

Delaware AeroSpace Education Team (DASET)

Section I

After submitting a proposal entitled “ Delaware’s AeroSpace/MSTE Resource Initiative”, the Delaware AeroSpace Education Foundation (DASEF) was selected by the AeroSpace States Association (ASA) and NASA to receive a grant. DASEF has put together an experienced team of professionals for the purpose of defining and developing AeroSpace Core Concepts for Delaware educators.

Mission Statement

With the progression of time, the educational needs of children are met by the ever-changing expansion of curricular frontiers. The Delaware AeroSpace Education Team’s (DASET) mission is to provide educators with an inquiry-based, interdisciplinary framework of AeroSpace standards, which will contribute measurably toward achieving the scientific and technological goals of our Nation.

Our Mission is:

- To work with teachers and others in the academic community to inspire America’s students and create increased learning opportunities.
- To provide justification for the use of networked tools and a handbook that ensures equitable access to AeroSpace resources.

AeroSpace curriculum is critical to fostering the development of innovative skills and investigations. The primary goal of the Delaware AeroSpace Education Team is to disseminate to the academic community, core concepts that are unique to AeroSpace education.

Objectives

1. To develop products and services that facilitate the application of AeroSpace education to formal and informal education and lifelong learning.
2. To transmit information in useful and transferable media and to share new knowledge with the education community.
3. To provide teachers in the state of Delaware with current, broad-based teacher-friendly AeroSpace resources that are aligned with the State of Delaware’s content standards.

AeroSpace Definition

For clarification purposes within the context of this document, the DASET team’s definitions when referring to Aerospace and AeroSpace Education are as follows:

What is AeroSpace?

Aero is air and atmosphere.

Space is the region beyond the earth’s atmosphere or beyond the solar system.

What is AeroSpace Education?

AeroSpace Education is an integration of space science and technology into all curriculums to emphasize:

- Space Science
- Earth Science
- Human Exploration and Development of Space
- AeroSpace Technology
- AeroSpace Education: An Interdisciplinary, Applied Learning Link

AeroSpace Education is a multidisciplinary approach that leads the way to the quest for in-depth knowledge and understanding of the cosmos and the technology needed to explore it.

Why AeroSpace Education is important to all students?

AeroSpace education is important for three reasons:

1. The volume of new knowledge is expanding at an unbelievable rate. One way for students to keep up with the pace and to be prepared for the world in which they will spend most of their lives is to study a content area that is on the leading edge of new developments in science and technology. AeroSpace is such a content area.
2. A large number of newly developed ideas and products, over the last thirty years, have come out of our quest for flight and space travel (spin offs), and it is reasonable to assume that this trend will continue.
3. Humankind has always done its best and most creative thinking while trying to explore new frontiers. Space offers an unlimited frontier for the inspiration and challenge of the human mind.

Goals for Student Achievement

All students will be provided the opportunity to learn and attain high levels of AeroSpace literacy through:

1. The use of quality materials and information provided by aerospace related groups.
2. The welcoming of such characteristics as creativity, curiosity, questioning, and imagination, which are internal to the teaching and learning of AeroSpace education.
3. The use of hands-on investigative teaching that actively engages students in real world AeroSpace content.
4. The use of a teacher network support group whose members actively seek to extend student opportunities and share new information in AeroSpace education.

Responsibilities of Stakeholders

The Delaware AeroSpace Education Team will:

1. Make available a quality resource handbook that uses AeroSpace core concepts, that when appropriate, align with the Delaware Content Standards.
2. Provide justification for the use of network tools and a resource handbook in education.

Responsibilities of Stakeholders Continued

The Delaware AeroSpace Education Foundation will:

1. Work with teachers and other educators to provide professional development in using the resource handbook and networked tools.

