Starlab® Share

- Virtual fieldtrips through the solar system, tailored to your unique student body.
- Content delivered by an experienced, certified instructor.
- A menu of 13 interactive lessons aligned to NGSS.

Starlab® Share – The Five I's

Do you have an interest in introducing your students to the big ***ideas*** surrounding our solar system in an ***interactive*** fashion without leaving the confines of planet Earth? Are you seeking an ***inclusive*** educational experience for all your students that goes beyond traditional textbook pages? Are you looking for an ***innovative*** and ***immersive*** teaching and learning environment where quality educational programming is presented by a certified Starlab® trainer?

We invite you to experience the magic of the Starlab® today! The Starlab® is a portable planetarium that allows visitors to the dome to experience a wide range of astronomy concepts including: night and day, moon phases, sky orientation, constellations, seasonal changes, eclipses, planetary motion, star properties and life cycles, and so much more! Starlab® educational programming is available for students ranging in age from elementary school through high school and beyond.

With Starlab® Share, you will have the opportunity to experience astronomy content delivered by a certified teacher, who understands the need to not only capture students' attention, but also deliver concepts that meet curricula constraints. In addition, teachers and administrators will have the chance to preview the ease of use and portability of a complete digital Starlab® system before making a future commitment to buy.

Starlab® Share includes a complete digital Starlab® system plus a Starlab® certified trainer onsite to deliver and facilitate programming within the dome during the duration of the program. Starlab® Share is available for a minimum of a three-day period within the continental United States. Programming of up to five sessions per day at approximately 45 minutes per session from a total of thirteen available presentations may be selected.

Presentation List with NGSS Correlations to Earth's Place in the Universe

- **Primary School Lessons**
  - **Night and Day (P1)**

    Students will learn what causes the diurnal (daily) motion of the stars, planets, Sun and Moon. Key concepts: Earth's rotation and daytime versus nighttime.
    - *ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.*
      - *ESS1.A: The Universe and Its Stars*

        Patterns of the sun, moon, and stars in the sky can be observed, described, and predicted.

  - **Going Through a Phase – Moon Phases (P2)**

    Students will learn how changes in the relative positions of the Earth, Moon and Sun cause the visible appearance of the Moon to change over the course of about a month. Key concepts: Moon's orbit, phases, and light.
    - *ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.*
      - *ESS1.A: The Universe and Its Stars*

        Patterns of the sun, moon, and stars in the sky can be observed, described, and predicted.

  - **Location, Location, Location – Finding Your Way Around the Sky (P3)**

    Students will learn how the stars can be used to help people find locations on Earth. Key concepts: Constellations and star patterns.
    - *ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.*
      - *ESS1.A: The Universe and Its Stars*

        Patterns of the sun, moon, and stars in the sky can be observed, described, and predicted.

  - **Myths Around the World – Constellations and Stars (P4)**

    Students will learn how ancient people devised myths and legends around patterns of stars in the sky to entertain, teach, and remember important events. Key concepts: Recognition of star patterns by name with associated history and key features.
    - *ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.*
      - *ESS1.A: The Universe and Its Stars*

        Patterns of the sun, moon, and stars in the sky can be observed, described, and predicted.

- **Secondary School Lessons**
  - **A Change of Season (S1)**

    Students will learn about why we have seasons. Key concepts: Earth's revolution, axis tilt and solar radiation, and position of Sun throughout the day.
    - *MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.*
      - *ESS1.A: The Universe and Its Stars*

        Patterns of the apparent motion of the sun, the moon, and

stars in the sky can be observed, described, predicted, and explained with models.

- o *ESS1.B: Earth and the Solar System*
  The model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are the result of that tilt and are caused by the differential intensity of sunlight on different areas of the Earth across the year.

- **Now You See It, Now You Don't – Solar and Lunar Eclipses (S2)**
  Students will learn about how the geometry of the Earth, Moon, and Sun produces lunar and solar eclipses. Key concepts: Lunar eclipse, solar eclipse and total versus partial eclipses.
  - *MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.*
    - o *ESS1.B: Earth and the Solar System*
      The model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are the result of that tilt and are caused by the differential intensity of sunlight on different areas of the Earth across the year.

