

Inventors and engineering

Text set ID TTA-TS-033

How the world works

Function · Causation · Change

Research · Thinking

SUGGESTED PYP CONNECTION

How the world works

How problems, constraints, testing, and revision turn ideas into workable systems.

INQUIRY QUESTION

How does an idea become something that works?

HOW TO USE THIS TEXT SET

Use the set as an inquiry into design processes rather than a gallery of famous inventors.

POSSIBLE STUDENT ACTION / REFLECTION

Build a design cycle from evidence across several books, then identify where testing or failure changed the result.

POSITIONING

Use this as a flexible connection within the school's own programme of inquiry. This companion does not prescribe a PYP unit or replace the school's planning. TumbleTA is an independent resource and is not produced, endorsed, or approved by the International Baccalaureate Organization.

Inventors and engineering — six books, idea to working result

Problems, constraints, models, tests, revisions, and systems show how ideas become workable.

six in sequence

Grade 3

TL06–TL12 where levelled

73 min listening

8 books in the collection

You are the teacher.

You know your students and what they need today.

Use what works. Change what doesn't. Make it yours.

This Grade 3 sequence compares several routes from problem to working result: architectural planning, communication, computation, accidental discovery, iterative invention, and public infrastructure. Students track the evidence that an idea was tested or adapted rather than treating invention as a single flash of inspiration.

The question that runs through all six

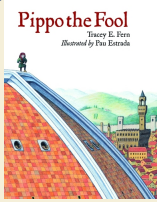
How does an idea become something that works?

Standards status

This curated reading sequence is not itself a region-specific standards claim. Review the documentary status on any linked lesson plan.

The sequence

1



Start here.

Pippo the Fool

Book ID 4717

Tracey E. Fern

Gr K-3

Historical Fiction

TL10

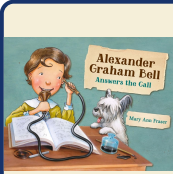
NC770L

15 min

Pippo responds to a public building challenge and skepticism by designing a major dome. It makes structure, constraints, and proving an idea visible through historical fiction metadata.

Ask What would Pippo have to show before other people could trust the design?

2



Now build the idea.

Alexander Graham Bell Answers the Call

Book ID 8034

Mary Ann Fraser

Gr K-3

Biography

TL07

820L

18 min

Bell's attention to sound leads toward a tool that changes communication. It connects close observation with defining the problem an invention solves.

Ask What problem becomes clearer because Bell listens closely?

3



Now imagine what could be.

Ada Byron Lovelace and the Thinking Machine

Book ID 7486

Laurie Wallmark

Gr 1-4

Biography

TL06

780L

11 min

Ada Lovelace imagines a use for a thinking machine before modern computers exist. It shows that designing what a system could do can precede a finished physical product.

Ask How can an idea be important before the machine exists to run it?

4

Now make it harder.

The Day-Glo Brothers

Book ID 6500

Chris Barton

Gr 2-5

Informational / Non-Fiction

TL12

990L

17 min

Two brothers' different talents contribute to an accidental invention with several later uses. It introduces collaboration, accident, and repurposing rather than a lone inventor following a straight plan.

Ask What turns an accident into an invention other people can use?

5

Now test it and change it.

Whoosh!: Lonnie Johnson's Super-Soaking Stream of Inventions

Book ID 7972

Chris Barton

Gr 2-5

Biography

TL12

820L

12 min

Lonnie Johnson's biography explicitly emphasizes curiosity, grit, and repeated improvement from rockets to the Super Soaker. It provides the clearest iteration evidence in the candidate collection.

Ask Which part of the work shows that the first idea was not the finished invention?

6

End by putting it together.

Erie Canal, The

Book ID 440

Jeanne Nagle

Gr 3-5

Informational / Non-Fiction

The Erie Canal joins measurement and engineering in a large system that changes travel and trade. It scales the design question from one object to coordinated public infrastructure.

Ask What must work together for a whole canal system to work?

Also in the collection



The Statue of Liberty

Book ID 7592 Holly Karapetkova

The Statue of Liberty extends large-scale design and assembly, but the core already ends with public infrastructure.



Tom Swift, Young Inventor: Into the Abyss

Book ID 5762 Victor Appleton

A failed shark suit creates a vivid test-and-revise extension for older readers, but its Grade 4-8 range is above the Grade 3 core.

Teaching this set

The design cycle matters more than the inventor label.

Create a design-cycle chart with problem, idea, constraint, test, change, and result. A book does not need to contain every step; the class will combine evidence across books to build the fuller cycle. Read the six in order: Start here. Now build the idea. Now imagine what could be. Now make it harder. Now test it and change it. End by putting it together. Build an evidence-based design cycle from at least four books. Which steps recur, and which book changes the cycle?

Titles, authors, grade bands, levels, run times and covers are drawn from the TumbleBookLibrary catalogue. Book-title links open the catalogue title. Where supplied lessons exist, lesson links open directly online.