



# Is Time Travel Possible?

By Greg Kirmser

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## [Things To Know/Things To Think About](#)

This Books That Grow original piece explores the nature of space-time and the human fascination with the possibility of sailing the seas of time—into the past and future. The piece begins by documenting one of the the earliest known references to time travel, contained in the Hindu epic, the Mahabharata. From there, the piece goes on to describe the history of time travel as a literary trope, made famous in such works as Charles Dickens’ “A Christmas Carol.” The turning point in the piece, however, comes after the introduction of H.G. Wells’ The Time Machine. Though his was a work of fiction, H.G Wells was the first to popularize the notion of using science to bend time. From here on out, the piece dives into simplified explanations of modern theories, in both theoretical and astrophysics, to answer the ultimate question: Is Time Travel Possible? The answer, although tentative, provides readers with an opportunity to learn about Einstein’s Theory of Relativity, and such phenomena as rotating black holes, worm-holes, and cosmic string. This piece is perfect for providing an accessible and student-friendly introduction to theoretical physics. Additionally, the piece can be used as part of a lesson on the reciprocal relationship between literature and science. Most importantly, this piece can be used to discuss questions of ethics in science, and the possible ramifications of tampering with the laws of nature.

### *Before Reading*

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1. Research the concept of “Time-Travel Paradox.” Explain what a time-travel paradox is, and describe how it complicates the issue of traveling into the past or future. Choose your favorite time-travel paradox, there are many, and write down some notes about it. In small groups, share your findings with each other in the form of small, informal presentations.

### *During Reading*

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1. According to Einstein’s Theory of Relativity, why is time travel possible? Give the two reasons Einstein provides in the text, and write down a brief description of your understanding of the phenomenon known as “Time Dilation.”

### *After Reading*

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1. Interestingly, in some works of fiction, traveling to the past and future is used as a way of learning from past mistakes, and avoiding these same mistakes in the future. In Charles Dickens’ “A Christmas Carol,” for example, Scrooge’s past is seen as something to be learned from, and his foreboding possible future motivates him to change for the better. If real time travel were possible, however, people wouldn’t need to learn from their mistakes, because they could simply go back in time and fix them. Thinking critically, what’s dangerous about these implications? And in your opinion, what other moral dilemmas does time-travel pose?

### *Connections In Text*

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1. Research the history of the idea of time travel, and make a list of known myths, legends, books, movies and essays that reference it. Compare examples from before the Scientific Revolution(around the 18th-century), with examples that come after it. How do portrayals of time travel differ before and after the Scientific Revolution? How do you explain these differences?

## Further Readings

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**For Teachers:** [http://www.pbs.org/wgbh/nova/education/activities/2612\\_time.html](http://www.pbs.org/wgbh/nova/education/activities/2612_time.html)

**This link provides a number of recommended activities for teachers that will help students better understand the nature of time.**

**For Students:**<http://www.space.com/17661-theory-general-relativity.html>

**This link provides a simplified explanation of Einstein's Theory of General Relativity. This link would be used as a pre-reading assignment to introduce students to some of Einstein's ideas, especially if they're unfamiliar.**

### **Domain-specific vocabulary:**

time dilation, black holes, wormholes, cosmic strings, cosmologist

### **G8 vocabulary list:**

allot (8), contemporary (8), formidable (8), futuristic (8), infinite (8), linear (8), advent (7), ascend (7), commence (7), fallacy (7), velocity (7), consider (6), contemporary (6), defy (6), phenomenon (6), stable (6), venture (6), warp (6), witness (6)

### **G6 vocabulary list:**

consider (6), contemporary (6), defy (6), phenomenon (6), stable (6), venture (6), warp (6), witness (6), case (5), challenge (5), fate (5), milestone (5), veteran (5), appear (4), back (4), content (4), develop (4), flaw (4), orbit (4), satellite (4)

### **G4 vocabulary list:**

appear (4), back (4), develop (4), flaw (4), orbit (4), satellite (4), absence (3), adjust (3), ancient (3), fraction (3), potential (3), publish (3), realm (3), wonder (3), astronaut (2), chance (2), discover (2), energy (2), future (2), journey (2), leap (2), literature (2), possible (2), present (2), science (2), speed (2), sprout (2)

### **G2 vocabulary list:**

astronaut (2), chance (2), cheat (2), discover (2), energy (2), future (2), journey (2), leap (2), literature (2), possible (2), science (2), sprout (2), change (1), create (1), destroy (1), early (1), explain (1), further (1), hour (1), magic (1), meet (1), minute (1), past (1), space (1), speed (1), start (1), tale (1), trip (1), allow (0), always (0), answer (0), Earth (0), day (0), human (0), king (0), new (0), push (0), small (0), year (0)