- **Welcome to the Neighborhood – Overview of the Solar System (S3)**
  Students will learn about our solar system. Key concepts: Celestial objects, Sun as the largest body of the solar system, and planetary orbits.
  - *MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.*
  - *MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.*
    - o *ESS1.A: The Universe and Its Stars*
      Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.
    - o *ESS1.B: Earth and the Solar System*
      The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.

      The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.

- **Welcome to the Neighborhood – The Planets (S4)**
  Students will compare and contrast the seven major planets of our solar system. Key concepts: Celestial objects in our solar system, Sun as the largest body of the solar system, and characteristics of each planet.
  - *MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.*
  - *MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.*
    - o *ESS1.B: Earth and the Solar System*
      The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that

are held in orbit around the sun by its gravitational pull on them.

- **Moving Out – The Motion of the Planets (S5)**
  Students will learn about the revolution of the planets. Key concepts: Revolution of Earth and planets around the sun, planetary retrograde motion, and the heliocentric model.
  - *MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.*
  - *MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.*
  - *MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.*
    - *ESS1.A: The Universe and Its Stars*
      Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models.
    - *ESS1.B: Earth and the Solar System*
      The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.

- **Big Macs – Meteors, Asteroids, and Comets (S6)**
  Students will learn about small objects that have a big impact on our solar system. Key concepts: Asteroids, comets, and meteor showers.
  - *MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.*
  - *MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.*
    - *ESS1.B: Earth and the Solar System*
      The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.

o Advanced Lessons

- **A Calendar in the Stars – Seasonal Constellations (A1)**
  Students will learn how the motions of the Earth cause seasonal changes in the stars. Key concepts: Constellations seen during different seasons, circumpolar stars, and the zodiac constellations.
  - *MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.*
    - *ESS1.B: Earth and the Solar System*
      The model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are the result of that tilt and are caused by the differential intensity of sunlight on different areas of the Earth across the year.

- **Star light, Star bright – The properties and life cycle of Stars (A2)**
  Students will learn about the properties and lifecycle of the stars. Key

concepts: Energy of stars, star properties of distance, apparent brightness, and luminosity, and the life cycle of a star.

- *HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.*
  - *ESS1.A: The Universe and Its Stars*
    The study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth.

- **Our Little Island – The Milky Way Galaxy (A3)**

  Students will learn about the Milky Way Galaxy. Key concepts: Characteristics of the Milky Way Galaxy, location of the Sun in the galaxy, and viewing the Milky Way from Earth.

  - *MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.*
    - *ESS1.A: The Universe and Its Stars*
      Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.

Frequently Asked Questions (FAQ)

Description:

- **What is a Starlab®?**
  A Starlab® is a portable planetarium. It is an immersive teaching and learning environment where students can experience the solar system without leaving the confines of planet Earth. The Digital Starlab® system includes a dome, projector, laptop loaded with Starry Night™ Small Dome software, and speakers.

- **Can I see the Starlab® before I schedule programming?**
  Absolutely! Please visit www.starlab.com for a selection of videos about the Starlab®. We recommend that you view the "Experience the Magic of the Digital Starlab®" video.

- **What makes the Starlab® different from other planetariums?**
  Starlab®'s focus is on educational programming and not entertainment. While the experience may include multimedia simulations and special effects, rest assured that the primary goal of Starlab® is to immerse students in an environment that will foster learning about our solar system. This is accomplished through the delivery of programming that is aligned to the Next Generation Science Standards (NGSS).

- **What is unique about Starlab® Share?**
  The Starlab® Share program is a terrific opportunity to immerse students in astronomy in an environment that is ideal for quality interactive educational programming. Starlab® Share provides teachers, administrators and other educational personnel with a chance to preview and see a demonstration of the Starlab® before making a commitment to purchase a system. For the more budget conscious, Starlab® Share allows a school system to schedule programming for students as needed through the school year without needing to make a system purchase.

