

Lesson Plan Template

Overview

How does this lesson connect to my class and the unit?

Lesson Title: The Skin's Anatomy

Unit Title: Science of Tattoos

Duration of Lesson: 1.5 hours

Essential Questions:

- What is the structure of skin's anatomy?
- What differences are notable between the three primary layers of skin?
- What important roles does skin play in our bodies?
- How does the structure of skin impact how tattoos are created and last?

Instructor: Lindsey Good

Lesson Number: 1 of 4

YouthBuild Program: Teacher Fellows

Class Level: Adult Education

Why/Purpose

What are my learning goals for my students in this lesson?

Learning Target(s):

- Students will understand the structure of skin and understand that there are three distinct layers.
- Students will recognize the role each layer of skin plays in the body.
- Students will understand that tattoos are created in a way that accounts for the structure of skin, allowing them to remain permanent.

Common Core Standard(s):

- Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

Anticipated Barriers:

- If students do not respond to the initial discussion about tattoos, use the prompts to guide the discussion.
- For students who are wary of drawing the skin structure, remind them that the drawing is to be used for their review, and it does not need to be perfect. Instead, they can quickly sketch and shade the drawing. If desired, the outside rectangle can be drawn and given to students, as this

step is slightly more precise. From there, students will only need to draw the layers.

- Many of my students are nervous about reading articles in class, out of fear that they will be required to read aloud. To account for this, I offer opportunities to read aloud, but never require students to do so.

Lesson Activities

Academic Vocabulary:

Subcutaneous
Dermis
Papillary
Reticular
Keratinocytes
Epidermis
Melanin

Resources and Materials Needed:

- Four signs (agree, strongly agree, disagree, strongly disagree)
- Chart paper
- Markers
- Paper, pencils and rulers for each student
- [Skin Cell Anatomy graphic](#) (also attached below)
- Colored pencils
- [How Stuff Works](#) article for each student

Multiple Means of Engagement	Multiple Means of Representation	Multiple Means of Action and Expression
<p><i>What opportunities will I provide to stimulate interest and motivation for learning?</i></p> <p>This lesson is geared toward a topic many students will be interested in learning about. Tattoos are relevant to many students, and have significant cultural relevance.</p> <p>Before jumping into the lesson, students have time</p>	<p><i>What opportunities will I provide for students to receive the information in different ways?</i></p> <p>Students can interact with the material through a variety of means (Four Corner Debate, discussion, drawing and article).</p> <p>Relationships are drawn between key concepts, allowing students to revisit and practice these concepts during each class.</p>	<p><i>What opportunities will I provide for students to express what they know?</i></p> <p>Students can express their own knowledge during the Four Corner Debate, discussion, article and exit activity.</p> <p>The Exit Tickets will allow students time to reflect on what they learned during class, while building anticipation for the second class.</p>

to share their own perspective during the Four Corner Debate and discussion.		
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Lesson Activities: *What learning activities will help students meet the learning objectives?*

Anticipation Activity - Four Corner Debate (20 minutes):

- Before class, set up the classroom for a Four Corner Debate. In each corner, put a sign (*Strongly Agree, Agree, Strongly Disagree, Disagree*).
- Explain to students that they should begin in the middle of the room, and move to the corner that expresses their opinion about each statement. After students move, ask for a volunteer from each corner to share why they responded as they did.
 - Since skin cells are constantly shedding, tattoos have a limited life before they will disappear.
 - Tattoos demonstrate cultural norms.
 - Tattoos create an emotional response.
 - Tattoos are created on the outermost layer of skin, so they will remain visible.
 - If I change my mind about a tattoo down the road, it will be easy to get it removed.
 - The ink used for tattoos is all the same, no matter where the tattoo is created.
 - Most tattoo ink is made from dye.
 - Tattoos have no medicinal benefits.
 - The U.S. Food and Drug Administration should regulate tattoo ink.
 - The body's immune system is weakened by tattoos.

Discuss (10 minutes):

- Bring students back together and ask them the following questions. Jot questions down on chart paper as students respond.
 - What is the purpose of skin?
 - What is skin like?
 - Generate analogies (ex: wrapping paper)
 - What can we learn from skin?
 - Age
 - Heritage
 - Health
 - Can skin be a source of pride?
 - Can it be a source of self-consciousness?

- Can skin be a form of expression?

Skin Structure Explanation and Illustration (30 minutes):

- Have each student get a piece of paper, a ruler and a pencil. As they are getting supplies, post a piece of chart paper on the board, with a rectangle in the center. Ask them to draw a similar rectangle, expanding to about 3 inches from each edge of the paper.
- Tell students that you will be explaining the structure of skin's anatomy, and that together you'll draw and label each layer. Remind students that the illustration does not need to be perfect, and it is instead a reference tool for the remainder of the unit.

Note: Refer to the [Skin Structure](#) graphic as a model.

