GirlsGotSTEAM x Simply Neuroscience One-Day Workshop:
Neurosurgery: An Introduction

Program:	Neurosurgery: An Introduction
Age Range:	14-18
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Description:	Step 1: Wake up! Step 2: Come to this workshop! Step 3: Have fun! Learn about different neurosurgery processes!

NOTE TO INSTRUCTOR: This lesson plan is an OUTLINE - use it as you will to execute your one day workshop. Feel free to add and remove material as needed. Attached is a PowerPoint and a packet (SciNotebook) for your student to complete. The SciNotebook includes material that should be taught and explained throughout the day.

The PowerPoint will include pictures, additional information, and instructions. It **SHOULD NOT** be the primary resource to run the workshop. Please refer to the lesson plans for detailed instructions. If you have any questions, comments, or concerns about any information in this workshop, please email girlsgotsteamorl@gmail.com or skylerbasco@gmail.com

Time	Objective	Component
Block 1: Introduction	Students should be introduced to the main types of neurosurgery (vascular, stereotactic, oncological, skull base, spinal, peripheral nerve, and pediatric).	**Activity 1:** Introduction **Activity 2:** Matching Activity
Block 2: Present and Discuss	After growing comfortable with the different surgeries, students should be able to deeply research one scenario in which a type is used and present on it to further the learning of themselves and their classmates.	**Activity 1:** Research Time! **Activity 2:** Presentations
Block 3: Reflect	Students should end by reflecting on their presentations of neurosurgery.	**Activity 1:** Discussion **Activity 2:** Review **Activity 3:** SciNotebook

Block 1:

- **Activity 1:** Introduction
    - To begin this lesson, the students will need to have a basic understanding of all the main neurosurgery types, which are as listed: vascular, stereotactic, oncological, skull base, spinal, peripheral nerve, and pediatric. The important and needed information will be covered in the slideshow.
    - Refer to the slideshow for the presentation.

- **Activity 2:** Matching Activity
    - After the students have been presented on the neurosurgery types, there will be a matching activity to ingrain what they have just learned. This will consist of pictures and/or videos (considering how much the student can handle), as well as the cause/purpose for the surgery.
    - Present these cause/purpose for the surgery (which can be found on the slideshow), and have the students discuss in small groups (3-4 people) which surgery they predict will be a solution to the problem.
    - After discussing, show the students the video(s)/picture(s) and have them match the graphics with the name and cause of the surgery. This matching should be done in the SciNotebook and checked during class.

Block 2:

- **Activity 1:** Research Time!
    - Students should choose groups of 3-4 to research and discuss a specific and interesting (to them) type of surgery. The research should be of either a specific scenario in which someone *got* the surgery (including the purpose, the science behind what occurred, and the aftermath), a research project done *on* the surgery, or a research project done *with* the surgery.
    - After finding an article/paper, students should divide their groups for certain roles:
        - ➢ Precursor: This person finds out the purpose/cause for the surgery
        - ➢ Scientist (preferably 2 people): This person(s) is in charge of finding the science behind the surgery
        - ➢ Aftermath: This person seeks to find what happened after the surgery scientifically, physically, mentally, etc.

- **Activity 2:** Presentations
    - After spending time researching with their group, students need to put together a short presentation (5-10 minutes) reflecting their research. The presentation should answer the following questions:
        - ➢ Why was the surgery done?
        - ➢ How (specifically, so under that circumstance) was the surgery performed? (it is recommended to include pictures for this, however, an explanation must be provided for the graphics if used)
        - ➢ What was the science behind the surgery (include brain parts, surgery methods, etc.)
        - ➢ What was the aftermath of the surgery?

- ➢ What are some conclusions?
    - Future surgeries
    - Things that could have been done differently
- Question Time: After a group's presentation, they should be able to answer three questions from their classmates or their teacher.

Block 3:

• Activity 1: Discussion

- The class should discuss their questions about neurosurgery, whether be on their classmate's presentations, the class lecture, or etc.
- NOTE TO INSTRUCTOR: Discussion should be fun, interactive, and detailed. Please ensure that students understand the objective of the activity.

• Activity 2: Review

- Instructors should reiterate the key learning points of this workshop by asking students questions (the responses to the questions should be done in their SciNotebook):
    - ➢ What was your favorite/the most interesting surgery? Why?
    - ➢ What was one new thing you learned today about your surgery?
    - ➢ Make-up a scenario in which a person needs to have surgery. Provide context, the surgery name, and how it would be performed.

• Activity 3: SciNotebook

- Since the workshop is coming to an end, please ensure that all the students' SciNotebooks are completed.

We hope your students will enjoy learning about different neurosurgeries! Thank you so much for using GirlsGotSTEAM's resources for your workshop - our team would be beyond happy to provide you with more free and enjoyable lesson plans in the future! For any questions, comments or concerns, please email girlsgotsteamorl@gmail.com or skylerbasco@gmail.com or DM us @girlsgotsteam on Instagram!