

BALTIMORE COUNTY PUBLIC SCHOOLS

DATE: January 13, 2004

TO: BOARD OF EDUCATION

FROM: Dr. Joe A. Hairston, Superintendent

SUBJECT: STARLAB

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Curriculum and Instruction

RESOURCE
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INFORMATION

The Board of Education will be provided with a PowerPoint™ presentation on STARLAB, a portable planetarium. An overview of the program will be provided detailing the scheduling and the alignment with the voluntary state curriculum.

BALTIMORE COUNTY PUBLIC SCHOOLS

Board of Education

January 13, 2004

presenting

STARLAB, the Portable Planetarium



Bringing the solar system to your school

STARLAB

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Starlab

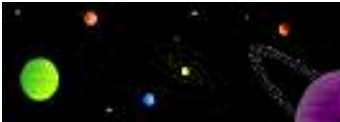
A Portable Planetarium

Baltimore County Public Schools
Office of Science PreK - 12

1

Starlab Portable Planetarium

- Starlab brings the solar system to your school.



Baltimore County Public Schools, Office of Science PreK-12

2

Starlab Portable Planetarium

- Starlab is a portable inflatable planetarium dome.



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Starlab Portable Planetarium4




Baltimore County Public Schools, Office of Science PreK-124

Starlab Portable Planetarium

- Starlab is a unique piece of educational equipment that can be used in all areas of the curriculum and with all grade levels.



Baltimore County Public Schools, Office of Science PreK-125

Starlab Portable Planetarium

- Starlab creates unique learning environment for virtually every level of education ...

from pre-kindergarten students through adults.

Baltimore County Public Schools, Office of Science PreK-126

Starlab Portable Planetarium

- An interdisciplinary tool that can be used to teach:
 - Astronomy
 - Earth Science
 - Language Arts
 - Math
 - Greek, African, Native American mythology

Starlab Portable Planetarium

- Starlab is a highly effective way to meet all of the voluntary State of Maryland science curriculum skills and processes indicators.



Starlab Portable Planetarium

Starlab F.A.Q.s

1 How many people can fit into the Starlab dome?

25-30 elementary students and their teacher.

Starlab Exhibit Questionnaire

2 Do teachers need to attend Starlab with their students?

Yes

- Liability protection for all of the participants.
- Enhances the educational experience of the students.
- Provides for a safer and friendlier learning environment.

Starlab Exhibit Questionnaire

3 What is the cost of my students attending the Starlab classes?

- The Starlab is free.
- Other planetarium shows cost \$450-\$600 per day.

Starlab Exhibit Questionnaire

4 How many classes should attend the Starlab? How long is each Starlab class session?

- All classes, grades pre-k to 5th grade.
- Pre-k to 2nd grade-20 to 30 minute programs.
- 3rd-5th grade-40-50 minute programs.
- Schedule all of one grade on the same day.
- 5-6 presentations per school day.

Starlab Earthlab Earthatorium

5 What size of an area is needed to set up Starlab?

- 25 ft. X 25 ft. X 12 Ft. high.
- Suggested locations:
 - gymnasium
 - auditorium
 - cafeteria
 - library
 - multi-purpose room
 - classroom
 - stage.

Starlab Earthlab Earthatorium

6 Can I set up Starlab outside?

No.

Moisture, direct sunlight, and the wind can damage the Starlab dome.



Starlab Earthlab Earthatorium

7 How does the school prepare the area where Starlab will be set up?

- Floor swept or vacuumed.
- Remove all furniture.
- Secure area.
- Notify all organizations using that area.

Starlab Earthlab Observatory

8 Is the Starlab safe?

Yes.

- Bottom of the dome is entirely open.
- Flame retardant material
- Latex free



Starlab Earthlab Observatory

9 How long does it take to setup and take down the Starlab?

15-30 minutes

Starlab Earthlab Observatory

10 Is it hot and stuffy in the Starlab?

No

- Room temperature
- Best in an air-conditioned area

Starlab Exchange Questionnaire

11 When will Starlab come to the schools?

- Starlab starts visiting schools in late January.
- Length of time in each school depends on the school size.

Starlab Exchange Questionnaire

12 Can students with physical handicaps attend the programs in the Starlab?

Yes

Starlab can accommodate students who are restricted to wheelchairs, walkers, or are otherwise physically challenged.

