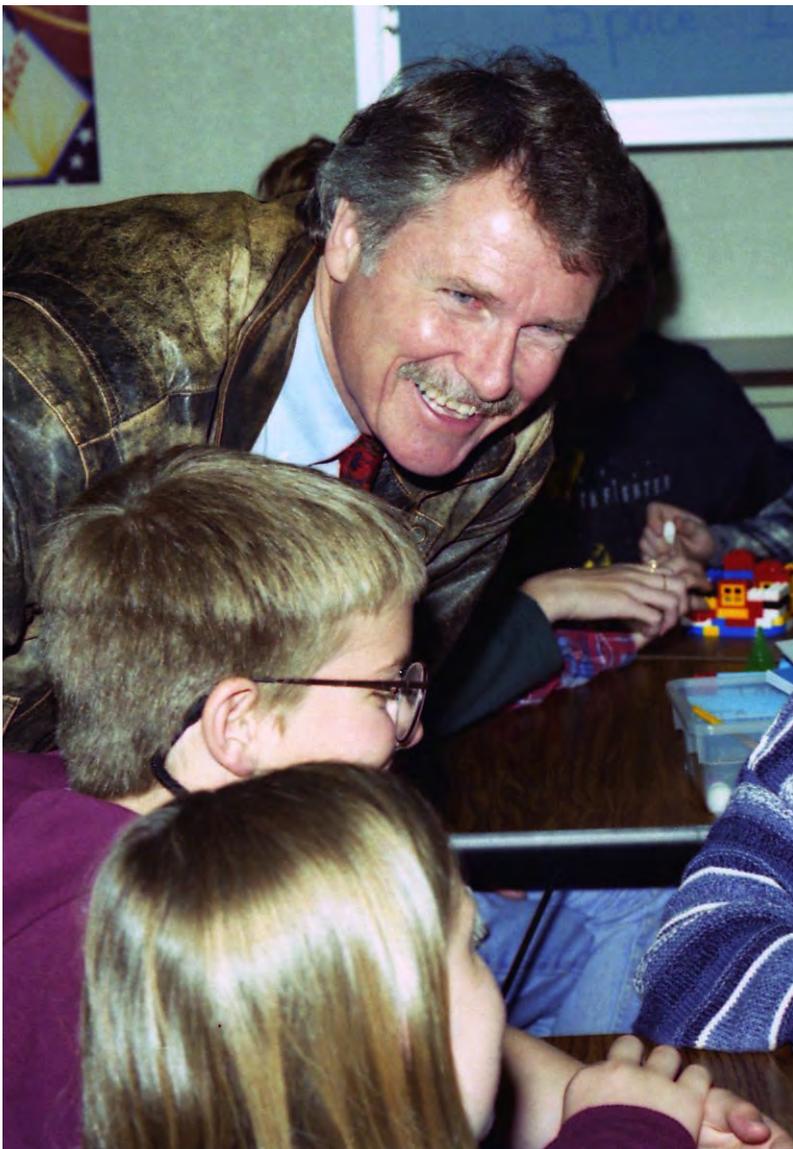


DISCOVER DoD STARBASE A Department of Defense Youth Program TODAY



Oregon Takes Off

How Oregon's two programs began.

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A review of the newly published STARBASE curriculum pieces!

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OREGON TAKES OFF:

How Oregon's Two Programs Began

Along with seven other states around the country, Oregon also was part of the initial 1993 funding to pilot a five-day program teaching school-age students about real-world applications of math and science. With that funding, two programs were created at Air National Guard bases in the state, Klamath Falls and Portland.

From the beginning several high ranking officials in the Oregon National Guard, such as MG Gene A. Katke, were particularly pleased about Oregon's involvement in this pilot program because it offered a way to expand the on-going efforts of the Oregon Guard members to support the children of the community.

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“Maj. General Gene A. Katke, Adjutant General of the Oregon National Guard “We’re very pleased to be one of the seven states selected for STARBASE funding. This funding will allow Oregon Guard members to become directly involved in helping youth in our communities to learn the value of science and math in a real world environment.”

Observers of students in the program, even from the beginning, noted how excited the learning environment is at STARBASE Kingsley and applaud the hands-on teaching model the nationwide program has aimed for since its inception.