- **Do I need to travel to see the Starlab®?**
  Not necessarily. Unlike a fixed planetarium that is in a specific geographic area, we bring the portable planetarium experience directly to you. Customers in more rural locations will not need to secure transportation for students to a planetarium location that may be hours away from the school. If the intention is to provide programming to students from multiple schools within a district, then the school may need to provide transportation to and from the location where we have set up the Starlab® system.

Location and Set Up:

- **Do I have to set anything up?**
  No! We will do all the work.

- **Where can I put the dome?**
  The Starlab® dome requires a minimum cleared floor space of 20 ft x 20 ft and a minimum ceiling height of 11 ft. When inflated, the dome has a width of 16 feet and a height of 10.5 feet. We recommend that the dome is set up inside a gymnasium, cafeteria, large multipurpose room or a classroom that has all the desks and chairs removed. The top of the dome must be kept away from heaters, lights and other sharp objects. The dome cannot be set up outside, on a stage or where exit doors are blocked. Access to power outlets is necessary, as both the blower and the computer require electricity.

Experience:

- **Who can experience the Starlab®?**
  The Starlab® may be enjoyed by visitors ranging in age from childhood through adulthood. The Starlab® is accessible by all, including visitors who are physically challenged and/or have learning disabilities.

- **Who presents the Starlab® programming?**
  Starlab® educational programming is brought to you by a certified Starlab® trainer. The trainer has a professional teaching certificate. Please see the bio section for more details.

- **Is Starlab® Share only available for classroom teachers?**
  The Starlab® Share program is not limited to traditional classroom teaching. It is a great learning environment for afterschool programs, camps, and educational outreach.

- **Can I share the experience with other teachers or other grade levels?**
  Absolutely! We want all your students to tour the universe.

- **How many people can experience the Starlab®?**
  The Starlab® dome can accommodate approximately 25 to 30 school age children per session. With a selection of five shows per day, this means the we will host 125 to 130 students per day!

- **How long will the dome presentation last?**
  The Starlab® experience will last approximately 45 minutes to one hour per session. This includes time for entry/exit from the dome, instructions, and the presentation by the certified Starlab® trainer.

- **Will I get sick during the dome presentation?**
  The dome presentation may include moving simulations and imagery that is projected 360 degrees. Visitors who are prone to motion sickness are advised to look down toward the floor until the motion ceases.

- **Why is no late entry allowed during the dome presentation?**
  The planetarium environment is extremely dark once the programming has begun. For your safety and the safety of others around you, no late entry will be allowed.

General:

- **Are food and/or drinks allowed inside the dome?**
  Food and drinks are not allowed inside the dome due to the potential for damage to the dome fabric and associated equipment inside the dome.

- **What should I wear inside the dome?**
  Shoes are allowed inside the dome; however, we do not recommend wearing heels as this type of shoe can cause damage to the dome fabric. Also, there are Velcro® strips that keep the door closed while it is inflated. These strips can catch on clothing during entry and exit from the dome. Clothing should comfortable, as dome visitors will be seated on the ground during the presentation. We do not recommend that dome visitors wear dresses or skirts.

- **Can I use electronic devices during the presentation?**
  We ask that you silence all electronic devices during the presentation and make sure that all display screen stay powered off. The light from the screen can ruin the dark sky effect for other visitors and sound from the device will interfere with the trainer's narration and ambient sound from Starry Night™ Small Dome that may be playing as background noise.

- **We are a small private school or a community group and we do not have hundreds of students enrolled. Is it still possible to make a Starlab® Share reservation?**
  Yes, absolutely! The dome can able to accommodate a maximum of 25 to 30 school age children per show. We are more than happy to provide programming to much smaller groups of students, as we want everyone to tour the universe.

- **Can parents accompany a school group inside the dome?**
  Policies vary from school to school. Parents should check with their child's teacher to make sure that there is enough space to accommodate them in the dome. Of course, parents are always encouraged to share in the immersive astronomy experience, and they are welcomed as extra adult chaperones inside the dome.

Lessons and Standards:

- **Will the Starlab® team help me to select the right lesson(s) for my learning standard(s)?**
  Yes. Tell us your themes and objectives, and we will help you select the right lesson(s).

