

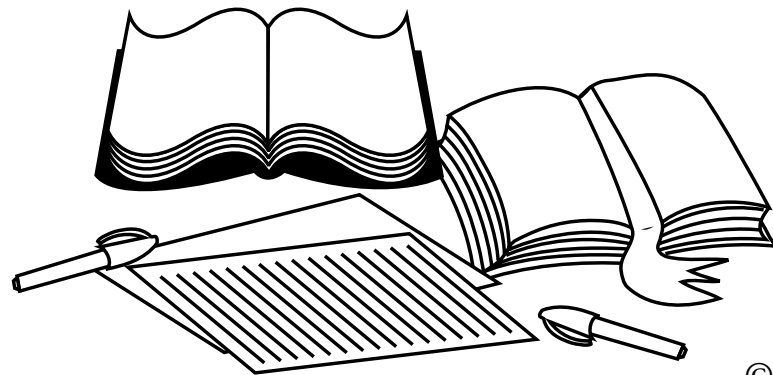
**Abbreviated Version**

**Correlation of**

*Astronomy and More:  
A Comprehensive Curriculum and  
User's Guide for the STARLAB  
and Other Planetaria*

**to the**

National Science Education Standards  
of the National Research Council



Compiled by Stephen Tomecek  
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## Introduction

In 1996, the National Research Council published a document entitled National Science Education Standards, which established a series of goals designed to improve the scientific literacy of American students. In developing the standards, one of the main thrusts of the NRC was to focus in on the inquiry aspects of science education rather than simply look at the content that is taught. Since its inception more than 20 years ago, the main focus of the STARLAB Planetarium System has been just that. Instead of simply being a place where people “see the sky” the various STARLAB curricula were developed with the concept of viewer participation as a central theme. Virtually all of the lesson activities in *Astronomy and More Curriculum Guide* (that comes with the STARLAB Planetarium System) are inquiry based and fall right in line with the goals and objectives of the NRC, even though the development of the STARLAB system pre-dates the publication of the standards by more than 15 years.

Since many state education departments and school districts use the NRC document as a framework for creating their core curricula in science, we offer the following correlation between the individual “Astronomy and More” lessons and the content standards. It is important to note that even though many of the lessons in the guide were written to be grade specific, we recognize that they are often adapted by educators for use with other grade levels. As a result, we have decided to correlate all of the lessons and activities to the content standards for all grades (K-12) regardless of the grade for which they were initially written.

The attached reference chart shows how each of the lessons in the main body of the “Astronomy and More” curriculum guide specifically correlates with the standards and specifications laid out in the NRC document. It is important to note that every standard in the NRC document has at least one STARLAB lesson that correlates to it.

## Correlation Key

In order to save space, rather than do the correlation in a narrative form, we have developed a system that provides a quick index to the various content standards that are written in the NRC document. Please refer to the following example.

For Index Code:

**D:5-8:III-2**

- The initial capital letter (“D” in the example above) identifies the content standard as used in the NRC text:
  - A = Science is Inquiry
  - B = Physical Science
  - C = Life Science
  - D = Earth and Space Science
  - E = Science and Technology
  - F = Science in Personal and Social Perspectives
  - G = History and Nature of Science
- Next, the appropriate grade level is given as K-4, 5-8, or 9-12:
- Then, the Roman numeral identifies the subheading under each standard in the NRC text in its numerical order. In this example, “III” refers to “Earth in the Solar System” in the actual NRC text.
- Finally, the last number refers to the bulleted text directly under each Content Standard subheading in its numerical order. In this example, “2” refers to the second bullet which in the actual NRC text says, “Most objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses.”

For individuals who do not have access to the full text of the NRC, Learning Technologies, Inc. also has a full narrative correlation available. To receive the complete document contact:

Learning Technologies, Inc. • 40 Cameron Avenue • Somerville, MA 02144

Phone: 1-800-537-8703/617-628-1459 • E-mail: [starlab@starlab.com](mailto:starlab@starlab.com) • Website: [www.starlab.com](http://www.starlab.com)

## **From Part 2: K-6 Activities and Lessons for Use in the STARLAB Portable Planetarium**

### **Horizon Lesson for Primary Grades**

A:K-4:II-1   B:K-4:II-1   D:K-4:II-1   E:K-4:II-1   F:5-8:V-1   G:5-8:II-1  
A:K-4:II-2   B:K-4:II-2   D:K-4:II-3   E:K-4:III-2  
A:K-4:II-4   B:5-8:II-1   D:5-8:III-2  
A:5-8:II-5