- As the images are drawn and explained, put key information about each term on the board, and students can jot down quick facts about each item on the back of their paper for future reference.
- The first layer is **subcutaneous tissue**. This can be drawn as circles at the bottom of the interior rectangle. There should be some space left between, as there is some overlap between the subcutaneous tissue and the dermis. Once this has been drawn, label the tissue, and explain:
 - **Subcutaneous tissue:** Subcutaneous is connective tissue, and is the deepest layer in the skin's composition. The thickness of this layer varies depending on the organism and where it is on the body (for example, it's thicker on the thighs, and thinner on the eyes).
- After explaining subcutaneous tissue, ask students to draw a wavy line about two inches from the top of the interior rectangle, and a straight line one inch from the top of the rectangle. Explain that this is the **dermis**, which is divided into two sections:
 - **Dermis:** The dermis is the thickest, toughest layer of the skin. This layer contains hair follicles, sweat glands, blood capillaries, nerve endings, and other structures. The dermis gives skin elasticity, as well as a sense of pain and temperature. The dermis is divided into two sections:
 - **Papillary:** The papillary layer is located at the top of the dermis. The papillary provides nutrients to the epidermis, allowing the epidermis to build skin cells called **keratinocytes**. Additionally, the papillary helps to regulate the body's temperature. Fingerprints are formed in the papillary, as a result of uneven bumps within this layer. Additionally, when an individual blushes, it is as a result of blood vessels

dilating within this layer.

- **Reticular:** The reticular layer forms the base of the dermis. The reticular provides skin with elasticity, allowing it to bounce back when pinched or stretched.
 - Invite students to lightly pinch their own arm. Ask them what happens when they let go. The skin should bounce back immediately, as a result of elasticity.
- Now, have students draw loose, wavy lines in the top layer. Explain that this is the **epidermis**:
 - **Epidermis:** The epidermis is the outermost layer of skin. This layer provides the first defense against viruses and bacteria, while also regulating body temperature. It contains **melanin**, which gives the skin color. The epidermis sheds about 40,000 skin cells an hour, equaling approximately 1,000,000 skin cells a day.

Reflect (10 minutes):

- Once their illustration is complete, have students get colored pencils and begin shading in each layer (color choice is flexible). While they are coloring, ask them to reflect on how it's possible for tattoos to last if the epidermis sheds approximately 1,000,000 skin cells a day. Give students time to respond and develop a theory as to how this process works.

Read and Discuss (10 minutes):

- Read the article "[How Tattoos Work](#)" on How Stuff Works. Some students will likely still be coloring their drawings, so they may choose to listen to the article, with a reminder that they will still be expected to respond to questions and offer their opinion.
- After reading the article, ask students what they learned about how tattoos remain permanent.
- To help students with this conversation, reflect that tattoo needles create 50-300 little holes in a person's skin, allowing the ink to reach the dermis. The dermis is far more stable than the epidermis, allowing the ink to remain permanently in a person's skin.

Exit Activity (10 minutes)

- Provide time for questions, and inform students that this discussion will continue during the next class, and that their illustrations should be stored in work binders (or other classroom storage space).
- **Exit Tickets** - Before students leave, have them write down one thing they learned or one

question they have, based on today's lesson. On the way out of the classroom, students should hand you the exit ticket. Questions can be answered during the next class's entry activity.

Evidence of Success (Formative Assessment): *How will my students and I know the extent to which the lesson objectives have been met?*

We will know that the objectives for this lesson have been met when I see their illustrations and notes. Additionally, the exit activity will provide important information about how students perceived the lessons, and any questions they may still have.

Closing Connections: *How will I provide opportunities for reflection and transfer of knowledge/skills?*

Students will be given time for reflection during the Exit Ticket activity. This will provide all students the opportunity to privately ask questions or make connections with the content. Additionally, this lesson will be followed up with the next day's lesson, which revisits the content and skills learned in today's lesson.

Reflections: *What can I include next time? What went well and what needs adjusting?*

Academic Vocabulary:

Subcutaneous: Subcutaneous tissue is connective tissue, and is the deepest layer in the skin's composition. The thickness of this layer varies depending on the organism and where it is on the body.

Dermis: The dermis is the thickest, toughest layer of the skin. This layer contains hair follicles, sweat glands, blood capillaries, nerve endings, and other structures. The dermis gives skin elasticity, as well as a sense of pain and temperature. The dermis is divided into the papillary and reticular layers.

Papillary: The papillary layer is located at the top of the dermis. The papillary provides nutrients to the epidermis, allowing the epidermis to build skin cells called keratinocytes. Additionally, the papillary helps to regulate the body's temperature. Fingerprints are formed in the papillary, as a result of uneven bumps within this layer.

Reticular: The reticular layer forms the base of the dermis. The reticular provides skin with elasticity, allowing it to bounce back when pinched or stretched.

Keratinocytes: An epidermal cell that produces keratin.

Epidermis: The epidermis is the outermost layer of skin. This layer provides the first defense against viruses and bacteria, while also regulating body temperature.

Melanin: Melanin is a pigment found in the hair, skin and eyes of humans and animals.