- **Can the programming be targeted for various levels, from elementary school to high school?**
  Yes. You may select any combination of programming from the thirteen available presentation list choices. Feel free to mix and match. We find that this approach is most applicable to middle-senior schools or integrated school districts, where there are wide variety of grade levels who will enjoy the programming during your selected dates.

- **Is custom programming available?**
  Custom programming is not available at this time; however, Starlab® is committed to ensuring that educational programming offerings are aligned with today's stringent education standards. Please let us know if you have a particular astronomy topic that is of interest to you that is not amongst our current presentation list options. We are continuously striving to work with our software development team to create programming that is desired by educators!

- **Only elementary school students will benefit from the primary lessons in Starry Night™ Small Dome (SNSD), correct?**

  It depends. Primary lessons target those age groups, but it is okay if the teacher wants to select programming from the topics in the secondary and advanced categories. The teacher may need to prepare the elementary school students in advance of the Starlab® Share presentation by the certified trainer, if secondary or advanced category topics are selected. The more advanced programs may require students to have additional background knowledge to truly benefit from the experience. The educator is advised to select programming that meets individual course requirements in terms of the concepts and topic areas that are covered.

- **Does the lesson content build in terms of scaffolding and/or rigor, so that middle school and/or high school students are best served by programming selected sequentially from the primary and secondary categories in SNSD?**

  Within each of the categories, the lessons have about the same rigor but you do not have to do the lessons in order. The educator is advised to selected programming that meets individual course requirements in terms of the concepts and topic areas that are covered.

- **Do certain lessons need to be covered before others or do they work independently of each other?**

  Lessons are independent of each other.

- **Do I need to cover background information with my students in advance of the Starlab® Share programming dates?**

  The educator is always encouraged to cover appropriate astronomy background information with his or her students in advance of the scheduled programming dates. This background knowledge may help to enhance the in-dome experience; however, this is not a requirement, and gaps in knowledge may still be present. Rest assured that the certified Starlab® trainer will present the in-dome content. You do not need to be an astronomy or earth and space science teacher to take advantage of Starlab® programming. As an educator, you may find that your students' experience in the dome is a great opportunity to review course content that you have already covered in science and even non-science courses.

- **Only high school students with prior astronomy knowledge will be best served by advanced lessons. Is this true?**

  Middle school students may benefit from the advanced category lessons, but these topics are most often covered at the high school. Prior advanced astronomy knowledge is not required for high school students.

- **I see that the SNSD lessons are correlated to NGSS, but what about the Common Core State Standards (CCSS)?**

  While there is not necessarily a direct connection, as an educator you may find that the CCSS for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects are applicable to the programming you have selected. With a little creativity, you will find that Starlab® Share lessons meet your needs in terms of CCSS.

  Suggested CCSS correlations for the middle school level include the following:

  Integration of Knowledge and Ideas:
  CCSS.ELA-Literacy.RH.6-8.7
  Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

  CCSS.ELA-Literacy.RST.6-8.9
  Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

  CCSS.ELA-Literacy.RST.6-8.7
  Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

  The certified Starlab® trainer will present programming in the dome. After the dome experience, you may decide to challenge your students to do a literary exercise to compare and contrast what they saw during an in-dome simulation (e.g., solar eclipse) with what they learned from a textual reading about the geometry and pathway of a solar eclipse. Or, you may ask your students to create a diagram with a written summary of the main attributes of a particular constellation after observing the constellation inside the dome.

Starlab® Share Certified Trainer Bio

Sarah Bell is the Starlab® certified trainer. She has a B.S. in Chemistry from Canisius College, a M.A. in Chemistry from SUNY Buffalo, a J.D. from Florida Coastal School of Law and a professional teaching certificate from the State of Florida. Drawing on her extensive experience with the development of creative science curricula for the K-12 market, she is adept engaging with students from varied backgrounds while placing emphasis on ensuring high-quality, standards based educational programming. Sarah also serves as a board member with Communities in Schools, the nation's leading drop-out prevention program that empowers students to stay in school and succeed academically.

Interested?

Please contact Sarah Bell at starlabshare@starlab.com. Sarah will be in touch with you to confirm pricing, packages, and availability should you wish to proceed with an exploration of our universe.