LESSON 1

Lesson	Title	Topic	Time (Min)
1	**The Challenge and your team**	**Introductions and forming your team** **The Foundation Five Team Rules** **Picking a TEAM NAME** **Process Observation** **History**, The Space Race, The Apollo Missions **Astronomy**, The Sun Earth Moon System **Environmental Science**, Earth vs moon life support inquiry	**10** **5** **15** **5** **5** **5** **10**

OBJECTIVES

Understand why some activities are better done in teams.

Be able to name the **Foundation Five.**

Understand the Four processes in making a team decision**.**

Understand why America went to the moon.

Be able to name three differences between the Earth and moon.

STANDARDS

See Program Standards Document

Welcome and Introductions (TEAMING activity)

Introduction of faculty and students

Each student gives their name and one thing they would like to share about themselves. If the team has members from different grade levels or schools, that should be included in their introduction.

The Challenge

Your team will design the first permanent base on the moon. It will have up to 10 astronauts as crew. It will be built mostly from lunar materials and process oxygen and water which are available. It should be as self-sufficient as possible but will be able to be resupplied from Earth.

Team Formation

Teams can be assigned by age,

grade,

skill level,

or other grouping.

The ideal number of members to be assigned to a team is 5 or 6. Less than 5 is less than optimal since the strength of the team process is in distributed responsibility, variety of input, and ability to do meaningful work. Dyads and triads are not teams. Greater than 6 members and decision making becomes too difficult.

Assignment of members to teams needs to be random.

Random assignments provide an opportunity for team members to learn how to work with a variety of team members, their styles, preferences, and strengths.

One random assignment procedure is:

Have the participants lined up in order by:

Birth date (month and day)

or

Last name (alphabetical)

Have the participants count off based on the number of teams to be formed. Then people with the same number (the 1s, the 2s, etc.) are members of the same team.

Part of forming a team is establishing ground rules for how team members will treat each other. The recommended ground rules for a team are called The **Foundation Five**. They are listed below and are covered in more detail in the in-service training materials.

1. *Treat others the way you want to be treated*.
2. *Walk the talk*.
3. *Value another's views and worth*.
4. Be *part of the solution, not part of the problem*.
5. *Hang together, not separately*.

TEAM DISCUSSION: Have team members discuss what each of the five rules means to them and why they might be important to the team.

Choosing a Team Name (Use the TEAM NAME DEVELOPMENT WORKSHEET)

Teams require a set of skills to do things like make decisions, plan, or problem solve. AEIC uses the TLRI TEAMING system which defines the common processes needed for effective student collaboration.

The Choosing a Team Name exercise will teach the team members the decision-making process which they will use throughout the program.

The four skills used in making a team decision are the ability to do:

- Brainstorming (to generate ideas)
- Data reduction (to sort and reduce ideas)
- Analysis (to discuss options)
- Decide (techniques to reach an acceptable solution)

Following this process may seem formal and complex, but they assure several crucial aspects of team building and maintenance: every member of the team participates, a broader range of ideas or options are explored, and the team members are better able to support the decision.

Brainstorming

Before Team members can make a team decision, they should make sure they have examined as broad a range of options as possible. One of the easiest and most enjoyable ways to generate a list of ideas is to brainstorm. A successful brainstorm lets people be as creative as possible and does not restrict their ideas in any way. The free-form approach can generate excitement in the group, equalize involvement, and often result in original solutions to problems.

Some helpful rules for conducting brainstorming sessions are:

- Encourage everyone to freewheel; don't hold back any ideas even if they seem silly – the more ideas the better.
- No discussion during brainstorming – that will come later.
- No judgment or criticism of others' ideas – no groans or faces either.
- Encourage hitchhiking – build upon others' ideas
- Write all ideas on the worksheet so that all Team members can easily see them.

Before starting the brainstorming session, it may be helpful to first review the topic and/or question to be answered and give everyone a moment to think in silence. Someone who is a good facilitator should lead the group and write down the

answers (or a separate recorder appointed). The facilitator should invite everyone to call out their ideas and have them recorded.

Data Reduction

The next step is to look at the ideas and try to reduce them. All ideas should be considered to show that all ideas and the members proposing them are valued. Try to reduce the number of ideas by combining similar ones and agreeing on ones that follow a theme the team likes.

Analysis

The team then discusses the different options and members can explain why they came up with the idea. The team can discuss the different options.

Decide

The actual decision should not be a simple vote. This creates a winner or winners and losers which is destructive to effective team formation and maintenance. Other ways of reaching a decision are Rank Order and Consensus.

Rank Order

A simple rank order is to ask each member to choose their top three options and rank them 1,2,& 3. Totaling up the votes, the options with the lowest scores would be most preferred by the whole team.

Consensus Decision-making

Reaching decisions by consensus can be both good and bad. The bad news is that it can take a long time and requires that every team member either approves or says they can live with the decision. A single no vote keeps the process and discussion going.