### **How to Make a Star Clock**

B:K-4:II-1   D:K-4:II-1  
B:K-4:II-2   D:K-4:III-3

### **How to Make a Moon Phaser**

B:K-4:II-1   D:K-4:II-1  
B:K-4:II-2   D:K-4:III-3  
D:5-8:III-2

### **Solar System Mobile**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:5-8:III-3

### **How to Make Constellation Pictures**

B:K-4:II-1   D:K-4:II-1   G:K-4:I-1  
B:5-8:II-1   D:K-4:III-3   G:5-8:III-1

### **How to Use a Star Finder**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

### **How to Use a Dipper Finder**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

### **Stars and Constellations**

B:K-4:I-1   D:K-4:II-1  
B:5-8:III-2   D:K-4:III-3  
D:5-8:III-1  
D:9-12:IV-3

### **The Motion of Stars and Constellations**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

*From Part 2 section entitled, “Stars & Skies, STARLAB Activities for Grades 4-6”*

### **Cardinal Directions, Activity 4-1**

B:K-4:II-1   D:K-4:II-1  
D:K-4:III-3

### **Celestial Movement, Activity 4-2**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

### **Apparent Motion, Activity 4-3**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

### **Stars and Light Pollution, Activity 4-4**

B:K-4:III-1   D:K-4:II-1   E:5-8:II-4   F:K-4:IV-4  
B:5-8:III-3   E:5-8:II-6   F:9-12:III-3  
B:9-12:V-1

### **East-West Constellation Movement, Activity 4-5**

B:K-4:II-1   D:K-4:II-1  
B:5-8:II-1   D:K-4:III-3

### **Star Groupings, Activity 4-6**

B:K-4:II-1   D:K-4:II-1  
D:K-4:III-3

**Circumpolar Constellations, Activity 4-7**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

**Early Astronomers, Activity 5-1**

A:K-4:I-1 D:K-4:II-1 G:K-4:I-1

A:K-4:I-4 D:5-8:I-1 G:K-4:I-3

A:5-8:II-5 D:5-8:I-2 G:5-8:III-1

A:5-8:II-7 G:5-8:III-3

G:9-12:III-2

G:9-12:III-3

G:9-12:III-4

**Phases of the Moon, Activity 5-2**

B:K-4:II-1 D:K-4:II-1

B:K-4:II-2 D:K-4:III-3

**Constellation Location, Activity 5-3**

B:K-4:II-1 D:K-4:II-1

D:K-4:III-3

**Nightly Position of Constellations, Activity 5-4**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

**Seasonal Position of Constellations, Activity 5-5**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

**The Ecliptic, Activity 5-7**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

D:5-8:III-2

**Studying Early Astronomers, Activity 6-1**

A:K-4:II-1 D:K-4:II-1 G:K-4:I-1

A:K-4:II-2 D:5-8:III-1 G:K-4:I-3

A:K-4:II-4 D:5-8:III-2 G:5-8:III-1

A:5-8:II-5 G:5-8:III-3

A:5-8:II-7 G:9-12:III-2

G:9-12:III-3

G:9-12:III-4

**Sunrise and Sunset Position, Activity 6-2**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

D:5-8:III-2

**Apparent Motion, Activity 6-3**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

**Seasonal Changes, Activity 6-4**

B:K-4:II-1 D:K-4:II-1

B:5-8:II-1 D:K-4:III-3

**Stellar Position - Poles vs. Equator, Activity 6-5**

B:K-4:II-1 D:K-4:II-1

D:K-4:III-3

**Stellar Reference Points, Activity 6-6**

B:K-4:II-1 D:K-4:II-1

D:K-4:III-3

**Greek Mythological Constellations, Activity 6-7**

B:K-4:II-1 D:K-4:II-1 G:K-4:I-1

B:5-8:II-1 D:K-4:III-3 G:5-8:III-1

**Native American and Greek Myths, Activity 6-8**

B:K-4:II-1 D:K-4:II-1 G:K-4:I-1  
B:5-8:II-1 D:K-4:III-3 G:5-8:I-1  
G:5-8:I-2  
G:5-8:III-1

**Using a Star Finder, Activity 6-9**

B:K-4:II-1 D:K-4:II-1  
D:K-4:III-3

*From Part 2 section entitled, “Grade 4-6 Supplemental Activities”*

**Comparing the Size of the Planets**

B:K-4:I-1 D:K-4:II-1  
D:5-8:III-1

**Making Constellation Slides**

B:K-4:II-1 D:K-4:II-1  
D:K-4:III-3

**Lost In Space**

B:K-4:I-1 D:K-4:III-1  
D:5-8:III-1

**Lost on the Moon**

C:K-4:I-1 F:K-4:IV-1  
C:5-8:III-1 F:K-4:V-1  
C:5-8:III-3 F:5-8:IV-1  
C:9-12:VI-2 F:5-8:IV-3  
F:5-8:IV-4  
F:9-12:I-1  
F:9-12:III-1  
F:9-12:V-4

