



## Scent Educational Programme A Guide for Teachers

## Introduction

Dear teacher,

We are pleased to introduce this teaching manual developed for you and other teachers interested in incorporating the Scent educational programme into your school's curriculum.

The manual describes the aims and approach of the programme and provides you with guidance on how to incorporate it into your teaching. It helps you in the lesson planning and includes details on the learning objectives for each lesson, the curricular links, resources and safety aspects as well as guidelines for assessment. It describes the cross-curricular skills development that the Scent programme fosters. The manual is designed to be used together with the Scent lesson plans and handouts. We hope you find it useful as a tool in your work.

The Scent programme is structured yet has the potential for adaptation and allows both teachers and students flexibility in terms of its implementation. It is by no means exhaustive or set in stone; once evaluated, it can be developed further based on feedback and preferences expressed by teachers and students. The programme is released in time for the 2018-2019 school year.

We hope you enjoy delivering the Scent programme in your school. By introducing Scent to your students, you will engage them in environmental issues and encourage and empower them to become active citizens in their local environment. Let's bring citizen science and environmental monitoring into the classroom!

*We're looking at the bigger EcoPicture*

**The Scent team**



## Contents

About Scent .....	3
Aims .....	3
Learning objectives .....	4
Links to curriculum .....	5
Material needed .....	6
Guidelines for assessment .....	6
Safety aspects .....	10
Joining the programme .....	10

## About Scent

Scent is a citizen science project that engages citizens in environmental monitoring through a set of smart technologies. By using their smartphones, tablets and laptops, citizens can make valuable contributions to the monitoring of changes in land cover and land use.

The smart technologies developed by the Scent team place the citizen at the centre of environmental monitoring. These technologies, collectively known as the Scent Toolbox, enable and empower citizens to become the 'eyes' of the policy makers.

Citizens collect data by taking photos and environmental measurements using their portable devices. The crowdsourced data is uploaded to the Scent Toolbox that combines and makes sense of it all. The data helps researchers understand how and why our landscapes are changing. These changes could create big problems over time, but we believe that the problems can be avoided if we gather enough information to identify and stop them before they cause destruction. Researchers use the data for example to create more accurate flood risk maps and share it with Earth observation systems so that anyone in the world can have access to it.

Scent is a three-year European Union research project funded under the Horizon 2020 programme.

It's all about getting everyone involved in shaping the Bigger Picture!

## Aims

- To raise awareness about citizen science and environmental monitoring among students aged 11-12;
- To inform students about the Scent project and raise interest in the project;
- To engage students in local, national and international environmental issues and equip them with the necessary skills to observe, monitor and take action in their own environment;
- To encourage and empower students to become active citizens in their local environment.
- To trigger lifelong behaviour change; awareness of environmental issues can lead students to think about the world around them and the effects of their actions on others and on the planet in a more holistic way.



## Learning objectives

### After **lesson 1**, students will

- be familiarised with the concepts of environmental monitoring and citizen science;
- be able to identify factors that bring about changes in their own local environment;
- understand the key idea of the Scent project and become ambassadors of the project;
- demonstrate a positive attitude towards and a genuine interest in exploring their own local environment.

### After **lesson 2**, students will

- demonstrate their ability to work in a team, support each other and divide tasks;
- demonstrate their problem-solving skills and their ability to follow instructions and interpret information from various sources;
- have developed their awareness of their local environment and of how different elements function together in the ecosystem; developed a holistic view of the diversity of elements present in a microenvironment;
- by being able to make hands-on, real-world observations, begin to construct interest in and deeper understanding of their surroundings and changes taking place in them.

