FLIGHT IN NATURE

Student Activities:
Read about characteristics, structure, and classification of birds.
Read about how birds fly.
Participate in experiments and demonstrations such as:
   examination of bird feathers and bones
   examination of owl pellets and bird nests
   examination of bird eggs
Have students construct a bird of their own, designed for flight.

Study Trips and Speakers:
Zoo
Nature Conservancy
State Parks
Owling Night

Curriculum Integration:

Literature:
   Owls In The Family, by Farley Mowat
   Mr. Popper's Penguins, by Richard and Florence Atwater
   Owl Moon, by Jane Yolen
   The Trumpet of the Swan, by E. B. White

Writing:
   Research reports on bird groups or individual birds.
   Write descriptive paragraphs of birds in flight.
   Write poems.
   Related Language Skills:
      puns, synonyms, tongue twisters, idioms

Social Science:
   Mapping of migration routes.

Math:
   Measurement of birds, nests, eggs, etc.
   Word problems related to birds and flight.
HISTORY OF FLIGHT

Student Activities:
Read myths that tie in with flight, such as Daedalus and Icarus.
Read about primitive beliefs on aviation.
Trace the history of flight from the Chinese to today.
Create a vocabulary notebook with "flight" words.
Research the development of hot air balloons.
Research the development of kites.
Make hot air balloons and kites.
Make a Wright Flyer.
Design an aviation trivia game.
Design an illustrated timeline of famous flights.

Study Trips and Speakers:
Aviation museums
Children's museums
A local airport
Interactive Video
NASA Centers

Curriculum Integration:

Literature:
Around the World in 80 Days, by Jules Verne
The Glorious Flight, by Alice and Martin Provensen
Wright Brothers: Young Flyers, by Augusta Stevenson
The People Could Fly, by Virginia Hamilton
Dragonwings, by Laurence Yep
Lost Star, by Patricia Lauber
Heroes and Monsters of Greek Myth, by Evslin, Evslin, and Hoopes
From Kite to Kitty Hawk, by Richard Bishop
They Flew Alone, by George Sullivan

Writing:
Fact Pyramids on different fliers.
Write a letter to the Smithsonian.
Write a paragraph on how the Wright Brothers felt after they found out Otto Lilienthal's flight calculations were wrong.
Pretend you are one of the Wright Brothers.
Write a letter to your father describing your progress at Kitty Hawk.
Write a news article entitled, "The First Flight."
Write an advertisement announcing the contest to fly across the English Channel.
Keep a journal as one of the famous fliers.
Compare and contrast the flights of Bleriot and Charles Lindbergh.

Math:
Do calculations for famous flights.
Create word problems using data of planes, flights, etc.
Create a distance graph for historical flights, compared to today's flights.

Social Science:
Research countries of famous fliers.
Map famous flights.
Create timelines of flight development.
PEOPLE IN FLIGHT

Student Activities:

Students will complete research and task cards on the following people:

Wilbur and Orville Wright
Charles A. Lindbergh
Eddie V. Rickenbacker
August Martin
Leonardo da Vinci

Amelia Earhart
General Daniel "Chappie" James
Gus Grissom
Louis Bleriot

Complete Flight Journals, writing as one of the above people.
Create a mural portraying events of a person's life.
Make a salt relief map of a famous flight.
Dress as one of the above people to do an oral report.
Create a fact book on a person to share with a first grade class.
Create a rap, a song, a play, a newscast, or a poem about one of the people.

Field Trips and Speakers:

Local airport
Challenger Center
NASA Center
Aviation museums

Curriculum Integration:

Literature:  Lost Star, by Patricia Lauber
Amelia Earhart: Adventure In The Sky, by Francene Sabin
Wilbur and Orville Wright: The Flight to Adventure, by Louis Sabin
The Glorious Flight, by Alice and Martin Provensen

Poetry:     Wilbur Wright and Orville Wright, by Rosemary and Steven Vincent Benet

Writing:    Descriptive paragraphs and research reports
            Phase biographies
            Character sketch
            Young Author's book

Social Science: Milestones in Flight Timelines
               Map skills for flight plans of historic flights

Math:       How Much Farther?
            Distance Graph
            Altitude Graph

Art:        Illustrating reports, books, poetry, etc.
PRINCIPLES OF FLIGHT

Student Activities:
The students will learn about the principles of flight through several experiments and
demonstrations.

Teach the Scientific Method and how to use the experiment form for these experiments:
- Hot-Air Balloons ———— Hot air is lighter than cold air
- What Makes an Airplane Fly ——— Strip of paper airfoil
- Bernoulli’s Principle ———— Water hose activity

Properties of Air experiments:
- Air takes up room
- Air has weight
- Air has pressure
- Air moves
- Heat causes air to expand
- Air contains moisture

Forces on An Airplane
- Basic Movements of an Airplane ——— Controlling pitch, roll, and yaw demonstrations
- Experiments with Gliders
- Experiments with Lift, Thrust, Gravity, Drag
- Experiments on Achieving Balance Between the Forces of Flight

Students learn the parts of a plane:
- Develop a poster with the plane parts labeled
- Sing a song to the tune of the Negro spiritual “Dem Bones” naming the parts of a plane
  and where each part is connected

Study Trips And Speakers:

Aircraft Manufacturing Facility
Military Base
Airport
Flight Service Station

Hot Air Ballooning
Tower Control
Military Installation
Commercial Airplane Factory

Curriculum Integration:

Literature:
- Bored! Nothing to Do, by Peter Spier
- Sabotage Flight, by Paul Meyerhoff
- What Makes A Plane Fly, by Scott Corbett

Poetry:
- I Am Flying

Writing:
- Journal writing tied to literature
- Coded messages – using pilot code

Social Science:
- Aeronautical Charts – Comparison with other maps; locate specific land features; discuss obstructions and find them on the map; plan a trip with charts.

