

## **Graphic score of the digestive system**

In this lesson you use the children's imagination for the digestive system: how does that sound? Students make up sounds which they write down graphically, they have fun and they learn something about biology.

## **Graphic score of the digestive system**

### **Age:**

9-10-11-12-year-olds

### **Goals:**

The students can

- Think of and produce sounds with which the different organs of the digestive system can be expressed;
- Think of a notation system to represent those sounds according to the graphic format principle: 'you see what you hear and you hear what you see';
- Put this notation system in a score, so that various sounds together produce the desired sound;
- Indicate with the graphic score which parts of the digestive system occur in which order.

### **Duration:**

60 minutes

### **Tips or sources:**

Enthusiasm is the engine behind the development of the brain.

### **Purpose:**

- Design
- Play
- Record

### **Supplies:**

- Worksheet with an empty score, only the organs are listed
- Paper for the final design: big sheets of paper (A0) or better still: a roll of wallpaper
- Digital board, for the projection of the picture of the digestive system and the worksheet, and possibly the finished score, preferably to be used after their own design process
- Drawing material such as felt tip pens or markers

### **Space:**

Classroom

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To apply music work forms in different subjects is popular thanks to the success stories of teachers who apply these. Music work forms by definition guarantee positive effects in a group of students,

such as improved concentration, collaboration, stimulating creativity and particularly the enthusiasm in students, which, according to Mark Mieras “is the engine behind the development of the brain”.

By using music work form in different subjects the pedagogical/didactical climate improves which increases student motivation. It makes no difference whether the tables of multiplication are beaten with a rap, the writing of a new verse in “De Droomboom” (the tree of dreams), or singing songs in a different language.

There are strong indications that knowledge take root better when working in this way, because students are working enthusiastically. Examples of music work forms are plenty, literally for every subject. This lesson is just one example: a biology lesson about the digestive system.

### **In retrospection: the digestive system**

Start the lesson with looking back at the biology lesson in which the digestive system was discussed. Show the projection of the picture of the digestive system and repeat the names of the organs and their function in the digestive process.

Do you prefer a hard copy?

[Download picture of the digestive system](#)

### **Notation**

Ask “Have any of you been to a doctor and did s/he listen to you with a stethoscope? What was s/he listening for? And what did s/he hear? Who can imitate the sound of one of these organs? And how would you write down this sound?”

Ask a number of students to act this out, in front of the class, and discuss. Make use of sound characteristics such as pitch, sound length, sound strength, and timbre (how do you make that sound?!) and emphasize the principle of graphic notation ‘you see what you hear and you hear what you see’.

Show a projection of the worksheet on the digital board and discuss the assignment: ‘express the journey taken by food or drink through our digestive system according to the following roadmap:

- I am going to divide you in groups of three or four.
- Discuss in your group what should sound in every organ. Think about the function of that organ: could you make that sound too?
- Limit yourselves as little as possible, experiment a lot, including ‘beaters’: fingers, hands, sticks with and without felt, rolled newspapers, beating, ticking, rubbing, on water bottles, along multimap rings, the bin or the teacher’s teacup.... Of course you should not touch one another and not break anything, paper can be torn or crumpled.
- Discuss how you would write down this sound.
- Remember to make differences in length in the sounds that you create.
- Divide the tasks: not all of you make sounds all the time, but vary between making the sound together or just by one person because you need to make a quiet sound, and/or because one of you can make this sound in a really funny way. Make sure there are empty places in the score, so vary between music/silence, this often makes the piece of music more exciting.

- Finish the worksheet in this way.
- The sequence is set: you follow the journey of the organs.
- Practise in your group what you have created. Remember: 'you see what you hear and you hear what you see'!

Form the groups, hand out one design worksheet per group.

### [Download the worksheet graphic score digestive system](#)

Set the students to work. Circulate around the groups, ask what they have come up with and how they are planning to write it down, make suggestions and give positive feedback about the content of their work.

For example 'clear', 'varied' in length or type of sound, in instruments or beaters and/or the use of silence. About the process 'you discussed really well', 'interesting/original choices'. And later in the lesson about the presentation: 'confident', 'good contact with the audience'.

Share a great find from one group to the entire class, as an example and as a stimulus to think of something beautiful. Make sure you do not make them experiment too long, give feedback now and again. Who are doing well? Who gets stuck? Can they give each other pieces of advice? If there are too many ideas help the students to make decisions.

As soon as some of the groups have finished, you set the entire class the next task: "When you have finished with the design, you can come and collect a large sheet of paper and felt tips and marker, and you can draw your score as large as you can, so that we can show the entire class later".

Also provide this piece of advice: "First list all the organs and add your names, then draw the sounds". The names are useful for the follow-up lesson, finding which paper belonged to which group.

#### **Play/present**

Not every group will have finished their score in one lesson, also there will not be sufficient time to allow every group to present. Therefore, ask one or more groups to stand in front of the class, show their score by holding it up by two fellow students, and ask the creators to perform their piece.

It is important that the score is shown at the same time with the performance so that the rest of the class can watch carefully how the group wrote everything down. Ask the group to perform their score at least two times, because the second time is always better .....

Discuss every score with the class: was the score easy to follow, was the notation correct and most of all: what were the finds, the original sounds and/or ways of notation and performance? The scores that were not discussed will of course be dealt with in the next lesson(s).

#### **Extension 1**

You can ask the entire class to perform the score, following the presentation by the group: divide the class in a number of voices and ask one group member to indicate the course on the score.

**Extension 2**

Ask the vocal graphic score to be converted to vocal/instrumental. Which sounds could be made on instruments? And which instruments? Will the notation stay the same? Try it!

**Extension 4**

Show the finished graphic score

[Download a finished graphic score digestive system](#)

Do this at the very end, after all the groups have presented their scores. Emphasize that this might look great but that you think their own products are much more valuable than such a 'slick' version ....

The fact that the slick version is best shown at the very end is not just to steal their thunder. It is also intended to avoid the thought 'we could never do that'. With graphic notation it is most important to do this first yourself, and/or by a student, in front of the class, on the board, 'off the cuff', in a way that you would like them to do later (see 'Notation' above): collectively, creatively and ... enthusiastically.

**Peter Mulock Houwer was a lecturer of Music and Nature Education at the Teacher Training College Saxion in Deventer, the Netherlands. At the moment he is a publicist and leader of workshops about cross curricular music education, among other things.**