

# Galileo Galilei and the Beginning of Modern Science

## Before Reading

### Motivation / Purpose

- The purpose of this text is to recount the life and discoveries of Galileo Galilei. The text links with the *Science* theme *Science and Society*.

### Text Type

- Draw students' attention to the: **...../...../... Date**
  - chapter titles and page numbers
  - images and captions
  - labelled diagrams
  - glossary and index.

Ask, 'What type of book is this?' (Factual). How do you know? What type of factual book is this? (Recount).

### Visual Literacy...../...../... Date

- Look at the front cover. What do you think the older man in the photograph is doing? How does this photograph relate to the content of this text?

### Background Knowledge

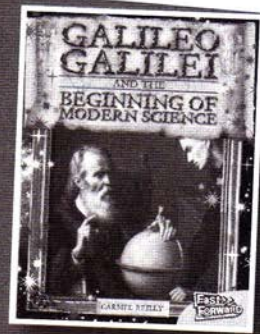
- What do you know about the planets and the way they move in our Universe? Do you think people have always had the same knowledge about the Universe? Are scientists making new discoveries? **...../...../... Date**

### Phonological Awareness

- Make sure students know the following phonological sounds:
  - /sh/:** motion (p.5), finishing (p.6), creations (p.19)
  - /s/ for soft c:** century (p.4), science (p.5), medicine (p.6), surface (p.15)
  - /or/:** falling (p.4), four (p.6), law (p.10), thought (p.12), ordered (p.20)
- fer/:** first (p.11), surface (p.15), universe (p.16)
- Write words containing the above phonological sounds on cards. Students group the words into the sound groupings as listed above. Ask, 'What letters can be used to represent the *or* sound?' Repeat with the other phonological sounds listed. **...../...../... Date**

## Vocabulary

accurate, astronomy, axis, Catholic Church, Copernicus, craters, creations, experiments, Galileo Galilei, heavenly, heresy, Italy, Jupiter, law, mathematics, observation, pendulum, physicist, physics, planets, professor, recant, scientific, swinging, telescope



### High Frequency Words

- area, breakthroughs, century, discoveries, equal, ideas, including, matter, order, prove, rather, returned, study, throughout, whatever **...../...../... Date**
- Before showing students the word list, dictate the words and ask them to have a go at writing each word. Show them the word. If they are correct, move onto the next word. If they are incorrect, ask them to have another go, focusing on the letters that were misspelt. **...../...../... Date**

## During Reading

### Vocabulary in Context...../...../... Date

- Write 'physics, astronomy and science' on the board. What suffixes are added to these words to change them to mean someone who studies the subject? What would you call a person who studies mathematics? Ask students to suggest words for other fields of study or occupations, identifying the base word and the suffix.

### Checking for Meaning

- Literal: ...../...../... Date**
  - Who was Galileo? (An astronomer and physicist who lived in Italy in the sixteenth century)
  - What discoveries did he make? (Many facts about astronomy, the law of the pendulum and the law of falling bodies)
  - Why did the Catholic Church disagree with his ideas about the Universe? (Because the Catholic Church believed that humans and the Earth were God's special creations and they were at the centre of the universe.)

### Inferential: ...../...../... Date

- How did Copernicus influence Galileo?

- Why wouldn't Copernicus have been able to prove scientifically that his ideas were right?
- Why would the Catholic Church force Galileo to say he was wrong?
- What later scientific breakthroughs do you think Galileo's ideas have led to?
- Make sure students understand the difference between literal and inferential information.

### Response: ...../...../... Date

- If Galileo were alive today, would he have been treated in the same way for his ideas? Should people always accept scientific discoveries? How do we know that a scientific discovery is true?

### Grammatical Patterns...../...../... Date

Make sure students understand the following components of a factual recount:

- Orientation providing information about 'who', 'what', 'where', 'when' and 'why': *Galileo Galilei was an astronomer and physicist who lived in Italy in the 16th century* (p.4)
- A record of events recorded in chronological order: The early years (pp.6-7), Galileo's astronomical discoveries (pp.14-15), Galileo and the Catholic Church (pp.18-21)
- A concluding statement: *Galileo was almost blind by this time, but he kept working and wrote another important book about physics. He died in 1642.* (p.23)
- Use of personal comments or evaluative remarks: *the Catholic Church was very powerful* (p.19)
- Use of action and relating verbs in the past tense: *was born* (p.6), *read* (p.16), *came to agree* (p.18)
- Use of conjunctions and time connectives to sequence events: *After finishing school* (p.6), *In 1589* (p.7), *In 1609* (p.14), *Over time* (p.18)
- Use of adverbs and adverbial phrases to build information: *For almost a thousand years* (p.8), *By using observations and doing his own experiments* (p.9), *for the first time* (p.15)
- Use of adjectives to describe nouns and build noun groups: *a famous scientist* (p.16), *house arrest* (p.22), *another important book* (p.23)
- Use of factual statements explaining key terms or ideas: *Physics is the study of matter and energy, including force and motion.* (p.5)

### Fluency/ Punctuation Patterns...../...../... Date

- Complex sentences contain longer phrases separated by commas: *After experimenting with his own pendulums, he observed that it always took the same time for pendulums of equal length to swing back and forward, no matter how far out they swung.* (p.11) Identify the independent phrase. Read the independent phrase (in bold) without pausing. Then add each dependent phrase, pausing at the commas to build the students fluency in reading these types of more complex sentences.

These punctuation patterns occur in the text:

- Apostrophes indicate possession: *Galileo's time* (p.12), *Jupiter's moons* (p.15), *Copernicus's view* (p.18)
- Capital letters are used in proper nouns: *Italy* (p.4), *Earth* (p.18), *Catholic Church* (p.20)
- Lower case is used in smaller words in proper nouns: *University of Pisa* (p.7), *Leaning Tower of Pisa* (p.13)
- Dot points used to list information: (p.15)
- A dash indicates more information is to follow: *This discovery led to the invention of the pendulum clock - the first accurate way of keeping time.* (p.11)
- Brackets surround word definitions: *forced to recant (say that he had been wrong)* (p.21)

### Critical Literacy...../...../... Date

- Which scientific facts make this a factual recount rather than just a recounting of the events in Galileo's life? Why did the author define astronomy and physics? What information about Copernicus could have been written as a fact box?

### Linking Visual and Written

- Why does this text contain photographs of paintings of Galileo and his times? How does the diagram on page 17 help you understand Copernicus's ideas?

## After Reading

Recall the structures and features of a factual recount. Plan a structure for the writing of a factual recount about Galileo's discoveries about the Universe.

### Activities

Students will:

- choose phrases that best complete sentences
- write words containing common phonological sounds
- write vocabulary words in dictionary order and write definitions
- write a factual recount about Galileo's discoveries about the Universe.

Comprehension (meaning)    Vocabulary (structure)    Phonics (visual)    Writing (structure)

