

EDUCATION STANDARDS

LAUNCH IT

National Science Education Standards (Grades 3–8)

Physical Science

- Properties of Objects and Materials (K–4)
- Position and Motion of Objects (K–4)
- Motion and Forces (5–8)

Science and Technology

- Abilities of Technological Design (3–8)
- Understandings About Science and Technology (3–8)

International Technology Education Association Content Standards (Grades 3–8)

Design

- Standard 2: Students will develop an understanding of the core concepts of technology.
- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.

Massachusetts Science and Technology/Engineering Standards (Grades 3–8)

Physics (3–5)

- Observable Properties of Objects
- Position and Motion of Objects
- Forms of Energy
- Conservation of Energy

Physics (6–8)

- Conservation of Energy
- Forms of Energy

Technology/Engineering (3–8)

- Materials, Tools, and Machines
- Engineering Design

National Council of Teachers of Mathematics Standards (Grades 3–8)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

TOUCHDOWN

National Science Education Standards (Grades 3–8)

Physical Science

- Properties of Objects and Materials (K–4)
- Position and Motion of Objects (K–4)
- Motion and Forces (5–8)

Science and Technology

- Abilities of Technological Design (3–8)
- Understandings About Science and Technology (3–8)

International Technology Education Association Content Standards (Grades 3–8)

Design

- Standard 2: Students will develop an understanding of the core concepts of technology.
- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.

The Designed World

- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Massachusetts Science and Technology/Engineering Standards (Grades 3–8)

Physics (3–8)

- Observable Properties of Objects
- Position and Motion of Objects
- Properties of Objects and Materials
- Forms of Energy

Technology/Engineering (3–8)

- Materials and Tools
- Engineering Design

National Council of Teachers of Mathematics Standards (Grades 3–8)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

ROVING ON THE MOON

National Science Education Standards (Grades 6–12)

Physical Science

- Motions and Forces (6–12)
- Transfer of Energy (5–8)
- Conservation of Energy (9–12)

Science and Technology

- Abilities of Technological Design (6–12)
- Understandings About Science and Technology (6–12)

International Technology Education Association Content Standards (Grades 6–12)

Design

- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.
- Standard 13: Students will develop abilities to assess the impact of products and systems.

The Designed World

- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Massachusetts Science and Technology/Engineering Standards (Grades 6–12)

Physics (6–8)

- Position and Motions of Objects
- Forms of Energy

Physics (9–12)

- Motion and Forces
- Conservation of Energy and Momentum

Technology/Engineering (6–12)

- Materials, Tools, and Machines
- Engineering Design
- Steps in the Design Process

National Council of Teachers of Mathematics Standards (Grades 6–12)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

HEAVY LIFTING

National Science Education Standards (Grades 6–12)

Physical Science

- Motions and Forces (6–12)
- Transfer of Energy (6–8)
- Conservation of Energy (9–12)

Science and Technology (6–12)

- Abilities of Technological Design
- Understandings About Science and Technology

International Technology Education Association Content Standards (Grades 6–12)

Design

- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.
- Standard 13: Students will develop abilities to assess the impact of products and systems.

The Designed World

- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Massachusetts Science and Technology/Engineering Standards (Grades 6–12)

Physics (6–8)

- Position and Motions of Objects
- Forms of Energy

Physics (9–12)

- Motion and Forces
- Conservation of Energy and Momentum

Technology/Engineering (6–12)

- Materials, Tools, and Machines
- Engineering Design
- Steps in the Design Process
- Construction

National Council of Teachers of Mathematics Standards (Grades 6–12)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

ON TARGET

National Science Education Standards (Grades 6–12)

Physical Science

- Transfer of Energy (6–8)
- Motions and Forces (6–12)
- Conservation of Energy (9–12)

Science and Technology (6–12)

- Abilities of Technological Design
- Understandings About Science and Technology

International Technology Education Association Content Standards (Grades 6–12)

Design

- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.
- Standard 13: Students will develop abilities to assess the impact of products and systems.

The Designed World

- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Massachusetts Science and Technology/Engineering Standards (Grades 6–12)

Physics (6–8)

- Position and Motions of Objects
- Forms of Energy

Physics (9–12)

- Motion and Forces
- Conservation of Energy and Momentum

Technology/Engineering (6–12)

- Materials, Tools, and Machines
- Engineering Design
- Steps in the Design Process

National Council of Teachers of Mathematics Standards (Grades 6–12)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Algebra

- Represent and analyze mathematical situations and structures using algebraic symbols

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

FEEL THE HEAT

National Science Education Standards (Grades 9–12)

Physical Science

- Conservation of Energy
- Interactions of Energy and Matter

Science and Technology

- Abilities of Technological Design
- Understandings About Science and Technology

International Technology Education Association Content Standards (Grades 9–12)

Design

- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Abilities for a Technological World

- Standard 11: Students will develop abilities to apply the design process.
- Standard 12: Students will develop abilities to use and maintain technological products and systems.
- Standard 13: Students will develop abilities to assess the impact of products and systems.