Starlab Exchange Questionnaire

"I like STARLAB. It is fun and interesting. It is cool. It is like sitting in the backyard looking at the stars, but it's better because you are closer up to the stars."

STARLAB FACTS

- What is it?
- Voluntary state curriculum
- Group size
- Grade levels
- Teacher's Responsibilities
 - Remaining with the students
 - Pre/post visit activities
- Cost
- School Responsibilities
 - Schedules
 - Area needed
 - Location
 - Preparations needed
- Safety
- Start date

Starlab Facts

1. What is Starlab?

Starlab is a portable inflatable planetarium dome. It is a very appealing, interactive, and exciting model that can be used to teach astronomy and space science to all grades. Starlab is an interdisciplinary tool that can be used to teach programs on the constellations, the solar system, the galaxies, and Greek, African, and Native American mythology. Starlab is a highly effective way to meet all of the voluntary state science curriculum skills and processes indicators. It also is a direct match to the astronomy indicators. Groups are limited to 25-30 students. Starlab will be available to all elementary classes- grades pre-k to 5th grade.



2. Do teachers need to attend Starlab with their students?

Yes. It is required that a teacher be with their students both outside and then inside the planetarium dome. This is necessary for liability protection for all of the participants. It also enhances the educational experience of the students and provides a safer and friendlier environment.

3. What is the cost of my students attending the Starlab classes?

The cost is **free** for all students. Two Starlabs have been purchased by Baltimore County Public Schools. There are Starlabs run by other organizations locally that some schools have scheduled to come to their schools in the past. The cost of those programs was generally

\$450-\$600 per day. This is a great savings to schools particularly when you consider that the Starlab will be there for several days.

4. How many classes should attend the Starlab and how long is each program?

All classes grades pre-k to 5th grade should be scheduled to attend Starlab within the days allotted for Starlab to be at each school. Pre-k to 2nd grade should be scheduled for 20-30 minute programs. 3rd-5th grade students should be scheduled to attend the Starlab for 40-50 minute programs. There should approximately 10 minutes between classes for the presenter to set up for the next class. Try to schedule all of one grade to come to the Starlab on the same day. There should be a maximum of six of the 45-50 minute presentations per day. Please allow for a half-hour lunch break for the instructor.

5. What size of an area is needed to set up Starlab?

The planetarium location should be an area measuring at least 25 feet by 25 feet with a ceiling clearance of 12 feet with no sharp objects (like sprinklers) or hot objects (like incandescent bulbs) coming in contact with the dome. A dark room is helpful. A 110 volt grounded outlet is required. It would be best to provide a quiet a location as possible to achieve the best educational programs. Suggested locations include: gymnasium, auditorium, cafeteria, library, multi-purpose room, classroom, or stage. Remember that all exterior sounds penetrate inside the planetarium dome and it actually magnifies the sound.



6. Can I set up Starlab outside?

No. The Starlab dome should not be set up outdoors. Moisture can damage the fan and projector. Direct sunlight on the dome, as well as dirt and grit, can damage it in the long run. In addition, when inflated, the Starlab dome is quite buoyant so even a slight wind can cause it to shift position.

7. Do I have to prepare the area where Starlab will be set up?

The area where the Starlab is going to be set up needs to be clean and secure. The floor needs to be swept and/or vacuumed before the Starlab is set up. (Even small staples or pebbles can puncture a hole in it.) A carpeted area is preferable because it is more comfortable and muffles exterior sounds. All objects such as desks, chairs, music stands, etc. need to be removed. If it is to be set up in a classroom, the room should be locked overnight. None of the equipment should not be moved except by the person giving the Starlab presentations. Make sure organizations that use your school both during and after school (basketball practice, play rehearsal, etc.) know about not moving the equipment.

8. Is the Starlab safe?

The Starlab dome is latex free. It is made from a flame retardant material that meets strict fire marshal requirements. In addition, the bottom of the dome is entirely open. In the event that everyone needs to be evacuated quickly (fire drill, etc.), the side of the dome can be easily lifted so that it flips over the heads of the visitors and over itself in one quick motion. The entire group can be outside of the dome in seconds.