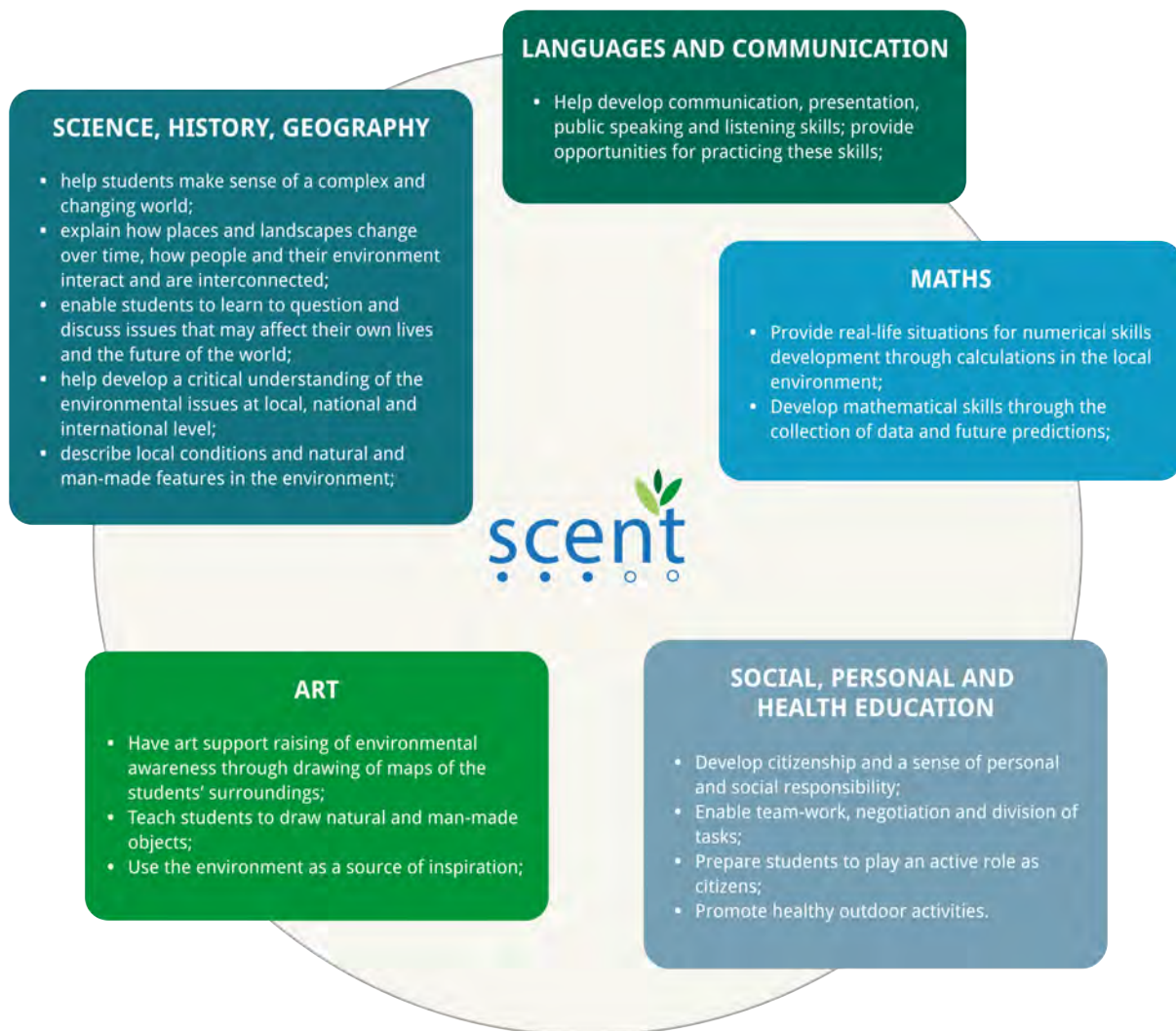
### After **lesson 3**, students will

- demonstrate their ability to communicate effectively (verbally and by using visuals), to present in front of the class and to explain how they have solved the Challenge;
- demonstrate their interpretative skills including the ability to analyse numerical data and think critically;
- be able to think abstractly and creatively about their surroundings and imagine change over time;
- develop a genuine interest in the environment and a sense of community responsibility by becoming aware of the importance of environmental monitoring.

*We're looking at the bigger EcoPicture!*

## Links to curriculum

The Scent programme is cross-curricular as it features strong links to science, history, geography, languages and communication, maths, art and social, personal and health education. The range of relevant curricular themes is briefly outlined below:



The examples above have direct links to existing curricula. In addition, there are numerous indirect links to other areas of the curricula.



## Material needed

### Lesson 1:

- Scent handouts
- Scent notebooks
- Pens

### Lesson 2:

- Scent handouts
- A1 sheets of paper
- Pens/markers/crayons in assorted colours
- Optional: Encyclopaedias/flora and fauna books, magnifying glasses

### Lesson 3:

- Scent handouts
- Blu tack/cello tape for displaying group maps
- Scent badges
- Scent diplomas
- Scent feedback forms

## Guidelines for assessment

The purpose of assessment in school is to provide information on student progress and to plan for further learning. Assessment is about teachers constructing a picture of a student's learning progress by using different ways to gather information about how and what the student learns. Teachers then use this information to highlight the student's current learning achievements and to provide him/her with appropriate support for future learning.

Teachers apply processes for assessment, recording and reporting that enable them to determine what the students know, can do, and understand. It is important for students themselves to receive meaningful feedback about their achievements, and teachers also need to report these achievements to parents in ways that make sense to them.

## Assessment methods

A variety of methods can be used for gathering information about how well students are learning across the curriculum. Commonly used methods include written tests, teacher observation, oral questioning and self-assessment. In the following, we outline these assessment methods for teachers to consider.