STARBASE Portland

The Portland site, at the Jackson Armory, is hosted by the 142nd Fighter Wing and was originally directed by FJ Cutting. With limited available space on the Portland Air National Guard Base, STARBASE Portland started off as one classroom with one teacher in the Oregon Army National Guard Jackson Armory near the base. During the 2000-01 school year, the program added a new teacher, and the following year, the program expanded to a second classroom in a space on base, in building 494. This expansion allowed STARBASE Portland to significantly increase the number of students served in the community. And, in 2003-04, they added a third teaching position. Recently, they achieved an important program goal to bring both of their classes together under one roof when they moved into their new building.

In addition to consistently working to expand the breadth of their program, STARBASE Portland has a valuable list of goals that will encourage continued success and relevance of the nationwide program.

Goals for STARBASE Portland

- » Develop methods to demonstrate uses of alternative energy:
 - Solar panels with demonstration station showing visible energy production and savings.
 - Wind turbines with demonstration station showing visible energy production and savings.
 - Sustainable practices: low flow faucets, insulation, and drinking fountain to avoid bottled water.
- » Partner with community, business, government, industry, and local school districts to establish positive rapport and provide STEM career models, mentors, and alternative energy consultants.
- » Resurrect non-profit Starbase PDX as advisory for local initiatives.
- » Work with local STEM organizations that target high school and college students to increase the number of STEM graduates.
- » Start a STARBASE 2.0 program.
- » Work with local teacher education programs to bring student teachers to Starbase for a STEM practicum.
- » Provide a summer program for military families.
- » Continue to connect with past graduates about their STARBASE experience and how it influenced their education and career decisions.

STARBASE Kingsley

The site in Klamath Falls is located at Kingsley Field and hosted by the 173rd Fighter Wing. Marsha Beardslee, with the program from the beginning, is the site director for the program in Klamath Falls.

Starting with just one classroom in Building 239 on Kingsley Air National Guard Base, they were able to provide students with one classroom to serve the students from Klamath Falls City and Klamath County Schools. For several years, they had just one teacher, but they were able to expand their staff as their program grew. And, at the end of the 2001-2002 school year, they moved into their current location in Building 302.

STARBASE Kingsley also expanded their STEM offerings three years ago with the addition of their STARBASE 2.0 program. The program has utilized Scalextric4Schools as their STEM Project. Over the last three years, they have engaged with several local schools and have worked with STEM Mentors from an array of sources including professors from the Oregon Institute of Technology, engineering students, military members, teachers from the participating schools, and STARBASE staff members.

This school year, the start to the 2.0 program has been delayed as the site works to finish installing a manufacturing center that will allow them to manufacture parts for Scalextric cars for their program and others around the country.



CURRICULUM EXPANSIONS

A review of the newly published STARBASE curriculum pieces!

During December 2012, 13 lessons plans were changed on the website. These changes ranged from updating lessons into the new curriculum format to brand new lessons that were recently approved and published. In order to keep STARBASE sites up-to-date with these changes to our curriculum, new curriculum expansions will be outlined In Discover STARBASE Today. Below is an overview of the changes that were recently made by curriculum area.

NEW CURRICULUM ITEM	TYPE	ABSTRACT
E3.1.1.1. Physics: A. Newton's Three Laws of Motion		
Introduction to Newton's First Law (Note: Revision to parent lesson to add new appendices and update document to the new format.)	Parent Lesson	This parent lesson provides a basic introduction to Newton's First Law of Motion, "an object in motion or at rest will stay in motion or at rest unless acted upon by an outside force." This introductory information prepares students for their work with the chosen appendix.
Appendix A: Crash Test Dummies (Note: Updated document to the new format.)	Appendix to Introduction to Newton's First Law	This appendix allows students the opportunity to investigate Newton's First Law of Motion, an object in motion or at rest will stay in motion or at rest unless acted upon by an outside force. Students will conduct a simulation of a car crash to observe the effects of force and motion on objects.
Appendix B: Marble Drop	Appendix to Introduction to Newton's First Law	This appendix allows students the opportunity to investigate Newton's First Law of Motion, an object in motion or at rest will stay in motion or at rest unless acted upon by an outside force. Students will conduct an investigation to observe the effects of force and motion on objects using multiple spheres of different masses.