9. How long does it take to setup and take down the Starlab?

After the boxes are brought in, it takes about 15-30 minutes to set up the Starlab. At the end of the day, if the Starlab is staying until the next school day, then it only takes about 5 minutes to deflate the dome. If the Starlab is being packed up, then allow 15-30 minutes to

collapse the dome and stow everything back in the duffel bags and cases.

10. Is it hot and stuffy in the Starlab?

The Starlab has no climate control of its own, so whatever the room temperature is will be the temperature inside the dome. Because the fan keeps the air circulating continuously through the dome, it is usually several degrees cooler inside the Starlab than out. Even so, in very hot climates, it is best to set up the Starlab in an air-conditioned room.

11. When will Starlab come to the schools?

Starlab will start visiting schools in late January. The length of time it will stay at each school depends on the school's size and number of classes per grade level at each school. Starlab will be visiting the Title 1 schools first and then go to the other schools in the county.

12. Can students with physical handicaps attend the programs in the Starlab?

Yes. Because of its unique design, the Starlab can accommodate visitors who are restricted to wheelchairs, use walkers, or are otherwise physically challenged. One or two teachers can assist these individuals in entering and exiting the Starlab by lifting the edge of the dome to let them through instead of using the entrance tube. Please notify the Starlab instructor ahead of time if there will be handicapped students attending the program. If a handicapped student is attending the program, it may limit the number of students that can attend slightly due to the actual amount of floor space available inside the dome.



Office of Science PreK-12

Starlab Matching Indicators with the Voluntary State Science Curriculum

Pre-Kindergarten

1. Identify patterns found in the natural environment.
 - a. Use their senses to recognize and describe the repeated sequences found in nature such as...events (day/night).
2. Identify models of real objects.
 - a. Match models of objects to the real object they represent.
3. Use senses and simple tools/equipment to gather data.
 - a. Use simple tools and ...other magnifiers to collect data.
4. Recognize that everyone can do science and invent things.
 - a. Investigate and explore science concepts.
5. *Identify the celestial objects that are visible in the sky.*
 - a. *Identify and describe the sun, moon, and stars.*

Kindergarten

1. Identify patterns found in the natural environment.
 - a. Use oral language, drawings, or writing to identify and describe repeated sequences found in nature such as ... events (day/night).
2. Identify models of real objects and compare the models to real objects.
 - a. Identify and describe models of real objects.
 - b. Describe how models of objects are similar to and different from the real object.
3. Use simple tools/equipment to extend the senses and gather data.
 - a. Use simple tools ...to collect data.
4. Describe how everyone can do science and invent things.
 - a. Investigate and explore science concepts.
 - b. Describe the role that the student takes during investigations and explorations.
5. *Identify and describe celestial objects that appear in the day sky and in the night sky.*
 - a. *Compare when the sun, moon, and stars are visible in the sky.*
 - b. *Recognize that the sun provides daylight and heat.*

1st Grade

1. Identify patterns found in the natural environment.
 - a. Recognize repeated elements in a sequence.
2. Identify that models of real objects can be used to learn something about those objects.
 - a. Identify that models can represent actual objects.
 - b. Explain how models are similar to and different from real objects.
3. Recognize ways tools are used to collect scientific information.
 - a. Make observations using magnifying instruments.
 - b. Describe how tools are used to collect information.
4. Recognize and describe that everyone can do science and invent things.
 - a. Investigate and explore science concepts.
 - b. Identify student roles during science investigations.

2nd Grade

1. Identify patterns found in the natural environment.
 - a. Describe a repeated sequence, orally, in writing, or by drawing.
2. Recognize and explain that a model can be used to learn something about an object.
 - a. Explain that models can represent actual objects.
 - b. Compare and explain how models can be used to learn about what they represent.
3. Recognize and explain ways that tools can be used to collect and communicate scientific information.
 - a. Recognize how to make observations using magnifying instruments.
 - b. Recognize when to use appropriate tools to make observations.