It is worth noting that the Scent programme and its assessment guidelines are not meant to be prescriptive. On the contrary, the programme provides structure but allows teachers flexibility in deciding on the approach they feel works best in their classroom. Each teacher can select the method or combination of methods they feel is fit for purpose and the most suitable for accurately assessing their student's learning.

SELF-ASSESSMENT	
<b>Description</b>	<p>Students look at their own work in a reflective way, identify aspects of it that are good and that could be improved.</p> <p>Self-assessment enables the student to take greater responsibility for his/her own learning, to recognise the next steps in his/her learning and to become more independent and motivated.</p>
<b>Resources needed</b>	<p><b>Time:</b> Students need time to reflect on their work.</p> <p><b>Questions:</b> The teacher is advised to provide students with questions on an evaluation sheet to prompt students to reflect on their learning.</p>
<b>Value of this method</b>	<p>Promotes the student's independence and motivation; provides information from the student's perspective.</p> <p>The results of the student's self-assessment can be shared with his/her parents at parent/teacher meetings.</p>
<b>Examples</b>	<p>Sample evaluation sheet questions:</p> <ol style="list-style-type: none"> <li>1. What did you learn? List three things.</li> <li>2. Were you a good team member? Why?</li> <li>3. What did you do well?</li> <li>4. What could you do better next time?</li> </ol>



## ORAL QUESTIONING

### Description

Oral questioning helps teachers assess knowledge and understanding and to guide students in their learning. Questions can be either open or closed.

Teachers can assess students' depth of learning by probing, i.e. encouraging them to elaborate on an answer. Probing can help the student clarify what they mean or provide more detail, or redirect the student's response in a more fruitful direction.

### Resources needed

**Questions:** The teacher needs to think of questions that encourage students to think deeper, that support higher order thinking.

**Time:** Lesson time needs to be devoted to asking different students questions and allowing for enough time for answers.

### Value of this method

Provides immediate feedback on a student's prior knowledge and understanding of what has been taught.

Students can also learn to become more skilled at asking good questions to help themselves to learn.

### Examples

1. In what ways can we care for the environment?
2. What is the Scent project about?
3. What is Scent Explore?
4. What is a delta?

## TEACHER OBSERVATION

### Description

Teacher observation is about the teacher observing students as they perform tasks and engage in activities. Observation includes listening, watching and keeping a record. By observing what students say, do or create, and how they do it, the teacher can gather important information about the students' learning.

### Resources needed

**Checklist:** The teacher prepares an observation checklist listing the skills to monitor and ticks boxes while observing the student.

**Time:** The teacher needs time during class to observe the students.

### Value of this method

Provides immediate and accurate feedback on a student's learning.

The teacher can adjust teaching and learning contexts according to what their observations tell them about the way in which students acquire different skills and knowledge.

Students can also learn to become more skilled at asking good questions to help themselves to learn.

### Examples

Observing students' behaviour while they work on the Scent challenge (do the students work well in the team, are they motivated, do they take initiative) and present the findings to the group (are they confident in front of an audience, are they able to express what they want to say, do they let others speak).

## WRITTEN TESTS (incl. multiple choice questions, short answer, essays)

### Description

Teachers develop written tests to monitor and assess children's learning either formatively (during the course of learning) or summatively (at the end of the learning process).

Test results assist in identifying the needs of individual students.

### Resources needed

**Time:** The teacher needs time to prepare questions (formulate appropriate questions for the right level) before the test and correct students' answers after the test.

### Value of this method

Written tests give students the chance to demonstrate their level of understanding and progress in learning. Tests also offer teachers valuable information that they can use to plan future work tailored to the students' needs.

### Examples

1. What is citizen science?
2. What are greenhouse gases?
3. How can people help the Scent scientists?

(Source: NCCA 2007)



## Safety aspects

It is important to ensure a safe environment for the students at all times. When planning outdoor activities, one needs to take potential risks and liabilities into account and expect and prepare for the unexpected.

Before heading outdoors to complete the Scent challenge, it is advisable to be informed about the weather conditions and to prepare the students for the task. Students should wear comfortable shoes and appropriate clothing. First aid supplies such as plasters and tweezers are useful to have at hand in case students cut themselves or get splinters.

It needs to be made clear to students that the school code of conduct applies to the outdoor environment as well, as it is an extension of the classroom. All school policies thus apply during the outdoor activities, and students are not allowed to leave the designated area without permission.

In addition, respect for the environment applies under all circumstances. Students must be careful not to harm or disturb wild animals, and environmentally sensitive behaviour is important in both urban and rural environments.

As the Scent activities are envisaged to be carried out in the immediate vicinity of the school, there is no need to consider safety aspects related to transportation or accommodation.

## Joining the programme

Would your school like to join the Scent programme? We would be delighted to hear from you and provide you with more information. You can get in touch with us by emailing us at [getinvolved@scent-project.eu](mailto:getinvolved@scent-project.eu)





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