Destination L1: A Thematic Unit

Module Planning Guide

Interdisciplinary Unit

Activity	Teacher Materials	Student Materials	Standards Addressed
• What a Trip!	• Teacher Guide	• Student Activity • Student Handout	**Life Skills Grades K-12** • Sets and manages goals **Technology Grades K-12** • Technology productivity tools • Technology problem-solving and decision-making tools
• What a Trip!		• Student Text	

SCIENCE			
• Kepler's Laws of Planetary Motion	• Teacher Guide		**Science Grades 5-8** • Science As Inquiry • Physical Science • Earth and Space Science • History and Nature of Science **Science Grades 9-12** • Science As Inquiry • Physical Science • History and Nature of Science **Mathematics Grades** 6-8 • Numbers and Operations • Algebra • Geometry • Problem Solving • Connections **Technology Grades K-12** • Technology productivity tools • Technology problem-solving and decision-making tools
• Round and Round • Sweepstakes • The Inclined Pendulum		• Student Activity	

MATHEMATICS			
• Minimum Energy Transfer Orbits	• Teacher Guide • Teacher Guide Supplement: "Group Summary"	• Student Activity • Student Reporting Sheet • Hohmann Excel Student Spreadsheet	**Science Grades 5-12** • Science As Inquiry • Physical Science • Earth and Space Science • History and Nature of Science **Mathematics Grades 6-12** • Algebra • Numbers and Operations • Geometry • Problem Solving • Connections **Technology Grades K-12** • Technology productivity tools • Technology problem-solving and decision-making tools
• Studying Orbits About Bodies in Space	• Teacher Guide • Teacher Guide Supplement: "Process Frame"	• Student Activity • Student Reporting Sheet • Kepler Excel Student Spreadsheet	

SOCIAL STUDIES			
• Joseph-Luis LaGrange	• Teacher Guide	• Student Activity • Student Text	**Science Grades 5-12** • History and Nature of Science **History Grades 5-8** • Historical Understanding
• Where On Earth?	• Teacher Guide	• Student Activity	**Geography Grades 3-12** • Understands the characteristics and uses of maps, globes, and other geographical tools and technologies
• View From Above		• Student Activity	
• What A Choice!	• Teacher Guide		**Economics Grades 3-8** • Understands that scarcity of productive resources requires choices that generate opportunities.

LANGUAGE ARTS			
• Science as Fiction	• Teacher Guide		**Language Arts Grades 3-8** • Uses the general skills and strategies of the reading process. **Language Arts Grades 3-12** • Uses reading skills and strategies to understand and interpret a variety of literary texts.
• World Colliding		1. Student Text	
• Space Story: You are the Author		2. Student Activity	
• Getting to the Core of the Matter		3. Student Activity	
• Can We Talk?	• Teacher Guide		**Language Arts Grades 3-12** • Uses listening and speaking strategies for different purposes.
• Alien Speak		4. Student Activity	
• Capturing a Whisper		5. Student Text	

CULMINATING ACTIVITY			
6. School Trek	7. Teacher Guide	8. School Trek	**Language Arts Grades 3-12** • Uses listening and speaking strategies for different purposes.
9. Speaking to Inform		10. Communication Development Text	

(View a full text of the National Science Education Standards.)

(View a full text of the Principles and Standards for School Mathematics.)

(View a full text of the National Technology Education Standards.)

(View a full text of McREL's Compendium of Standards and Benchmarks for K-12 Education.)

MATERIALS

Below is a quick reference list to each teacher guide and accompanying materials for your convenience.

What a Trip!

For each group of two or three students:

- Student Activity, "What a Trip!" (Optional)

Kepler's Laws of Planetary Motion

For each group of two or three students:
- Butcher paper

"Round and Round"
For each group of two or three students:

For Part One
- Wide-mouth jar lid
- 200 watt light bulb
- Electrical socket
- Lamp
- Student Activity, "Round and Round"
- Pencil
- Metric ruler
- String

For Part Two
- Six push pins
- 15-centimeter loop of string
- Paper
- 30-centimeter square sheet of styrofoam

For Part Three
- Calculator or Student Spreadsheet

"Sweepstakes"
For each group of two or three students:
- Student Activity, "Sweepstakes"
- Computer with Internet connection
- Kepler's Second Law, Animation

"The Inclined Pendulum"
For each group of four students:
- Metal ring mounted onto a piece of plywood
- Marble
- Student Activity, "The Inclined Pendulum"
- Stopwatch or other timing device
- Five textbooks (all about the same size)

Teaching Tip

The styrofoam for "Round and Round" and the plywood for "The Inclined Pendulum" can both be purchased at the local hardware store. The metal rings can be purchased at the local craft store.

Minimum Energy Transfer Orbits

For the teacher:
- Teacher Guide Supplement, "Group Summary"

For each student:
- Student Spreadsheet, "Hohmann Excel"
- Student Reporting Sheet "Minimum Transfer Orbits"
- Student Activity "Minimum Transfer Orbits"

Studying Orbits About Bodies In Space

For the teacher:
- Teacher Guide Supplement, Process Frame

For each group of three to four students:
- Student Spreadsheet Kepler Excel spreadsheet

For each student:
- Student Reporting Sheet "Studying Orbits About Bodies in Space"
- Student Activity "Studying Orbits About Bodies in Space"

Joseph-Louis LaGrange

For each student:
- Student Text Joseph-Louis LaGrange
- Student Activity Joseph-Louis LaGrange

Where on Earth?

For each student:
- Student Activity, "Where on Earth"
- Student Activity, "View From Above" (High School Extension)

What a Choice!

For each student:
- List of resources they identified in "What a Trip!"

Science as Fiction

For each student:
- Student Text, "Science as Fiction: Worlds Colliding"

For Part One:
- Copies of: *The Golden Apples of the Sun*
- Copies of: *The Wilderness*
- Student Activity, "Space Story: You are the Author"

For Part Two:
- Student Activity, "Getting to the Core of the Matter"

Can We Talk?

For each student:

For Part One
- Student Activity, "Alien Speak"

For Part Two
- Student Text, "Capturing a Whisper"

School Trek

For each student:
- Student Activity, "School Trek"
- Communication Development Text, "Speaking to Inform"