**From Part 3: Grades 7-12 Activities and Lessons for Use in the STARLAB Portable Planetarium.**

*From Part 3 section entitled, “Curriculum Guide for Astronomy and Interdisciplinary Topics in Grades 7-12 — Sciences: Earth, Life, Physical and Space”*

**Topic of Study 1: The Earth as an Astronomical Object**

D:5-8:III-2

**Topic of Study 2: Latitude and Longitude**

D:9-12:I-4

**Topic of Study 3: The Earth's Atmosphere**

D:K-4:III-3  
D:5-8:III-4  
D:5-8:I-6  
D:5-8:I-8  
D:5-8:I-10  
D:9-12:I-3  
D:9-12:I-4

**Topic of Study 4: The Sun and Its Energy**

B:K-4:II-1 D:K-4:II-1  
B:K-4:II-2 D:K-4:II-2  
B:5-8:II-1 D:K-4:III-3  
B:5-8:III-6 D:5-8:III-1  
D:5-8:III-2  
D:5-8:III-4  
D:9-12:I-1  
D:9-12:I-3  
D:9-12:I-4

**Topic of Study 5: The Stars**

A:5-8:II-1    B:K-4:I-1    D:K-4:II-1  
 A:9-12:II-4    B:K-4:II-1    D:K-4:III-3  
                   B:K-4:II-2    D:9-12:III-1  
                   B:5-8:II-1    D:9-12:IV-2  
                   B:5-8:III-1    D:9-12:IV-3  
                   B:5-8:III-2  
                   B:9-12:V-3

**Topic of Study 6: The Physical Universe**

B:K-4:II-1    D:K-4:II-1  
 B:K-4:II-2    D:K-4:III-3  
 B:5-8:II-1    D:9-12:IV-1  
 B:9-12:IV-2    D:9-12:IV-2

**Topic of Study 7: The Solar System**

D:K-4:II-1  
 D:5-8:III-1  
 D:5-8:III-2  
 D:9-12:III-1

**Topic of Study 8: Constellations**

B:K-4:II-1    D:K-4:II-1    E:5-8:II-2    G:K-4:I-1  
 B:5-8:II-1    D:K-4:III-3                    G:5-8:III-1

**Topic of Study 9: Astronomy and Cultures**

A:K-4:II-1    B:K-4:II-1    E:5-8:II-2    G:K-4:I-1  
 A:K-4:II-2    B:K-4:II-2                    G:5-8:III-1  
 A:K-4:II-4    B:5-8:II-1                    G:9-12:I-3  
 A:5-8:II-7                                    G:9-12:III-1

**Topic of Study 10: Astronomers and Their Tools**

A:K-4:II-1    E:K-4:II-5    G:K-4:I-1  
 A:K-4:II-2    E:5-8:II-3    G:5-8:III-1  
 A:K-4:II-3    E:9-12:II-2    G:9-12:I-3  
 A:K-4:II-4                                G:9-12:III-1  
 A:5-8:II-3  
 A:5-8:II-4  
 A:5-8:II-5  
 A:5-8:II-7  
 A:9-12:II-3  
 A:9-12:II-4

**Topic of Study 11: Space Exploration**

A:K-4:II-2    E:K-4:II-5  
 A:5-8:II-4    E:5-8:II-3  
 A:5-8:II-7    E:9-12:II-2  
 A:9-12:II-3

**Topic of Study 12: Exobiology**

C:K-4:I-1  
 C:K-4:I-2  
 C:5-8:I-2  
 C:5-8:I-3  
 C:5-8:III-1  
 C:5-8:V-2  
 C:9-12:I-1  
 C:9-12:I-4

*From Part 3 section entitled, “Curriculum Guide for Astronomy and Interdisciplinary Topics in Grades 7-12 — Mathematics”*

**Topic of Study: Mathematics Used in Earth and Space Science Applications**

A:5-8:II-3    B:K-4:II-1  
 A:9-12:II-4    B:5-8:II-1

*From Part 3 section entitled, “Curriculum Guide for Astronomy and Interdisciplinary Topics in Grades 7-12 — Social Studies/History”*

