School Matinée
Study Guide

Gravity and Other Myths

Ten Thousand Hours

Fri, Apr 16, 11 am
The Moore Theater

THE HOP

Welcome to the Hop

A performance needs an audience, so be prepared to play your part!

Photo by Robert C. Strong II

Theater Etiquette

When entering the hall, show consideration for all those sharing the building by remaining quiet and respectful in common areas. Applause is the best way to show your enthusiasm and appreciation! Backpacks, food, drink and gum are not allowed in the theater. Please turn off all cell phones and note that recording the performance or taking photos is strictly prohibited.

Information for Teachers

Review this study guide for context and activities that will help your students engage with the performance. Please read the email that accompanies this guide—Hop staff often request details about your visit, including how many buses you'll be bringing and what accommodations you need.

This study guide's content was created by Aaron Rivkin, the Hopkins Center's Manager of Impact and Community Alliance. If you have questions about this guide, please direct them to Aaron Rivkin at **aaron.s.rivkin@dartmouth.edu**. To download copies of this and other guides, visit **hop.dartmouth.edu/study-guides**.

Enjoy the Show!

The Hopkins Center's mission is to cultivate art as central to life. As a catalyst for creative experiences, we aim to deepen understanding of the world and connect students and communities to one another.

Did You Know?

- The Hopkins Center is located on the ancestral homelands of the Abenaki people.
- The Hop presents over 100 live performance events each season.
- In 1988, the Hop was named by the National Endowment for the Arts as one of the nation's exemplary performing arts centers.
- The new Hop reopened in October 2025!

About the Show

Ten Thousand Hours by Gravity & Other Myths is an ode to the countless hours it takes to achieve something extraordinary. Eight world-class acrobats from Australia investigate physical skill-how we obtain it, how we perfect it, and how it can transform our lives. Rather than hiding the hard work behind a polished performance, this show pulls back the curtain: audiences see the practice, the failures, the tries and retries, and the eventual mastery.

Set to a driving, dynamic musical score performed live on stage by a percussionist, *Ten Thousand Hours* is a celebration of the human body, the persistence required for mastery and the joy of physical play. It is at once a dazzling acrobatic spectacle and an honest and moving tribute to the process behind greatness.

The show's title references the widely discussed idea that it takes roughly ten thousand hours of practice to achieve true expertise in any skill-a concept that connects deeply to themes of growth mindset, effort and learning.

About the Artists

Gravity & Other Myths is an Australian circus company pushing the boundaries of contemporary circus. GOM's work utilizes an honest approach to performance to create shows with a focus on human connection and acrobatic virtuosity. After forming in 2009 as a group of young Adelaide artists with a passion for circus and physical theater, they've spent the past 13 years growing steadily and creating six critically acclaimed main stage works. gravityandothermyths.com

Pre and Post Performance Discussion Questions

Pre-Performance

- Is there something you are practicing to get better at? What is it? How do you practice?
- Have you ever tried something over and over before getting it right? How did it feel when you finally succeeded?

Post-Performance

- What was the hardest-looking thing you saw? How do you think the acrobats learned to do that?
- Did you see moments where performers made mistakes or struggled? How did that change the way you felt watching them?
- What would you like to practice for ten thousand hours? Why?

Learning Activities

Each activity below includes options for younger students (grades 3–5) and middle grades (6–8).

STEM: Physics of the Human Body

Acrobatics is physics in action. Every flip, balance and catch involves forces, momentum and the body's relationship with gravity.

Key Science Concepts:

- **Gravity** is the force that pulls all objects toward the Earth. Acrobats work with and against gravity in every move.
- **Center of mass** is the point around which an object (or body) balances. When you balance on one foot, your center of mass must be directly above that foot. Acrobats learn to control their center of mass precisely.
- **Momentum** is the tendency of a moving object to keep moving. A flipping acrobat carries momentum through the air.
- **Biomechanics** is the study of how the body moves-applying engineering and physics principles to human motion.

Classroom Activity: Balance Challenge. Try these balance challenges to explore center of mass:

- Stand on one foot for 30 seconds. Now close your eyes. What changes?
- Balance a ruler (or pencil) on your finger. Where does it balance most easily? Why?
- Try a partner counterbalance: stand facing a partner, hold hands and slowly lean back together until your combined weight keeps you both stable.

Discuss: What did you discover about your own center of mass?

