacher Keltner**, founding director of the Greater Good Science Center and a professor of psychology at the University of California, Berkeley reports scientific studies that confirm that compassion can be communicated via touch. And that's just the physics side of friction. What about the psychological side? What would we do without the friction of your mother telling you how to watch out for the dangers of life? If there were no psychological friction, we would not have partners and friends who drive us crazy, but arguably, save us from ourselves. *Is it possible that friction is a teacher of social emotional intelligence that is built into nature as a free set of daily affirmations?*

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***"That which intellectually considered we call Reason, considered in relation to nature, we call Spirit. Spirit is the Creator. Spirit hath life in itself."***

***- Emerson***

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So, we need friction. It is the spiritual entity or perhaps the spiritual being that, in idea form binds us together, and in physical form sets up enough resistance to slow us down to appreciate life. But does that extrapolate to meaning that the more friction we have, the better? I don't think so. There is a limit to good friction. And if you can sense when enough is enough - either psychologically or physically - yet tolerate and even embrace the friction that makes you stronger - you're on the right track.

## Psychological Friction Among Students

In February of 2023, the [Evidence Project](#) published a series of reports to "definitively assess the best available evidence on how the Covid-19 pandemic and its aftermath has affected America's students" (Gross & Hamilton, 2023). One of these reports, of the hundreds compiled by the [Center on Reinventing Public Education](#) (CRPE), accounts for the pandemic's effects on students in three areas: 1) academic progress, 2) emotional well-being, and 3) impact on students with disabilities.

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***“To be yourself in a world that is constantly trying to make you something else is the greatest accomplishment.”***

***- Emerson***

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As many of you may know, emotional well-being is quite low among students in the educational system in the U.S. at the present time, in 2024. There is a decided increase in both personal friction and social polarization that students face within their relationships at school, at home, and outside of the home. They are also surrounded by political polarization that is constantly reported in the media. The **CRPE report** notes that we currently have a strong need to "Overcome turf wars and divisions; embrace 'big tent' thinking for social and emotional development and well-being support." (Gross & Hamilton, 2023, p. 9)

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***"The only reward of virtue is virtue; the only way to have a friend is to be one ..."***

***- Emerson***

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It is as if we need to relearn how to make friends. We need to refresh our abilities to seek relationship with the other - to see opposing ideologies, as well as nature herself - as you would a new friend that you wish to get to know.

To that end, I humbly offer a science lesson similar to one that I gave in March, 2023. It was a science class and the subject was FRICTION. The students were seventh and eighth graders. I am supposed to be retired, but like the car on the cliff, I keep approaching the edge of retirement and stop just short of it. My science lesson on friction was one of a seven-week course in science topics, loaded with hands on physical experiments, as well as several

psychological discussions about being friends with nature and each other. In this particular lesson, I challenged the students to consider a world without friction.

## A Science Lesson on Friction

Ok class, we first need to get one thing straight. We are simultaneously physical beings and non-physical beings. Our physicality shows up in things like our bodies, in the earth, the air, the water, and fire. Our non-physicality - our spirituality - shows up in things like our psychology - our ideas, wishes, wonder, and awe. So, to really discuss friction, we need to simultaneously look at both the physical and psychological sides.

**Physical Friction** is one of those things that epitomizes the whole of our physical existence. Let me say this clearly. Friction is not simply representative of our human life on earth - it is the **essence** of physicality. How? As I intend to show you in this next lesson, *friction is at the center of the reason that matter is physical, as opposed to non-physical.*

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**Psychological Friction** can be studied simultaneously to physical friction because the way we humans experience friction in a psychological sense, has a strong parallel to the physics of friction. So, let's study both the physics and the psychology of friction, alternating between the two in order to draw these very informative parallels.

## The Science

*Some scientists guess that all of the physical world may be made out of molecules and atoms held together to make all manner of stuff from trees to water to food to buildings to mountains. So, class, may I ask a question? Have you ever wondered, as you look around at the material stuff of our world, "What holds that stuff together?" Or, said another way, "Do you wonder why matter feels solid? I mean, physically speaking, if you hit the table, the wood holds strong - it doesn't just fall apart. Doesn't your peanut butter hold onto to your jelly until you are finished eating it?" I don't know about you, but I wonder about this. I wonder if there are some mysterious rules or forces that cause this place we call our physical world to hold together!*

*Physics says that indeed there are forces at the most minute, minuscule level that hold the parts of matter together. Thus, we have FRICTION. Friction is at least one way to look at this mysterious rule - this oppositional force. It is what holds us together. Friction is the resistance of the material world; the tendency to hold on; the reluctance to let go. And, since friction is not a physical substance itself - it is a non-physical tendency. Perhaps this is what Emerson calls spiritual.*

# Pairing the Non-Physical with the Physical

I would like to propose a game we can play. In this game we will imagine that this **FRICTION** is an intelligent being - able to communicate with us. Then, voila! We will have a conversation with it. Can you think of questions you would ask if you could speak directly to **FRICTION**? I have a lot of questions. So, let's give it a try, shall we?