The good news is that:

Once consensus is reached, implementing decisions is much faster.
The process builds strong team participation.
The process builds team trust.
The process improves participant's listening skills.
The process reinforces the Foundation Five Ground rules for how members agree to treat one another.
The process can help resolve complex issues

There are three steps that a team follows when making a consensus decision

- The presentation of the issue or topic
- Thorough discussion of the issue or topic
- Making the actual decision

Presentation:
The decision to be made is stated and any relevant information is shared. The group may want to gather more information. Each person should also identify their "interest" in the topic (what the decision would mean to them). No solutions or positions should be put forward in this step.

Discussion:
All ideas for deciding the issue should be on the table along with individual and group interests. All ideas should be equal in the discussion, and all ideas should be explored thoroughly.

Decision:
Actually making the decision involves a "test" for consensus. As with any other type of team decision, a member can either agree or disagree. If there is a disagreement by anyone, more discussion is required. In consensus decision-making, there is another category: can you live with the decision. You may not be in full favor of a decision, but you can agree with reservations. When every team member either agrees or can live with a decision consensus is reached, and the team can then move to implement the decision.

Choosing a TEAM NAME (TEAMING)

Using the Worksheet, have the team walk through the decision-making process. Again, it may seem complicated at first, but once mastered, it can go very rapidly.

TEAM NAME DEVELOPMENT WORKSHEET

STUDENT NAME TEAM NAME IDEA

_____

_____

_____

_____

_____

_____

_____

ARE ANY OF THE NAMES SIMILAR? COULD THEY BE PUT TOGETHER?

DISCUSSION (ANALYSIS)

HOW TO SELECT (DECIDE)

RANK VOTE____ CONSENSUS_____
ALL AGREE____
LET ONE DO IT____

_____

OFFICIAL TEAM NAME

Process Observation (TEAMING)

This analytical tool can be used periodically throughout the TEAMING experience to monitor and improve interactions and observe how well the team is running. It consists of 8 questions which provide a snapshot of the team's interpersonal, intragroup, and leadership dynamics. While relatively quick and simple, it is very powerful.

Team members get an opportunity to observe, monitor, discuss, and improve group activity. Process Observation has been used successfully with teams as young as fourth grade.

Procedure

Normally, one team member is designated as an observer and still participates in the activity. The team adult facilitator may want to be the process observer for the first time with each team. The Observer simply watches for specific behaviors during activity session and takes notes on the Observer form. (See the sample Process Observer Form.) At the end of the activity, the Observer reports his or her observations. Then the whole team talks about what behaviors to encourage, what to discourage, and what deserves further discussion. This information helps the team study and improve how members interact.

Some tips for the Observer are:

Report what you hear and see. Avoid reporting what you "think" is going on in other people's minds.

Report actions, not what caused them.

If there is conflict, ask the adult facilitator for help.

PROCESS OBSERVER WORKSHEET

HOW WELL DID THE GROUP WORK TOGETHER?

DID EVERYONE TALK?

DID SOME TALK MORE THAN OTHERS?

WAS ANYONE BOSSY?

DID SOMEONE ACT LIKE A LEADER?

DID THE REST OF THE TEAM FOLLOW?

WAS THERE ANY ARGUING?

DID THE TEAM GET FINISHED?

History The Space Race

- Oct 4, 1957: Sputnik 1 - First artificial Earth satellite.
- Nov 3, 1957: Sputnik 2 - First living creature (dog Laika) in orbit.
- Sep 12, 1959: Luna 2 - First spacecraft to impact the Moon.
- Apr 12, 1961: Vostok 1 - Yuri Gagarin, first human in space and Earth orbit.
- Jun 16, 1963: Vostok 6 - Valentina Tereshkova, first woman in space.
- Mar 18, 1965: First spacewalk (Alexei Leonov, Voskhod 2).

United States Milestones:

- Jan 31, 1958: Explorer 1 - First US satellite.
- Oct 1, 1958: NASA established.
- May 5, 1961: Freedom 7 - Alan Shepard, first American in space.
- Feb 20, 1962: Friendship 7 - John Glenn, first American in orbit.

Jul 20, 1969: Apollo 11 - Neil Armstrong & Buzz Aldrin, first humans on the Moon.

VIDEO link The Space Race

https://m.youtube.com/watch?v=xvaEvCNZymo&pp=0gcJCR4Bo7VqN5tD

The Apollo Missions 1968-1975

FLIGHT	Mission
Apollo 7	Earth Orbit test flight
Apollo 8	First flight around the moon
Apollo 9	Earth Orbit test of lunar module
Apollo 10	First lunar orbit and lunar module test
Apollo 11*	First humans land on the moon
Apollo 12*	Second moon landing
Apollo 13	Space emergency and rescue
Apollo 14*	Third moon landing
Apollo 15*	Fourth moon landing
Apollo 16*	Fifth moon landing
Apollo 17*	Sixth moon landing
Skylab	Space station launch
SL-2	One month mission
SL-3	Twp month mission
SL-4	Three month mission
Apollo-Soyuz	United States and Soviet (Russian) Earth Orbit link up

VIDEO link - Learning to walk on the moon

https://youtu.be/IYQTCAOgrVQ

OPTIONAL VIDEO The Space Race

https://youtu.be/IYQTCAOgrVQ

Astronomy, The Sun Earth Moon System

The moon is our nearest neighbor in space. Apollo spacecraft made the trip from Earth to the moon in 3 days. A trip to Mars might take a year.

