

TESI Lesson Plan

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Topic: Natural Resources and Mining

Length: 2 weeks

Background Knowledge: This project will be the culminating project at the end of our rock and mineral unit. They will have a brief understanding of the purpose of the mine and the different types of mines (underground, metallic, non-metallic, open pit, quarry, etc).

Objectives:

- 📖 Students will gain a brief understanding of the types of mines in the Midwest
- 📖 Students will understand the economic and environmental impacts of mining in Sheboygan and Wisconsin
- 📖 Students will gain public speaking experience and enhance their writing skills

Standards:

- 📖 A. 12.5 - Show how the ideas and themes of science can be used to make real-life decisions about careers, work places, life-styles, and use of resources
- 📖 E. 12.4 - Analyze the benefits, costs, and limitations of past, present, and projected use of resources and technology and explain the consequences to the environment

Materials:

- 📖 Internet access
- 📖 Information on various types of mines
- 📖 Information on specific jobs associated with a mine

Procedure:

Divide students into 8 groups (4 students per group). Four groups will be “pro-mining”, and four groups will be “con-mining”. Each group will have 1 specific mine that they will research and state their position. The four mines that we will study are:

- 📖 Crandon Mine
- 📖 Flambeau River Mine
- 📖 Marquette, MI Copper Mine
- 📖 Sand and Gravel Mines in Sheboygan, WI

The group must answer the following questions about their mine:

- 📖 Where is your mine located? Point to it on a map.
- 📖 What geologic features are located around it?
- 📖 What is going to be mined and how will it be used?
- 📖 What type of environment is around it?
- 📖 How will the environment be impacted by the mine?
- 📖 What is the local economy like?

- ✚ What are some other local features or facts about the area (population, average age, etc)?

Each person in the group will support their position from a different perspective.

The “pro-mining” position will have the following roles:

- ✚ Geologist
- ✚ Environmentalist
- ✚ Mine Owner
- ✚ Local Community Member

The “con-mining” position will have the following roles:

- ✚ Environmentalist
- ✚ Local Community Member
- ✚ Health Care worker
- ✚ Geologist

Students will answer the following questions:

- ✚ What is your job description – What do you do?
- ✚ What is your position – What would a person with your job description say? Why would they say that? How will your view impact the local community?
- ✚ How is the opposing side going to react to your statement – What are they going to say? How are they going to prove they are right and you are wrong? Why do they feel this way?
- ✚ What investment would your person have in this mine – Why do they care? What’s the big deal?
- ✚ Why should I believe your side? What makes your more right than your opponent?

Students will prepare and research the above topics in class. They will have to cite all of their sources using accepted notation. They must have at least 2 verifiable sources (they may be Internet).

Each person will have 1 min to present who they are and their position. The community (rest of the class) will ask 1 question to a specific side. The side will respond and then the opposing side will react. This will happen for 4 questions (2 to each side). One group member will present a closing statement. This person will receive extra credit for this. After the presentation, the class will be polled as to who one the debate and 6 extra credit points will be given to that team.

Each student will also write a final report and will include the following parts:

- ✚ Essay telling me about their job and position (1 page double spaced)
- ✚ 1 – 2 paragraph reaction to 1 other debate – who won? Why do you think so? Should we mine there? Why/why not?

Students will be graded on the following items (see rubric):

- ✚ Final report
- ✚ Speaking during appropriate times (when they are presenting and when they are a community member)
- ✚ Working consistently during work days
- ✚ Working well with team members

Assessments:

The students will hand in a final report – see rubric for specific grading. They will also be informally assessed during in class work days

Rubrics:

See attached rubrics for grading

MINING DEBATE

Even in WI, mining is a huge business and we mine for different ores. We have already discussed different types of minerals, rocks and some methods to get them out of the ground. We also know why minerals are important and how we use them.

This debate is centered around the controversy that goes with opening a new mine. There are always two sides to every story.

Your job: Tell the class why they should believe your mining position

Time frame: You will receive a calendar telling you what we will be doing each day

Your Assessment: You will be graded on your presentation and a final report.

You will be divided into groups and each person will have a specific job to complete. Each person must work with his or her group to create an understandable position (it must make sense). However, your report will be graded as an individual.

