

Integumentary System

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Integumentary System 5E Lesson

Grades 7-12	Integumentary System	Ongoing Lesson
Lesson Objective: Students will learn about: • Functions • Structure • Skin • Skin Layers • Hair • Nails • Exocrine Glands • Scarring • Tanning • Sunburn • Skin Color • Sweat • Disorders		
Possible Student Misconceptions: • A "base tan" will protect skin from burning • Sunburns turn into tans • Dark-skinned people can't get sunburn • The hairs on our arms and legs don't serve any purpose • Skin is simply a covering for the body • The main role of sweat is the expel wastes • SPF is a measure of sunscreen strength • Scars are treatable		
Materials: • 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 students • A means of projecting a PowerPoint presentation • Internet access • General classroom objects		
Teacher Notes: ➢ All videos can be accessed directly from the PowerPoint. To retrieve the icon while in slideshow mode and it will automatically open for you. If it doesn't, right-click on the image and click Edit Hyperlink or something similar. ➢ I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ ➢ I don't believe in long lessons. If you feel your students are losing their focus, stop the PowerPoint and give them a 5-minute break. If you'd like to share, I recommend my video collection here - http://www.teachwithferg.com/sc are tons of brain-break videos to choose from all grouped by category.		

Integumentary System – 5E Lesson

Engagement Phase Your students will watch the video 'The Science of Skin Color' and complete the questions found in the file – Engagement – The Science of Skin Color Video . Teacher Notes: - The video is about five minutes long - You may need to show the video more than once or pause when an answer is given to one of the questions.	Dura Teac learn unde
Exploration Phase Exploration – Lab Station Activity • In groups of 2-3, have your students complete Exploration – Lab Station Activity. Once they're done, they will submit their passport to you. Teacher Notes: • The complete instructions for my Lab Station activity can be found in the START HERE – Instructions file.	Dura Teac learn unde ☐ Co ex ☐ Cr ☐ As ☐ Un of
Explanation Phase PowerPoint Lessons • The lesson is found in the folder – Explanation – Lesson • This lesson is designed to be completed over one day • There are multiple embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson • The lesson covers the following topics: ➢ Purposes ➢ Skin ➢ Epidermis ➢ Dermis ➢ Hypodermis ➢ Hair ➢ Nails ➢ Exocrine Glands ➢ Disorders Teacher Notes: • All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. • I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ	Dura Teac conc mate press ☐ St un co ☐ Ot ex dis ☐ St vo ☐ St co pri ex

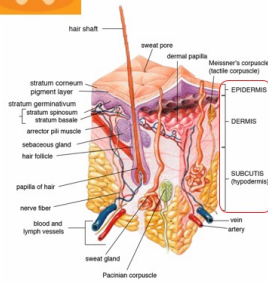
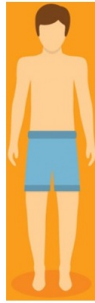
• I have also enclosed a .PDF version of both the teacher and student versions.	
Elaborate Phase Elaborate – Reading Your students will complete – Elaborate – Reading . This reading will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding. Teacher Notes: - Students will work individually or in small groups - This reading contains 8 comprehension questions and 2 extension questions. It is fully editable, so I encourage you to remove any question(s) in order to meet the needs of your students as well as your time frame.	Duration: 1 hour Teacher Role – Facilitate learning and keep students focused Goal ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Evaluate Phase Quiz Have your students complete - Evaluate – Integumentary System Quiz Teacher Notes: ➢ It's sometimes best to have the students peer evaluate ➢ Placing students in small groups and having them exchange papers to mark will accomplish two things 1) Provide immediate feedback on the questions they just completed 2) Significantly reduce your marking time ➢ Peer evaluation is not needed, only suggested when appropriate	Duration: 30 min Teacher Role – Distribute and collect evaluation Goal ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Skin

- Largest organ in the body
 - Surface area: 1.5 - 2 m²
 - Weight: ~2.7 kg
 - 12 - 16% of body weight
- 2 mm thick
- Three layers
 - Epidermis: outermost layer
 - Dermis: middle layer
 - Hypodermis: inner layer

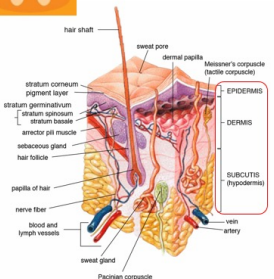
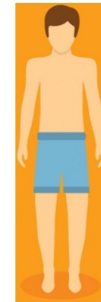


Make sure your students are on track

Student copies with blanks
Videos embedded right into
your slideshow

Skin

- Largest organ in the body
 - _____
 - _____
 - _____
- 2 mm thick
- Three layers
 - _____: outermost layer
 - _____: middle layer
 - _____: inner layer



Interactive and Engaging Activities

Scarring

Scientific Reading Comprehension Article and Extension Activity

Scarring



What is a scar?