VIDEO Sun – Earth – Moon

https://www.youtube.com/watch?v=W47Wa7onrIQ

Space Environment (SCIENCE)

Imagine you lived 20,000years ago.

Inquiry 1: What does planet **Earth** provide to keep humans alive?

Possible answers:

- Gravity
- Air (Oxygen)
- Atmosphere (pressure)
- Water (rain, streams, rivers, lakes, snow, ice, glaciers)
- Food (animals and vegetables)
- Waste disposal
- Shelter (Caves, building materials - wood, stone, Ice, plants, animals)
- Space radiation protection (Cosmic rays, solar rays)

Inquiry 2: If you were floating in space or standing on the moon, what would you NOT have?

Possible answers:

- Space - no gravity
- Moon – 16% 1/6 gravity
- No Air
- No Atmosphere
- No water
- No waste disposal (bathroom)
- No shelter
- No radiation protection

OPTIONAL Team-building activity

Team Mission Patch Design (TEAMING)

Every space mission crew gets to design a mission patch to wear on their flight suits. For this activity, each team will have the opportunity to use the decision making process to design and draw a patch for their team.

Part 1: Provide the teams with a series of mission patch design template options. Have each team pick one member to be the Process Observer. Have the observers gather to receive their instructions and "Observer Worksheet" forms.

Part 2: Ask the team to pick a shape for the patch. The patch can be circular, triangular, rectangular or other regular shape. Generally, patches can have the group name, the names or initials of the members and pictures of a spacecraft, celestial objects (planets, constellations, etc.) and symbols (mathematical, astronomical, school logos, etc.). Use the **MISSION PATCH DESIGN 1 WORKSHEET** to select the shape and theme of the patch.

Part 3: Have the group use the Decision-Making worksheet and process to decide on the graphic elements in the patch:

- **Symbol**
- **Team member names**
- **Image** (rocket, capsule, moon, comet, star constellation)

Samples of actual mission patches should be researched and shared with the teams.

MISSION PATCH DESIGN 1 WORKSHEET

Brainstorm

STUDENT NAME SHAPE AND THEME

_____

_____

_____

_____

_____

_____

_____

ARE ANY OF THE IDEAS THE SAME? COULD THEY BE PUT TOGETHER?

DISCUSSION (ANALYSIS)

HOW TO SELECT (DECIDE)

RANK VOTE____ CONSENSUS_____
ALL AGREE____
LET ONE DO IT____

SHAPE AND THEME

MISSION PATCH DESIGN 2 WORKSHEET

BRAINSTORM

STUDENT NAME IMAGE and COLORS

_____

_____

_____

_____

_____

_____

_____

ARE ANY OF THE IDEAS SIMILAR? COULD THEY BE PUT TOGETHER?

DISCUSSION (ANALYSIS)

HOW TO SELECT (DECIDE)

RANK VOTE____ CONSENSUS_____
ALL AGREE____
LET ONE DO IT____

_____

IMAGE and COLORS

Team Mission Patch Production and Presentation (TEAMING)

Team members should identify each member's role in mission patch production. Obviously, some members may have more skill at drawing, but an effort should be made to engage as many people as possible.

Tasks include:

- Tracing the design
- Lettering (names, team name)
- Coloring
- Writing a description of the meaning
- Presenting the patch and description to the entire group

PRESENTATION

The whole group should meet to present their mission patches. Team should divide the presentation by task.

Process Observation

After the presentation, teams should reassemble and conduct a Process Observation and discuss how the team is developing. Use the following Process Observation Worksheet.

PROCESS OBSERVER WORKSHEET

HOW WELL DID THE GROUP WORK TOGETHER?

DID EVERYONE TALK?

DID SOME TALK MORE THAN OTHERS?

WAS ANYONE BOSSY?

DID SOMEONE ACT LIKE A LEADER?

DID THE REST OF THE TEAM FOLLOW?

WAS THERE ANY ARGUING?

DID THE TEAM GET FINISHED?

Lesson 1 Shared Learning

1. Gove 3 reasons a team may be better that just one person.
2. Which of the following is NOT one of the Foundation Five?
   Walk the Telk
   Be part of the solution, not part of the problem.
   Speak only when spoken to.
   Value another's views and worth.
3. Which 4 processes are used in making a team decision?
4. Why did the USA go to the moon?
5. What are 3 differences between the Earth and the moon?