Math:
- Calculate distances using aeronautical charts
- Flying High – Calculate average heights in the sky for different aircraft in feet, miles, kilometers, meters
- Airplane Measurement – Use twine to measure off lengths of various aircraft
- Survey and graph information on students who have flown.
- Create various word problems using mileage and travel speed information

Health: Examine conditions that affect pilots’ reaction time.
FLIGHT SIMULATION

1. Together the students will select a country that they are interested in learning more about. (This could easily be tied into regions study in the social sciences.) Students will then research this country to learn about location, history, culture, cuisine, customs, and interesting places to see. This could be done by students individually, or each learning team might take a different topic to research.

2. The students will find out the necessary information they will need to travel to this country. They will need to know:
   - flight schedules
   - departure times
   - lodging
   - exchange rates
   - air fares
   - route information
   - meals
   etc.
   This information can be obtained by talking to a travel agent or by sending for travel brochures.

3. After obtaining the information outlined above (number 2), the students will calculate the cost of their trip.

4. Students will fill out their own passport application and make their own passport.

5. The students will plan an in-flight meal, keeping in mind the food pyramid. The meal must consist of food common to their destination. This meal will actually be prepared and served on the “flight.”

6. The students will transform the room into an interior of an airplane.

7. A guest speaker who is a native of the chosen country will visit and share information about the country, if possible.

8. The students will calculate the cost of lodging and meals.

9. The students will write to any places that they would like to visit to obtain information about cost, hours, tours, and so on.

10. Each student will come up with one thing that they would like to know about this country. Students will copy these into their travel logs and write down the answers as they find them.

11. Students will select the role that they would like to play on the flight simulation. Roles:
    - Pilot
    - Baggage Porters
    - Airplane Design Crew
    - Co-pilot
    - Airport Security
    - Other positions as the class
    - Flight Attendants
    - Ticket Agents
    - may come up with

12. On the Flight Simulation Day, students will play their assigned roles, the food will be served, and, if possible, an in-flight movie about the country will be shown. The pilot should make announcements throughout the flight about cruising altitude, geographic landmarks, flight time, weather, and any other trip information.

13. The students will keep travel logs in which they will record information about their flight and trip.

These activities can be done by all the students, or each team can be assigned a different activity to complete and then share their findings with the rest of the class.
CAREERS IN FLIGHT

Student Activities:
- Introduce job categories – service, technical, manufacturing, sales.
- Brainstorm jobs in aviation with which students are familiar.
- Research different occupations.
- Complete "When I Grow Up" activities.
- Discover educational training information on various careers.
- Meet with the school guidance counselors.

Study Trips and Speakers:
- Airports: Challenger Center, Civil Air Patrol
- Military Bases: Flight School, Control Tower
- NASA Center: Aircraft Manufacturing Facilities, Commercial Airport

Curriculum Integration:
- Literature: *Behind the Scenes at the Airport*, by David Cooke
  *Aircraft at Work*, by Mary Elting
  *Highways in the Sky: The Story of Air Traffic Control*, by Lou Jacobs
  *What Does an Airplane Crew Do?*, by Roy E. Ray
  *Come Work With Us In Aerospace*, by Jean Wilkinson
- Writing: Complete a research report on a specific career.
  Write letters to schools for educational information.
  Design a resume and cover letter to apply for a specific job.
  Design and fill out a job application.
  Write a business letter to various institutions for job information.
  Write job descriptions for various jobs and careers.
- Social Science: Map skills – locate job locations
  Examine work and why particular jobs are needed.
- Math: Calculate the cost of training and education.
  Figure incomes.
- Life Skills: Fill out job applications.
  "Special Qualities" – Examine qualities needed for success in various jobs and careers.
THE FUTURE OF FLIGHT

Student Activities:

Brainstorm needs for future planes – examine issues such as:
- fuel available, cost, time, where people will need to go, etc.

Students will design and draw or build their future aircraft.

Students will examine the need for environmental friendly airplanes.

Students will research technology needed for future flight.

Students will research the National Aerospace Plane.

Study Trips and Speakers:

Aeronautical Engineer
NASA Center
Aircraft Manufacturing Facility

Curriculum Integration:

Literature: A Wrinkle in Time, by Madeleine L'Engle
A variety of science fiction having to do with flight or travel

Writing:
- Create a reading log on ideas for flight discussed in books
- Write letters to Boeing, Cessna, Lockheed, other aircraft manufacturers
- and the Jet Propulsion Laboratory for information on new ideas for flight
- Create a book called "Window On The Future" with the ideas you receive

Technology:
- Go on-line with NASA Spacelink for information.

Flight Festival

The Flight Festival is an end-of-component celebration. We spend one day having the students rotate around to each of the five classrooms. They complete various hands-on and interactive activities. During the Festival, the students also display their Specialty Information. The students are required to present their information as an assigned part of the day. Parents are invited to participate in all activities throughout the day. We do a special picnic lunch outside.

Suggested Rotation Activities:

- Students participate in a pilot training program. Have students complete different physical activities. Example: walk beam, run obstacle course, throw football, jump through hoop, etc.
- Students will complete an activity measuring off lengths of different types of aircraft.
  - Students build models of the Wright Flyer or balsa wood planes
  - Have students create their own kites and compete in various contests with them.
- Students present their Specialty projects to parents.
- Many different activities could be used as part of the celebration.