The Designed World

- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Massachusetts Science and Technology/Engineering Standards (Grades 9–12)

Physics

- Heat and Heat Transfer
- States of Matter
- Forms of Energy

Technology/Engineering

- Materials, Tools, and Machines
- Engineering Design
- Thermal Systems

National Council of Teachers of Mathematics Standards (Grades 9–12)

Problem Solving

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems

Measurement

- Understand measurable attributes of objects and units, systems, and processes of measurement
- Apply appropriate techniques, tools, and formulas to determine measurements

On the Moon

EDUCATOR REPLY CARD

To achieve America's goals in Educational Excellence, it is NASA's mission to develop supplementary instructional materials and curricula in science, mathematics, geography, and technology. NASA seeks to involve the educational community in the development and improvement of these materials. Your evaluation and suggestions are vital to continually improving NASA educational materials.

**Please take a moment to respond to the statements and questions below.
You can submit your response by mail.**

1. With what grades did you use the educator guide?

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College/University - _____ Undergraduate _____ Graduate

Number of Students:

_____ K-4 _____ 5-8 _____ 9-12 _____ Community College

College/University - _____ Undergraduate _____ Graduate

Number of Others:

_____ Administrators/Staff _____ Parents _____ Professional Groups

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2. What is your home 5- or 9-digit zip code? _____

3. This is a valuable educator guide?

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. The information provided in the product is relevant to my role in education.

Strongly Agree Agree Neutral Disagree Strongly Disagree

5. How would you rate the effectiveness of the product in teaching the intended standards.

Excellent Good Average Poor Very Poor

6. How did you use this educator guide?

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7. Where did you learn about this educator guide?

- NASA Educator Resource Center
 NASA Central Operation of Resources for Educators (CORE)
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8. What features of this educator guide did you find particularly helpful?

9. How can we make this educator guide more effective for you?

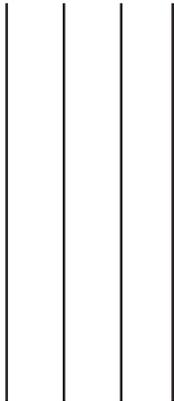
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CREDITS

On the Moon was produced by the WGBH Educational Outreach department, in collaboration with NASA.

Director, Educational Outreach

Julie Benyo

Associate Director, Educational Outreach

Thea Sahr

Educational Content Manager

Sonja Latimore

Editorial Project Director

Chris Randall

Associate Editor

Joan Pedersen

Outreach Coordinator

Natalie Hebshie

Outreach Assistant

Margot Sigur

Writer

Jeff Lockwood

Evaluator

Christine Andrews Paulsen, Ph.D.
American Institutes for Research

Advisors

Jenny Atkinson, M.Ed.
*Executive Director, Charlestown Club,
Boys & Girls Club of Boston*

Brian Day
*Education and Public Outreach Lead
Lunar Crater Observation and
Sensing Satellite
NASA Ames Research Center*

Michelle Hailey
*Manager, THE ARTS
Girl Scouts of the USA*

Jerry G. Hartman
*Education Lead—Exploration
Systems Mission Directorate
NASA Headquarters*

Al Krause
*Education Specialist—WILL
Technology, Inc.
Academic Affairs Office
NASA Marshall Space Flight Center*

Hollington Lee
Curriculum consultant

Rick McMaster, Ph.D., P.E.
*Executive Project Manager, IBM
Chair, Central Texas Discover
Engineering*

Dawn Mercer
*Education Specialist—WILL
Technology, Inc.
NASA Marshall Space Flight Center*

Brian Mitchell
*Education and Public Outreach
Program Manager
Lunar Precursor Robotic Program
NASA Marshall Space Flight Center*

Danielle Moran
*Communications Strategist
Lunar Precursor Robotic Program
NASA Marshall Space Flight Center*

Kate L. Pickle
*STEM Program Manager
Girl Scouts of the USA*

Stephanie Stockman
*Education and Public Outreach Lead
Lunar Reconnaissance Orbiter
NASA Goddard Space Flight Center*

Senior Designer

Peter Lyons

Designers

Greta Merrick
Jonathan Rissmeyer

Illustrator

Hannah Bonner

Senior Executive Producer

Kate Taylor

Series Executive Producer

Marisa Wolsky

Series Content Director

Dr. David Wallace
*Associate Professor of Mechanical
Engineering
Massachusetts Institute of
Technology*

Field Test Sites

Donna Falk
*Manalapan-Englishtown Middle
School
Manalapan, NJ*

Matthew Loughran
*Watertown Middle School
Watertown, MA*

Von Mom, and
Michelle Hatem Meehan
*Lowell Boys and Girls Club
Lowell, MA*

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