Scientix Lesson plan

# Title

Measurement of stroke and minute volume of human blood

# Author(s)

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# Abstract

*Add here a paragraph summarizing the learning scenario. This text will be used to introduce your learning scenario when it is published online, so please try to be as clear and concise as possible.*

The aim of the work is the independent work of students in which they will determine the body surface with the help of height and weight, using a nomogram. Then they will use a mathematical method to calculate the minute volume of blood, measure the pulse for themselves, and thus get data on the stroke volume of blood. After that they will pour a volume of water into the beaker that corresponds to their stroke volume, compare in with other students and draw conclusions.They will also check by experiment how the stroke volume changes in a certain exercise or lord is done, and connect in with everyday life and maintaining health.

# Keywords

*Add here 5 keywords that you think best describe your learning scenario. Other teachers will find your learning scenario based on these keywords, so please try to be as accurate as possible. Use as examples the lists provided in* [*http://www.scientix.eu/resources*](http://www.scientix.eu/resources) *under Subject, Type and STEM School Strategy*

blood, pulse, stroke volume, minute blood volume, nomogram

blood, pulse, stroke blood volume, minute blood volume, nomogram

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# Summary table

|  |  |
| --- | --- |
| *Subject* | *List all the subjects that this learning scenario is intended for. If this is an interdisciplinary lesson, list multiple subjects.*  Biology,Mathematics,physics |
| *Topic(s) within the subject* | *Add here a topic that the learning scenario addresses. For example, if this scenario is intended for a Biology lesson, the topic could be the climate change.*  Human health |
| *Key real-life topic* | *Add here the real-life topic that the learning scenario addresses. For example, if this scenario is about the arrival of airplanes to an airport (and how understanding coordinates systems is very important), write “airplanes and the tower control”.*  Stroke and minute volume of human blood |
| *Age of students* | *15-18* |
| *Preparation time* | 45 minutes |
| *Teaching time* | 45 minutes |
| *Online teaching material* | *List here all the links of online tools, applications and support documents that you will use during the lesson, such as: Padlet, Kahoot, Canva, etc.*  *Google forms*  [*https://forms.gle/9i2SgDstsXCtxsqM9*](https://forms.gle/9i2SgDstsXCtxsqM9)  Padlet  <https://padlet.com/regina_vukasovic/bvcldlnu2g9l>  Lino <http://linoit.com/users/regina123/canvases/Srce%20%C4%8Dovjeka> |
| *Offline teaching material* | *List here all the offline tools, such as: paper, glue, etc.*  *House scale, meter,ruler, nomogram, beaker,pen, calculator,graph paper* |

# Integration into the curriculum

*Detail in a few sentences how the topic of the learning scenario will fit into your national curriculum.*  
During the processing of the cardiovascular system, we fit this scenario with practical work and it fits into our Annual Performance Curriculum

# Aim of the lesson

*Describe in 1-2 sentences what you would like to achieve with your students by the end of the lesson.*

My goal is to show students the importance of maintaining their health, to notice how the stroke volume of blood changes significantly with exercise, and it is different in obese people and people who are generally less physically active.

# Outcome of the lesson

*Describe in 1-2 sentences what kind of outcome the lesson will have. This can be a tangible end-product or any other particular outcome.*  
I think it will encourage students to be physically active and the importance of maintaining their health.

# Trends

*List the relevant trends that the lesson incorporates:* [*http://www.allourideas.org/trendiez/results*](http://www.allourideas.org/trendiez/results)

Lifelong Learning: learning does not stop when leaving school.

Student Centered Learning: students and their needs are at the centre of the learning process.

Assessment: the focus of assessments is shifting from "what you know" to "what you can do."

# 21st century skills

*Add here how the lesson plan corresponds to 21st century skills. To find out more:* [*http://www.p21.org/our-work/p21-framework*](http://www.p21.org/our-work/p21-framework) *.*  
Develops independence, encourages critical thinking

# Activities

*Describe here in detail all the activities during the lesson and the time they require. Remember, that your lesson plan needs to correspond to real-world problems in STEM education.*

|  |  |  |
| --- | --- | --- |
| Name of activity | Procedure | Time |
| Introduction | Introductory quiz Google forms  <https://forms.gle/9i2SgDstsXCtxsqM9> | 5 minutes |
| Practical part | * Weighing on home scale * Recording results * Calculating body surface area * Recording results * Calculating minute volume * Recording results * Measuring pulse * Recording results * Calculating stroke volume * Recording results * Squat exercises * Remeasuring stroke volume * Graphical representation | 35 minutes |
| Conclusion | Comparison of results, question to think about—The heart rate of a mouse is 700 times a minute, and that of an elephant 30 times.Mouse are known to live less than 3 years and elephants more than 60 years. Is there a link between these data? | 5 minutes |
|  |  |  |
|  |  |  |

# Assessment

*Describe here the assessment method of the lesson, if any. For example, if you plan on assessing your students with a quiz, include here questions and answer options with color-coding the correct answers.*

This is practical work, so I am not planning a summative evaluation, only students will get feedback on the correctly completed task using emoticons.

 Slika na kojoj se prikazuje objekt, svijetlo

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# Student feedback

*Add here the method with which your students will be able to give you feedback and discuss the lesson.*

Students will check each other's results with peer evaluation, and so I will get information about the outcome of this lesson.

# About Scientix

Scientix, the community for Science education in Europe, promotes and supports a Europe-wide collaboration among STEM (Science, Technology, Engineering and Mathematics) teachers, education researchers, policymakers and other STEM education professionals. If you need more information, check the [Scientix portal](http://www.scientix.eu/home), or contact either the Scientix National Contact Point or Scientix Ambassadors [in your country](http://www.scientix.eu/in-your-country).