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***“What you do speaks so loudly that I cannot hear what you say.”***  
**- Emerson**

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The following chart captures the questions I would ask of **FRICTION**.

<b><i>Implications of Friction</i></b>	
<b>"How might these PHYSICAL experiences ...</b>	<b><i>... show up in my PSYCHOLOGICAL self?</i></b>
the sensation of physical touch	<i>the warm embrace of your friend taking your hand</i>
the spark to light a fire, then the ensuing exchange between two burning logs to keep the fire going	<i>the intimacy of being with another person</i>

hugs	<i>social emotional closeness</i>
the barrier that puts up a blockage - stopping you from going too far, skidding off the cliff, or doing damage	<i>a close acquaintance keeping you from saying something you would regret</i>
fastening shoes or vests with laces or velcro or snaps or hooks	<i>the safety a child feels when a parent protects by holding them closely</i>
taping diapers, packages, wrapping paper	<i>the security of someone who catches you before you fall</i>
buttoning cloth to stay on one's body	<i>your boss says that you "fit like a glove" at work</i>
one hand holding another lest you fall	<i>your partner saves you right before you do that thing ... again</i>
the extreme friction of being hit hard enough to leave more than temporary impairment	<i>life intervenes and takes you out of the game with an actual injury, forcing you to sit on the bench</i>
the communication from vocal chords vibrating against the air	<i>you find your voice and write an essay that sings your song</i>
musical instruments creating harmony by percussion, vibration, and being filled with air	<i>you wake up in love with the world: birds are singing, colors look vibrant, and food tastes great</i>
construction of shelters for safety and sculptures just for beauty itself	<i>you feel satisfied and secure having completed what you set out to do</i>
mending and healing by medicine or hand	<i>you rest assured with a sense of being taken care of by the world</i>
the shoelace knot that you cannot untie, taunting you with oppositional defiance	<i>an unsolvable problem</i>

<p>the obstruction that creates an opposing view persistently blocking the light from coming in through a window with an obstacle that is so staunchly stuck in its position that it cannot be moved</p>	<p><i>life is overwhelming for the moment - there seems to be no way out</i></p>
<p>playgrounds with apparatus for sliding, climbing, swinging, running</p>	<p><i>you love your work - it feels like you are playing</i></p>

## No Friction?

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***"Through all its kingdoms, to the suburbs and outskirts of things, it [nature] is faithful to the cause whence it had its origin. It always speaks of Spirit."***

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From the smallest level of matter to the largest, friction is largely due to the force of electromagnetic attraction. Without electrons attracting protons, it is hard to imagine any friction. So, conversely, no friction would mean no magnets attracting each other and no electricity. Light is an electromagnetic phenomenon, so no light. Heat is on that same spectrum, as is color and cell phone waves - so cancel them out. The world would be in a total frozen blackout; everything would come apart. There would be no extremes of temperature, no distances, no measurements. There would be no middle way because there would be no ends.

Nothing could hurt or help; impede or encourage.  
Differences would disappear; diversity would blend; but  
there would be no one to appreciate the blending.

So, whether you look at the physicality of friction or the  
psychological effect of having to tolerate other people, the  
bottom line is that *we need* friction. So, I have a question,  
"Is it possible to tolerate and even embrace friction?"

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*"There is a power in love to divine another's destiny better than that other can, and by  
heroic encouragements, hold him to his task."  
- Ralph Waldo Emerson*

*"We know beauty because there is ugly,  
We know good because there is evil.  
Being and not being,  
having and not having,  
create each other."  
- Lao Tsu*

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## About the Author



**John Bickart**

John Bickart, Ph.D., likes to work in the background and let good ideas speak for themselves. He believes that children, and sometimes adults, know what they want and that they empower themselves when they listen to their hearts.

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## References

Gross, B., & Hamilton, L. (2023). Student Mental Health and Well-Being: A Review of Evidence and Emerging Solutions. *Center on Reinventing Public Education*.