**Topic of Study: Earth**

D:K-4:III-1  
D:K-4:III-3  
D:5-8:I-1  
D:5-8:I-2  
D:5-8:I-10  
D:5-8:II-1  
D:9-12:I-1  
D:9-12:I-4

*From Part 3 section entitled, “Extension Activities for Grade 7 and Beyond”*

**Naming the Stars in Constellations**

A:K-4:I-4      B:K-4:I-1  
A:5-8:I-4      B:K-4:II-1  
A:9-12:I-1

**Shifting Addresses for Stars**

A:K-4:II-3    B:K-4:II-1  
A:5-8:II-3    B:K-4:II-2  
A:5-8:II-4    B:5-8:II-1  
A:5-8:II-7  
A:9-12:II-3  
A:9-12:II-4

**Examining Spheres and Spherical Angles**

A:5-8:II-3  
A:9-12:II-4

**Steering By the Stars**

A:5-8:II-3    B:K-4:II-1  
A:9-12:II-4    B:K-4:II-2  
B:5-8:II-1

**Meteor Observation: Getting The Facts**

A:K-4:I-4      B:K-4:I-1  
A:5-8:II-3      B:K-4:II-1  
A:5-8:II-5      B:5-8:II-1  
A:9-12:II-1  
A:9-12:II-4

**Parallax: Finding Stellar Distances**

A:K-4:II-4      B:K-4:II-1  
A:5-8:II-3      B:K-4:II-2  
A:5-8:II-5      B:5-8:II-1  
A:9-12:II-1  
A:9-12:II-4

**Building Astronomical Observing Tools (Planetarium Hand Sextant, Student-made Astrolabes, Student-Made Sextant, Apparatus for Observing Temperature-Color Relationships, Equatorial Coordinate Star Finder, Safety Devices for Viewing the Sun)**

A:K-4:II-1      E:K-4:II-5  
A:K-4:II-2      E:5-8:II-3  
A:K-4:II-3      E:9-12:II-2  
A:K-4:II-4  
A:5-8:II-3  
A:5-8:II-4  
A:5-8:II-5  
A:5-8:II-7  
A:9-12:II-3  
A:9-12:II-4

*From Part 3 section entitled, “Stars & Skies, STARLAB Activities for Grades 7 to 9”*

**Moon Phase Identification, Activity 1**

B:K-4:II-1      D:K-4:II-1  
B:K-4:II-2      D:K-4:III-3  
B:5-8:II-1      D:5-8:III-2

**Moon Phase Position, Activity 2**

B:K-4:II-1 D:K-4:II-1  
B:K-4:II-2 D:K-4:III-3  
B:5-8:II-1 D:5-8:III-2

**Time of Day, Activity 3**

B:K-4:II-1 D:K-4:II-1  
B:K-4:II-2 D:K-4:III-3  
B:5-8:II-1 D:5-8:III-2

**Surface of the Moon, Activity 4**

B:K-4:I-1 D:K-4:II-1  
D:9-12:III-1

**Moon Features, Activity 5**

B:K-4:I-1 D:K-4:II-1

**The Magnitude of Stars, Activity 6**

A:K-4:II-4 B:K-4:I-1 D:K-4:II-1  
A:5-8:II-3  
A:5-8:II-5  
A:9-12:II-1  
A:9-12:II-4

**Star Color and Temperature, Activity 7**

A:K-4:II-4 B:K-4:I-1 D:K-4:II-1  
A:5-8:II-3 B:K-4:III-2 D:9-12:IV-3  
A:5-8:II-5 B:5-8:III-1  
A:9-12:II-1 B:5-8:III-5  
A:9-12:II-4 B:9-12:V-3  
B:9-12:VI-1

**Apparent Stellar Motion, Activity 8**

A:K-4:II-4 B:K-4:II-1 D:K-4:II-1  
A:5-8:II-3 B:K-4:II-2 D:K-4:III-3  
A:5-8:II-5 B:5-8:II-1  
A:9-12:II-1  
A:9-12:II-4

**Star Drift, Activity 9**

A:K-4:II-4 B:K-4:II-1 D:K-4:II-1  
A:5-8:II-3 B:K-4:II-2 D:K-4:III-3  
A:5-8:II-5 B:5-8:II-1  
A:9-12:II-1  
A:9-12:II-4

**Season Identification, Activity 10**

B:K-4:II-1 D:K-4:II-1  
B:K-4:II-2 D:K-4:III-3  
B:5-8:II-1 D:5-8:III-2

**Star Brightness 1, Activity 11**

A:K-4:II-4 B:K-4:I-1 D:K-4:II-1  
A:5-8:II-3 B:K-4:II-1 D:K-4:III-3  
A:9-12:II-4

**Star Brightness 2, Activity 12**

A:K-4:II-4 B:K-4:I-1 D:K-4:II-1  
A:5-8:II-3 B:K-4:I-1 D:K-4:III-3  
A:9-12:II-4 B:K-4:II-1

**The Planet, Venus, Activity 13**

A:K-4:II-4 B:K-4:II-1 D:K-4:II-1  
D:K-4:III-3