A scab is a blemish on the skin.

A scab is a blemish on the skin. They can be lighter or darker in color than the surrounding tissue or even silver-colored. Scars are the way that the body repairs damage. They can be left over from all sorts of injuries, including burns, accidental cuts and scrapes, and surgery incisions. Though people often comment that large, visible scars make people look strong and mysterious, the reality for people living with certain forms of scarring is not always so rosy. While many scars are just marks that feel like lumps or sensitive, or even itchy, they can also be self-conscious, stigmatized, and even disrupt sleep. Some types of scarring can make it difficult to completely daily tasks. Large and disfiguring scars can make people feel less confident, stigmatized, anxious, or depressed.

How do scars form?

Wounds cause skin tears to break. Often, these breaks break vessels and bleeding ensues. **Platelets** in the blood stick to form a clot to prevent further blood loss. Next, white blood cells (leukocytes) migrate to the wound to help fight infection and to lay down matrix that get us. Finally, a protein called **fibron** weaves through the clot, holding it in place. This is the process of **scar formation**. Scarbs protect the damaged tissue before from infection and let the wound heal on its own. Healing begins when **epithelial tissue** (the outermost component of skin, as well as tissue that lines body cavities and makes up our glands) starts to grow over the break. In this way, the body connects the edges of the wound together. When repairing damaged tissue, epithelial cells can grow at around 1 mm per day. Skin has three layers. The top layer is the **epidermis**. The **epidermis** is the top thin layer. The **dermis** is just below it and the **hypodermis** is the bottom layer where the skin connects with the underlying muscles and bones. The dermis contains cells called **fibroblasts**, which make the skin collagen. Our skin, muscles, tendons, and bones all contain collagen; it lends strength and support to tissues. After the epithelial cells have grown, fibroblasts migrate to the damaged area and build up a new layer of tissue. The new layer is laid down in even, organized patterns. However, the body of collagen works very fast to cover the wound and prevent infection, so the



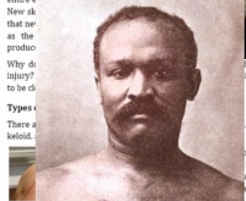
collagen layer we get after an injury isn't as fancy as skin tissue is repaired, the scab falls off.

Why don't scars disappear as new skin is underneath? After all, new skin cells are being born at the bottom of the epidermis (in the layer called **basale**) and pushed up, causing old skin cells to fall off. Why isn't new skin *replaced* by normal skin?

It has to do with the entire structure of the skin. New skin that is pushed up as the product of the basal layer is not the same as the skin that is being pushed down. It is not the same as the skin that is being pushed down.

Why do scars form? Why do they stay? Why do they stay?

to be ch



Types



There's a keloid.

Widespread line scars, such as widespread, injured are flat.

Atrophic acne or chicken pox but can also arise from

Scar contractures occur when scar tissue creases in the skin. In these areas, the tissue takes place during scar formation, before limit motion.



new, normal skin over an
skin tissue and wounds need

contractures, hypertrophic.

in type. They are caused by injuries. A thin raised line, and flattens over time. Fine side, though they never fully

fine
ries.



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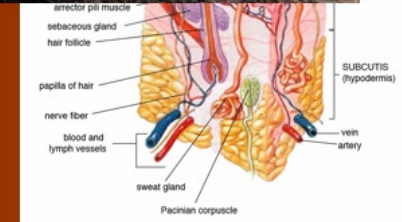
Analysis

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Integumentary System

Lab Station Activity



Improve your students' **Literacy** and **Analysis Skills**,
use as an **Emergency Substitute Plan**, or create
Applicability in your classroom

7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