Four groups will be “pro-mining”, and four groups will be “con-mining”. Each group will have 1 specific mine that they will research and state their position. The four mines that we will study are:

- 📍 Crandon Mine
- 📍 Flambeau River Mine
- 📍 Marquette, MI Copper Mine
- 📍 Sand and Gravel Mines in Sheboygan, WI

The group must answer the following questions about their mine:

- 📍 Where is your mine located? Point to it on a map.
- 📍 What geologic features are located around it?
- 📍 What is going to be mined and how will it be used?
- 📍 What type of environment is around it?
- 📍 How will the mine impact the environment?
- 📍 What is the local economy like?
- 📍 What are some other local features or facts about the area (population, average age, etc)?

Each person in the group will support their position from a different perspective.

The “pro-mining” position will have the following roles:

- 📍 Geologist
- 📍 Environmentalist
- 📍 Mine Owner
- 📍 Local Community Member

The “con-mining” position will have the following roles:

- 📖 Environmentalist
- 📖 Local Community Member
- 📖 Health Care worker
- 📖 Geologist.

Each student will answer the following questions:

- 📖 What is your job description – What do you do?
- 📖 What is your position – What would a person with your job description say? Why would they say that? How will your view impact the local community?
- 📖 How is the opposing side going to react to your statement – What are they going to say? How are they going to prove they are right and you are wrong? Why do they feel this way?
- 📖 What investment would your person have in this mine – Why do they care? What's the big deal?
- 📖 Why should I believe your side? What makes your more right than your opponent?

Students will prepare and research the above topics in class. They will have to cite all of their sources using accepted notation. They must have at least 2 verifiable sources (they may be internet).

Each person will have approximately 1 minute to present who they are and their position. The community (rest of the class) will ask 1 question to a specific side. The side will respond and then the opposing side will react. This will happen for 4 questions (2 to each side). One group member will present a closing statement. This person will receive extra credit for this. After the presentation, the class will be polled as to who one the debate and 6 extra credit points will be given to that team.

Each student will also write a final report and will include the following parts:

- 📖 Essay telling me about their job and position (1 page double spaced)
- 📖 2 general questions to be asked during the debate (*handed in ahead of time*)
- 📖 1 – 2 paragraph reaction to 1 other debate – Who won? Why do you think so? Should we mine there? Why/why not?

Students will be graded on the following items (see rubric):

- 📖 Final report
- 📖 Speaking during appropriate times (when they are presenting and when they are a community member)
- 📖 Working consistently during work days
- 📖 Working well with team members

Report Checklist and Cover Page

MINE NAME: _____

GROUP MEMBERS and JOB: _____

Group Questions:

- 1. Where is your mine located? Point to it on a map
- 2. What geologic features are located around it?
- 3. What is going to be mined and how will it be used?
- 4. What type of environment is around it?
- 5. How will the mine impact the environment?
- 6. What is the local economy like?
- 7. What are some other local features or facts about the area (population, average age, etc)?

Individual Questions (remember your job descriptions should focus your answers – what would this person say?)

- 1. What is your job description – What do you do?
- 2. What is your position – What would a person with your job description say? Why would they say that? How will your view impact the local community?

- 3. How is the opposing side going to react to your statement – What are they going to say? How are they going to prove they are right and you are wrong? Why do they feel this way?

- 4. What investment would your person have in this mine – Why do they care? What’s the big deal?

- 5. Why should I believe your side? What makes your more right than your opponent?

SOURCES (Title, Author, Updated Date, Access Date, Volume Number, Page Number, Publisher, Copyright Date): (at least 2 sources)

1. _____

2. _____

FINAL REPORT:

1. Your position – should be 1 page, double spaced, size 12 font, Times New Roman and should answer the questions listed above
 - Grammatically Correct
 - Written in Paragraph form – DO NOT write the question and then the answer – write it as an essay
2. Your Reaction to 1 other debate – Who won the debate and why? What would you decide if you were in the community and why? Should we mine there? Why/Why not?
 - ½ page – 1 page double spaced – same size requirement as above
3. Work cited – you must use an acceptable type of citation. Feel free to use websites to help with this – such as <http://citationmachine.net/>

NAME: _____

COMMUNITY QUESTIONS – TO BE HANDED IN BEFORE DEBATE:

1. _____

2. _____