Core Concepts

Introduction

The Delaware AeroSpace Education Team has developed K-5 AeroSpace Core Concepts and accompanying standards, aligned with the Delaware Content Standards. This framework along with network tools is part of an on-going process to implement AeroSpace education. Core Standards state what students should know, understand, and be able to do in the course of their education. Aligned with these standards is developmentally appropriate AeroSpace material.

CORE CONCEPT I: SPACE SCIENCE

Humans have a natural wonder about the origin of the universe, the planets, and the stars, what lies beyond, and their impact on our future. This interest can be used to expand their knowledge of the universe, the motion of objects in space and the development of the technology needed to explore deep space.

STANDARD:

Students will understand the nature and history of our Solar System and what makes Earth similar to and different from its planetary neighbors. Students will understand the external forces and cyclical motions that affect life and the habitability of Earth. Students will explore the concepts of how any form of life may originate and persist in the cosmos.

CORE CONCEPT II: EARTH SCIENCE

Planet Earth is affected by natural and human-induced changes on a local, regional; and global scale. The unique perspective from Earth's upper atmosphere and orbit afforded by air and space travel can greatly aid in the study of these changes. This concept will develop a universal understanding of the environmental importance of the Earth's land, air, water, natural hazards, and life.

STANDARD:

The Earth Science Concept will explore how the Earth's land, water, air, and life interact to produce the environment in which we live. Students will understand that the Sun is the source of energy and life on Earth. Students will learn how to use technological data bases obtained over time to analyze and evaluate patterns in the ecosystem. The students will take this knowledge to develop innovative approaches in an effort to become caretakers of the global environment.

Core Concepts Continued

CORE CONCEPT III: HUMAN EXPLORATION AND DEVELOPMENT OF SPACE

Great strides have been made in the exploration of space in the last four decades. Extending the boundaries of science and engineering allows us to develop and share new knowledge in useful and transferable media. The development of this new knowledge, through people living and working in space, has enriched life on Earth and ensured its transfer to the private sector in an effort to develop strong and everlasting partnerships among industry, academia, and government. Exploring the universe, enriching human life, and stimulating intellectual curiosity present a new world of opportunity and unite nations of the world in a shared vision. Space will be accessible to everyone.

STANDARD:

This concept focuses on space exploration and the use of the space environment in extending scientific and medical advances. Students will investigate the physiological phenomena of microgravity and become aware of its implications on human life. They will develop an understanding of how the unique conditions of microgravity can be used to manufacture new products and how new technologies develop for the space program can be adapted for use on Earth.

CORE CONCEPT IV: AEROSPACE TECHNOLOGY

As the world has become a global community, with interconnected economies, AeroSpace transportation has become a vital link between the United States and other countries. The AeroSpace technology concept promotes economic growth and strengthens the security of the international community. The need for AeroSpace design and propulsion aimed at improving safety, comfort, and speed has never been greater. A safe and efficient civil AeroSpace system provides affordable, reliable and environmentally friendly space transportation.

STANDARD:

Students will learn about the history of flight and space transportation. They will understand the principles of flight and rocketry, which enable AeroSpace travel. Students will analyze current AeroSpace transportation and evaluate new AeroSpace technologies with regard to safety and economic feasibility. Students will recognize that information technology and high-speed digital communications are expanding our economy in new ways. They will define the roles of the digital revolution, while linking communication and transportation whose two components contribute measurably to the growth of the Global Civil Aviation System.

Core Concepts Continued

CORE CONCEPT V: APPLIED LEARNING

The human population continually encounters challenges. In the past, many of these challenges have been met through the cooperative work of scientists and engineers from the global community. Today, AeroSpace innovation and exploration are major focal points of new scientific research and engineering applications. As the twenty-first century proceeds, we will have an ever-increasing need for responses to challenges in space and on Earth, and for the scientists and engineers who will meet them.

STANDARD:

Students will analyze problems related to AeroSpace. They will draw on their knowledge of the various curricular fields and use appropriate scientific tools and processes to develop possible solutions. With an inquiry-based approach to learning, students will evaluate, summarize and communicate their results.