CURRICULUM UPDATE

Appendix C: Egg Spin and Inertia Drop	Appendix to Introduction to Newton's First Law	This appendix allows students the opportunity to investigate Newton's First Law of Motion, an object in motion or at rest will stay in motion or at rest unless acted upon by an outside force. Students will conduct an investigation to observe the effects of force and motion on objects during two different activities.
Introduction to Newton's Third Law (Note: Revision to parent lesson to add new appendices and update document to the new format.)	Parent Lesson	This parent lesson provides a basic introduction to Newton's Third Law of Motion, "every action is followed by a reaction equal in magnitude and opposite in direction." This introductory information prepares students for their work with the chosen appendix.
Appendix A: Newton's Pop-Ups (Note: Updated document to the new format.)	Appendix to Introduction to Newton's Third Law	This appendix presents students with an opportunity to investigate Newton's Third Law of Motion, "every action is followed by a reaction equal in magnitude and opposite in direction," using an everyday object.
Appendix B: Newton's Balloon Cars	Appendix to Introduction to Newton's Third Law	In this appendix, students will use a balloon car to investigate Newton's Third Law. They will inflate the balloons and release the air to observe the action/reaction pair and discuss which direction the air from the balloon went (backward) and what direction the car moved (forward).
Appendix C: Newton's Balloon Rockets	Appendix to Introduction to Newton's Third Law	In this appendix, students launch a balloon rocket. While each student takes a different role in the launch, all students closely observe the rocket's flight for later discussion and flight analysis. Through discussion, questioning, and use of the Activity Log, students are guided to an understanding of Newton's Third Law of Motion.
Appendix D: Down the Track	Appendix to Introduction to Newton's Third Law	This activity presents students the opportunity to investigate Newton's Third Law by conducting a series of tests using impact cars on a prebuilt track. These tests demonstrate the action-reaction force pairs while providing an opportunity to discuss kinetic and potential energy.

CURRICULUM UPDATE

E3.1.1.2. Chemistry Sciences: A. Building Blocks of Matter

Characteristic Properties	Lesson Plan	Students will learn about characteristic properties by first conducting an investigation to determine the relative density of water, oil, rubbing alcohol, and a green bead. Then, they will observe how quickly a green bead moves through test tubes filled with water, oil, and corn syrup to determine which liquids have higher viscosity. Finally, they will use appropriate tools to separate iron filings from a soil sample, dissolve salt, and separate sand.
Chromatography (Note: Revision made to previous version to add the optional Solubility Testing activity.)	Lesson Plan	This lesson will allow students to recognize one of the characteristics of a substance is solubility. In the introductory portion of the lesson, polar and non-polar substances are related to solubility. An optional Solubility Testing series of experiments can be conducted before the Chromatography Activity is introduced. In the Chromatography Activity, students test ink for solubility and create chromatograms. The results can then be compared to a suspect chromatogram.

E3.1.1.3. Technology: B. Navigation and Mapping

Introduction to Navigation and Mapping	Parent Lesson	This parent lesson plan offers students the opportunity to learn about the conventions that make navigation tracking possible on the Earth. Through a hands-on demonstration, students will experience the importance of longitude and latitude and how these systems relate to navigation. This exposure will prepare them to better understand the technological tools demonstrated in the accompanying appendices.
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E3.1.1.4. Engineering: A. Engineering Design Process (EDP)

Introduction to Engineering Design Process	Parent Lesson	This parent lesson offers students the background information necessary to understand the eight steps of the Engineering Design Process. In this introduction, students will examine a specific, real-world problem that allows them the opportunity to learn about steps themselves and see the way the steps work together to facilitate the work engineers do.
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CURRICULUM IMPLEMENTATION GUIDELINES

All you need to know about implementing the STARBASE curriculum.

Standards, Objectives, and Approved Activities (SOA)

The Standards, Objectives, and Approved Activities document outlines the STARBASE core curriculum components. This document also details the objectives for each core component as well as the national standards that provide the foundation and framework for the objectives.

