Join the Mission, Design a Patch

Nathan Mentzer
Utah State University

Fay Mentzer

Krista Jones

Follow this and additional works at: https://digitalcommons.usu.edu/ncete_publications

Part of the Engineering Education Commons

Recommended Citation
Grade Level: Third and up, but could be adapted to younger students
Time: One to three hours (divided over a few days)

Mission patches communicate the goals and objectives of a NASA mission. Creating a patch has become an important tradition over the last 40 years. The flight crew and support personnel develop a mission patch together and pack a great deal of information in a small (three or four inches across) embroidered area.

Patches are proudly worn by astronauts on the right of the space suit. Mission control demonstrates unity by displaying a large version of the patch while the mission is active.

We live in a world rich in symbolism. In our everyday lives, we are surrounded by symbolic representations of feelings, advertisements, goals, dreams, and some memorable events. Our ability to communicate graphically has been a critical skill for thousands of years. For example, students may recall reading about hieroglyphic drawings or family crests in social studies classrooms.

by Nathan Mentzer, Fay Mentzer, and Krista Jones

Student teams design a mission patch based on research related to exploration. The exploration theme may include space (www.nasa.gov) but may also include land (www.bigr.com) or ocean (www.jason.org).

The Internet provides excellent examples of mission patches developed by NASA and can excite students about what their particular exploration may be—which leads to the design of their team’s mission.

Getting students interested and excited about creating their mission patch is easy and fun when you use this NASA website. Either as a class using an overhead projector or on individual computers go to: www.nasa.gov/audience/forstudents/9-12/features/F_STS-116_Patch_Explorer.html.

Discuss the patch and what students think it is trying to convey. After a discussion of a symbol, click on the area, and information regarding the relevance to the mission will be displayed. Give students a few minutes to explore each part of the patch. Ask students what they think of the patch. Did the astronauts do a good job conveying what was important about their mission? Were the symbols appropriately representative of what they stand for? Did they include vital information, or did they add any unnecessary information? If needed, remind students that the patches
are small, and when too many things are added the message can be confusing. Discuss other situations where mission badges might be used.

- NASA's "For Students" site highlights NASA-related topics by age-appropriate interfaces and content: [www.nasa.gov/audience/forstudents/index.html](http://www.nasa.gov/audience/forstudents/index.html)
- JASON Project: Education through Exploration provides a digital portal to underwater exploration including curriculum and exciting discoveries: [www.jason.org](http://www.jason.org)

**design activity**

1. **Excite students about exploration**
   Pick a theme for the project: (space, land, underwater, other). Highlight an exploration project (mission) using NASA's website. Ask students which goals they think were important on the mission. Show pictures of the mission patch and have students try to explain the connections between the symbols, their placement and colors, and how this relates to the mission. Divide students into teams with three to six students per team.

2. **Connect exploration, teamwork, and need to communicate goals**
   Share with students the importance of establishing common goals for the success of a project. Possibly identify a recent example of student teamwork (i.e., student drama performance, organized game, earning class rewards, reading groups, etc.) In this example, students, with the help of a leader, are focused on a common goal. What would happen if the team did not share a common goal? How was the goal identified by this team?

3. **Research**
   Students research an area that they would like to explore following the theme of space, land, or underwater. Provide resources such as NASA or the JASON Project.

4. **Focus**
   Have students identify a mission goal (one sentence describing their mission purpose). Have students determine where their crew is going and what the crew is looking for.

5. **Discuss symbolism**
   Demonstrate to students that symbols are all around us. Pick a few symbols in the classroom and students' immediate environment (i.e., school letterhead, school mascot, traffic lights, brand logos on shoes/
ACTIVITY

Student teams color final patch design.

shirts, company logos). Each of these symbols has a meaning to convey to its audience. What is the meaning?

6. Identify significance in the students' mission
Have students list significant components of their mission that they may want to communicate with their mission patches.

7. Brainstorm and sketch
Students sketch ideas for symbolically representing important aspects of their mission. This may be an individual activity.

8. Team consensus
Discuss appropriate means of generating consensus and encourage each student team to decide what symbols will be shown on their patch design. Don't forget to encourage students to consider putting two or more ideas together in creative ways.

9. Design a patch
Provide colored pencils, crayons, markers, and a variety of paper so that teams may create colorful and meaningful representations of their mission.

10. Present to the class
Display the patches around the room and have students walk around and look at other teams' work. Ask students to write their impressions of what they think the badge represents. Before each team presents, have the class give a few examples of what they think the badge represents. Was the class close? If so, what does that tell us about symbolism? If not, does personal significance impact our interpretations? Do we all share common cultural experiences that shape our interpretation of symbols? Have presenting students explain and justify how each symbol was chosen and why.

evaluation
Students may be evaluated on both their process and product. As students begin to determine what their mission's goals and objectives are, encourage creativity based on research. The process of developing a creative mission is rooted in the excitement of discovering something unknown.

Consider a rubric based on the following process-based items:
- Has clear vision of final product
- Properly organized to complete project
- Managed time wisely
- Understands symbolism
- Communicates ideas with teacher and team members.

Students create a final product of a mission patch and make a presentation explaining and justifying their symbolic representation of mission goals and objectives. In the product section of the rubric, the following items may be considered:
- Followed format
- Mechanics of speaking/writing
- Organization and structure
- Creativity
- Project reflects knowledge
- Quality of work

interdisciplinary connections

The heart of this activity is symbolism, but a strong exploration theme holds great potential for making interdisciplinary connections.
- **Social Studies:** This activity may be connected to a social studies unit on family crests, as each design on a crest has deep meaning for the family from a genealogical perspective. Further, connections to units on ancient Egypt and hieroglyphic communications may broaden students' understanding.
- **Language Arts/Reading:** Students’ imaginations and creativity are primed by researching the background of previous explorations in space, land, or underwater. Presentations at the conclusion of this activity foster confidence and provide students practice in oral communication skills.

TECHNOLOGY AND CHILDREN May 2008
• **Math**: Discussions of scale and proportion may be woven into the lesson. Often, students will include drawings of the earth or their exploration vehicles. These drawings are scaled down to a smaller size, and this scale can be discussed in terms of measurements. A 30-millimeter explorer vehicle on the patch may be a 30-meter vehicle in reality (1 millimeter = 1 meter).

• **Science**: The exploration theme provides a wide range of connections to the science classroom. Science teachers may be discussing the solar system, land features, plants and animals, or underwater life. All of these topics could be the exploratory focus driving the goals and objectives on which the patch symbolism is based.

**extensions**

Expand the activity to include an international study. Students may research how various countries use mission patches related to the international space station project. How do international patches differ in symbolic representations from their American counterparts?

Invite a professional embroiderer into the classroom to share pictures of how the embroidery process works and demonstrate how a student's work would be transformed from design to production.

Develop a “mission patch” for this classroom. Brainstorm with the students a list of classroom goals for the year, answering such questions as: What makes this class unique? and What do we learn in this classroom? What are our goals? This patch may be proudly displayed on a bulletin board, including explanations of the symbolic representations portrayed.

**Nathan Mentzer** is a graduate student at Utah State University studying engineering and technology education. He can be reached at nmentzer@comcast.net.

**Fay Mentzer** is a former elementary school teacher and reading specialist. She can be reached at fmentzer@comcast.net.

**Krista Jones** is a K-5 technology education teacher at Belle Vue Elementary School in Bellevue, Idaho. She can be reached at kjones@blaineschools.org.

Student mission patches
Courtesy of Krista Jones