4. Recognize that people have investigated the world around us, answered scientific questions, and invented things.
 - a. Explain student roles during science investigations.
5. *Identify and describe the repeating patterns of celestial events.*
 - a. *Recognize and describe that there are apparent, visible changes in the moon's shape over time.*
 - b. *Recognize that the apparent changes in the moon's shape form a repeating pattern.*
 - c. *Recognize that the seasons occur in a repeating pattern each year.*
 - d. *Recognize that the day/night cycle is a repeating pattern.*
6. *Identify and describe the physical properties, locations, and apparent movements of the sun.*
 - a. *Describe that light from the sun causes daytime on Earth.*
 - b. *Describe the apparent changes in the sun's position during the day.*
 - c. *Recognize and describe that the number of hours of daylight changes with the seasons.*
 - d. *Recognize and describe that the changes in the amount of heat and light from the sun causes differences in the temperature on Earth.*
7. *Identify and describe the physical properties and locations of stars.*
 - a. *Identify that stars are like the sun; some are smaller and some larger.*
 - b. *Identify that the sun is the Earth's closest star and Earth's source of heat and light.*
 - c. *Recognize and describe that the stars are so far away from Earth that they appear as points of light.*
 - d. *Recognize and describe that stars appear to form patterns in the night sky.*

3rd Grade

1. Identify and describe patterns found in the natural environment.
 - a. Identify repeated elements in a sequence, such as ...events (phases of the moon).
 - b. Describe a repeated sequence, orally, in writing, or by drawing.
 - c. Extend a sequence using the pattern discovered.
2. Recognize and explain that a model can be used to learn something about an object, event, or situation.
 - a. Explain that models can represent actual objects, events, or situations.
 - b. Compare models with what they represent.
 - c. Explain how models can be used to learn about what they represent.
3. Recognize and describe how tools are used to collect and communicate scientific information.
 - a. Describe when it is appropriate to use magnifying instruments to make observations.
4. Recognize that people from ancient times to the present have investigated the world around us, answered scientific questions, and invented things.

4th Grade

1. Identify and describe patterns found in the natural environment.
 - a. Identify repeated elements in sequences in designs, structures, sounds, and events.
 - b. Describe a repeated sequence, orally, in writing, or by drawing.
 - c. Extend a sequence using the pattern discovered.
2. Recognize and explain how changes made to models can apply to real objects, events, and situations.
 - a. Compare the structure and function of the parts of an identified model with what they represent.
 - b. Explain how what they learned from models applies to real objects, events, and situations.
3. Identify and explain how tools are used to collect and communicate scientific information.
 - a. Explain how to use magnifying instruments such as hand lenses, microscopes, and ground and space-based telescopes.
 - b. Describe which magnifying instruments are appropriate to make a given observation.
4. Explain that people from ancient times to the present have investigated the world around us, answered scientific questions, and invented things.
5. *Recognize and describe the effects produced by the rotation and revolution of planet Earth.*
 - a. *Describe the rotation of the planet Earth on its axis.*
 - b. *Recognize and describe that the rotation of planet Earth produces the day and night cycle.*

- c. *Recognize that the rotation of Earth causes the apparent movement of the sun, moon, planets, and stars.*
- d. *Describe the revolution of the planet Earth around the sun.*
- e. *Recognize and describe that the patterns of stars in the sky stay the same although different stars can be seen in different seasons.*

5th Grade

- 1. Identify and describe patterns found in the natural environment.
 - a. Identify repeated elements in sequences in designs, structures, sounds, and events.
 - b. Describe a repeated sequence, orally, in writing, or by drawing.
 - c. Extend a sequence using the pattern discovered.
- 2. Recognize and explain how the changes made to models can apply to real objects, events, and situations.
 - a. Compare the structure and function of the parts of the identified model with what they represent.
 - b. Explain how what they learned from models applies to real objects, events, and situations.
- 3. Identify and explain how tools are used to collect and communicate information.
 - a. Explain how to use magnifying instruments such as hand lenses, microscopes, and ground and space-based telescopes.
 - b. Describe which magnifying instruments are appropriate to make a given observation.
- 3. Explain that people from ancient times to the present have investigated the world around us, answered scientific questions, and invented things.
- 4. *Identify and describe the relationships among the sun and other celestial objects in our solar system.*
 - a. *Recognize and describe the solar system as a sun-centered system.*
 - b. *Identify and describe the planets in our solar system according to their relative size, physical properties, and motion.*
 - c. *Recognize that distance influences the amount of energy a planet receives from the sun.*
 - d. *Recognize that the gravitational force between the sun and its planets causes the regular and predictable motion of those planets.*
 - e. *Recognize that asteroids, comets, and meteors are celestial objects in our solar system.*