- A. The SOA is founded on national standards and will be updated when necessary to maintain currency with national standards.
- B. As new lessons receive approval, the SOA will change to reflect these additions. Regularly check the on-line posting of the SOA for updates.
- C. Newly approved lessons do not replace existing lessons. For instance, “Blackbird Thermal Expansion” did not replace “Warm Ups and Cool Downs.” Blackbird is another choice.

Meeting Objectives Handout

The Meeting Objectives handout provides a quick overview of all approved lessons for each core component and the objectives met by each lesson.

- A. You must meet every objective with approved lesson plans, approved appendices, or approved activity stations. As more lessons are approved, you will have more choices to meet the objectives.
- B. You may teach only approved lessons. If you have met all the objectives for every core curriculum item and their sub-categories, and you have additional time in your schedule, select another approved lesson to fulfill the time. Lessons under review by the curriculum committee are not approved lessons. (Please reference page two of this document–Miscellaneous, part A–for additional details.)

STARBASE POLICY INFORMATION

- C. If a portion of a lesson covers an objective but the lesson plan does not cite the objective, you may not use the lesson to count toward meeting the non-cited objective. Example: Parts of “Fluid Investigations” incorporates fractions, decimal, and percent conversions. However, since the lesson plan does not cite any objectives for mathematics, this lesson does not count toward meeting any mathematics objective. To meet a mathematics objective, you will need to select a lesson that specifically meets a mathematics objective.
- D. In the case where more than one lesson meets the exact same objectives, you only need to choose one lesson to fulfill the objective requirements. “Rocket Launch Data Analysis” and “Pop Goes the Fizz,” as an example, cover the same objectives. It is not necessary to do both. You may select one or the other (or both, if it fits within your schedule).
- E. Parent, introduction, and prerequisite/requisite lessons are mandatory for appendices. All parents, likewise, must be accompanied by an associated appendix.
- F. You are expected to complete an entire lesson as written. Variations to a lesson are only allowed if the variations received approval through the standard submittal/approval process.
- G. There are no nationally approved lessons for STEM Careers. These are site specific. As each site has unique resources available at their installation, it is dependent on the site to develop their own opportunities for this core curriculum component. The STEM Careers lessons and experiences, however, must still meet all the objectives as noted in the SOA, and these lessons cannot exceed more than two hours of the entire curriculum schedule.

Curriculum Schedule

The Curriculum Schedule is a unique schedule developed by each site that clearly outlines which lessons are taught, on which day, and at which time.

- A. When developing your schedule of lessons, ensure you are meeting all the objectives. For instance, “Chromatography” meets objective three for Chemistry, Building Blocks of Matter. It does not meet objectives one and two. You must also meet objectives one and two by implementing another lesson, such as “Creating and Building Molecular Models.”
- B. Organize your schedule of lessons so prerequisites are taught before the associated lesson, appendix, or activity station.

STARBASE POLICY INFORMATION

- C. You may not teach all Engineering, 3-D Computer Aided Design requirements (mandatory PTC modules) in one day. Break up the lessons so they span over several days. Repeated exposure will help students develop proficiency. In addition, keeping students at computer stations for extended periods is not conducive to a healthy learning environment and may contribute to frustration.
- D. It is suggested that you teach an engineering design process (EDP) approved lesson during a classroom's first visit. Having an EDP foundation is helpful for many subsequent lessons.

Miscellaneous

- A. Once you receive written permission to write your abstract submission as a full lesson plan, appendix, or activity station, you may test it on three to five classes, allowing you to iron out the kinks and make it premier. Following this testing and modification period, you will submit the newly written lesson plan, appendix, or activity station for approval. Once you make this submission, you may not continue to teach the lesson until it receives full approval.
- B. An extension activity that you provide to a visiting classroom teacher does not require curriculum committee approval, but they should maintain the premier quality that exemplifies STARBASE. Additionally, these extension activities do not count toward meeting the objective requirements.

SEEKING STARBASE ALUMNI

To commemorate the 20th anniversary of the DoD STARBASE Program, we are looking for STARBASE graduates who have gone on to STEM careers, hopefully in part from the influence of their STARBASE experience. We are happy to showcase any STARBASE alumni, but we are especially interested in finding graduates from the original 1993/94 classes. Please send any information about a STARBASE alumnus to Ernie Gonzales, at ernie.gonzales@osd.mil.