Grades 3–5: Keep the activity hands-on and playful. After trying the balance challenges, have students draw a picture of themselves balancing and mark with an X where they think their center of mass is. Simple follow-up: "Why do you fall over when you lean too far?"

Grades 6–8: Add a measurement component. Time how long each balance challenge can be held and graph the results as a class. Introduce the term "base of support" and discuss why a wider stance (like a cartwheel landing) is more stable than a narrow one (like standing on tiptoe).

English Language Arts: Growth Mindset and Personal Narrative

The idea at the heart of *Ten Thousand Hours*—that mastery comes through practice and persistence—is closely connected to the concept of **growth mindset**, developed by psychologist Carol Dweck.

About Growth Mindset: A **fixed mindset** assumes that abilities are innate-you are either good at something or you are not. A **growth mindset** believes that abilities can be developed through dedication and hard work. Research shows that students with a growth mindset tend to achieve more and bounce back better from setbacks.

Writing Activity: My Ten Thousand Hours. Ask students to write a personal narrative about something they have worked hard to learn or improve-a sport, an instrument, a language, cooking, drawing, anything. The narrative should include:

- What motivated them to start
- A moment when it was hard or they wanted to give up
- What helped them keep going
- What they have learned -about the skill and about themselves

Discussion: Process vs. Product. The show *Ten Thousand Hours* is unusual because it shows the process of acrobatics, not just the polished final product.

- Can you think of other arts, sports or crafts where seeing the process would change how you appreciate the finished product?
- How does understanding the work behind something change how you feel about it?

Physical Education / Health: Practice, Mastery and the Science of Learning

The show *Ten Thousand Hours* connects directly to what scientists and educators have learned about how skills are acquired.

The Science of Practice:

- **Deliberate practice**—focused effortful practice with specific goals—is more effective than casual repetition. The "ten thousand hours" concept (popularized by Malcolm Gladwell in his book *Outliers*) suggests that expertise in any field requires approximately this much dedicated practice.
- **Muscle memory** (more accurately called **procedural memory**) is the way our brains store and automate physical skills through repetition, freeing up conscious thought for other things.
- **Proprioception** is the body's sense of its own position in space— a crucial sense for acrobats (and athletes of all kinds).

Discussion:

- What role does failure play in learning? Is making mistakes important? Why?
- What is the difference between practicing something and practicing it well?
- Can you think of athletes, musicians or performers you admire whose success came from extraordinary levels of practice?

Grades 3–5: Try a simple proprioception game: have students close their eyes and touch their nose, or walk a straight line with eyes closed, to feel how the body senses its position without looking. Discuss in simple terms: "How did your body know where your hand was without seeing it?"

Grades 6–8: Have students track a personal practice log for one week (any skill: a sport, instrument, video game, drawing), noting how long they practiced and one thing they improved. Discuss as a class what patterns they noticed about effort and improvement.

Vocabulary

Acrobatics: The performance of extraordinary feats of balance, agility and coordination.

Biomechanics: The study of the mechanical aspects of living bodies, including how forces act on muscles, bones and joints.

Center of mass: The point in an object or body around which its mass is evenly distributed; the balancing point.

Contemporary circus: A modern form of circus that emphasizes theater, narrative and human skill rather than animal acts or traditional circus spectacle.

Deliberate practice: Focused, intentional practice aimed at improving specific skills, as opposed to casual or repetitive practice.

Growth mindset: The belief that abilities and intelligence can be developed through dedication and hard work (as opposed to a fixed mindset, which sees abilities as innate).

Momentum: The tendency of a moving object to continue moving in the same direction.

Procedural memory: A type of long-term memory that stores how to perform physical skills—often called "muscle memory."

Proprioception: The body's ability to sense its own position, movement and balance in space.

Resources

Gravity & Other Myths website:
gravityandothermyths.com
Ten Thousand Hours show page:
gravityandothermyths.com/shows/ten-thousand-hours
Video trailer of *Ten Thousand Hours*:
vimeo.com/906163209
Carol Dweck on Growth Mindset: mindsetworks.com
History of circus: en.wikipedia.org/wiki/Circus
Gravity & Other Myths on Instagram: @gomcircus

References

ctl.stanford.edu/students/growth-mindset
en.wikipedia.org/wiki/Outliers_(book)
livescience.com/43595-procedural-memory.html
merriam-webster.com/
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