

## **UNIT 10: IS FLUORIDATION OF WATER USEFUL FOR PREVENTING TOOTH DECAY?**

**Grade Level:** Primary 4 **Age:** 10-11  
**Time Required:** 2 periods (80 minutes)

### **Introduction:**

The object of this unit is to decide whether the government has the right to take away free choice. In this case, the unit considers the incorporation of fluoride in the water supply, rather than simply including it in toothpaste. It is used as a method for preventing tooth decay. Students are asked to gather information about tooth decay from a dental clinic. The dentist will be able to show the effects of various substances eaten by children and the action of fluoride in preventing tooth decay.

But is fluoridation always good? Students are given the possibility to explore this channel and determine whether it can also have a detrimental effect. With this in mind, students debate whether free choice is needed and whether the better policy is to educate the public to exercise their choice wisely.

### **Educational Objectives:**

This script includes the following learning objectives:

1. Investigating whether fluoridation of water is an acceptable approach to the avoidance and prevention of tooth decay
2. Justifying any position with respect to a person's freedom on the right to choose
3. Design a questionnaire for gathering information on fluoridation from a secondary source
4. Cooperate as a member of a group

5. Communicating through participation in group work and the preparation of resolution which could reflect the result of the activity
6. Explaining the causes of tooth decay and its prevention.

**Scientific Concepts:**

Fluoridation of water and toothpaste has been accepted way of preventing tooth decay.  
Fluoridation has side effects.  
Healthy teeth contribute to a person's well-being.

**Previous Knowledge Assumed:**

1. Dental Structure
2. Effect of fluoride on the dentine

## **Teaching/Learning Materials needed:**

### **Student's Guide**

#### ***Scenario***

Children are usually reminded to brush their teeth before going to bed. Brushing means cleaning the teeth with a toothbrush and using certain brands of toothpaste. There are toothpaste which are fluoridated, and there are those brands which do not contain fluorine compounds. In this way, children have a choice. But in some countries, it has been decided to fluoridate the water supply. Now there is no choice. But does this matter, if fluoridation prevents tooth decay?

#### ***Your Tasks***

1. Brainstorm possible causes of tooth decay.
2. As group work, develop a questionnaire/set of questions for interview. This will help you obtain answers from qualified dental practitioner on the use of fluoridation to prevent tooth decay. Some points to include in the questionnaire might be whether:
  - a) fluoridation helps to prevent tooth decay
  - a) there are side effects when fluoridation is used
  - b) it is possible to use too much fluoride on the teeth
  - c) adding fluoride to the water supply would be a better method to prevent tooth decay.
3. Visit the health centre and interview dental practitioner using the prepared questions.
4. Participate in a debate on whether it is a good Government policy to fluoridate the water supply to each household.
5. As a groupwork, prepare a resolution regarding your stand on the issue of fluoridation.

## Teacher's Guide

This activity relates to:

- a) the causes and prevention of tooth decay;
- b) the use of fluoridation;
- c) whether individuals should be given a choice on health matters.

### *Teaching Strategy*

1. The lesson can begin with a *brainstorming* session on causes and prevention of tooth decay. The students put forward their ideas and these are recorded on the blackboard.
2. It is expected that fluoridation of tooth paste will be one point brought up in the brainstorming session. If it is not, the teacher will need to raise this point at the end of the brainstorming session. The teacher can also pose the question as to whether the water supply is fluoridated. From the ensuing class discussion, the teacher should not try to answer the questions but guide the students to realise that they have many questions and there is a need to obtain answers. The teacher suggests a visit to the health centre and that visit should be arranged.
3. To prepare the students for asking questions at the health centre and to make sure they have a written record afterwards, the students, in groups, *prepare a questionnaire about the causes and ways of preventing of tooth decay.*
4. The teacher needs to check the questionnaires, both to be aware of student interests and also to ensure that important questions e.g. possible problems with fluoridation, are not overlooked. To avoid overlap, of questions to be asked the teacher will need to decide which group will ask a particular question at the health centre.

5. At the health centre, the *students ask their questions* and complete their questionnaires.

Students are asked to prepare an individual written reports, based on the debate, on the topic "Should fluoridation of water be mandatory?" This is handed to the teacher for marking.

6. Having obtained the necessary background information from the health centre, the students are now ready to tackle the issue of fluoridation and whether it is sufficiently important that it should be put in the water supply. The counter argument is that by putting fluoride in the water supply, an individual's right to choose is taken away. Thus *a debate can be set up on this issue and the students be made aware of the rights of the individual.*

Teacher discusses written reports and indicates the point to be highlighted in preparation for the writing of the class resolution on the issue.

7. The students prepare to take part in a debate on whether the Government has the right to take away free choice – fluoridation of water supply. Four speakers are chosen for the motion and another four speakers against the motion. The rest of the class act as the judging panel and the teacher is the non-voting chairman. The leading speaker for the motion begins the debate and is given 2 minutes to address the judging panel. The first speaker opposing the motion then speak trying to repudiate the points made by the speaker for the motion and then adding additional points. This is repeated by the other speakers in turn. At the end, the judging panel is allowed to ask any questions to seek clarity before the main speaker for the motion is allowed 1 minute to sum up and then a further 1 minute is given to the leader of the opposing team. The judging panel then vote to decide whether the motion is carried or not.

## Achieving the Objectives

Objective	This is achieved by
1. Investigating whether fluoridation of water is an acceptable approach to the avoidance and prevention tooth decay	seeking answers to questions when visiting the dental office.
2. Justifying any position with respect to a person's freedom on the right to choose	writing a report following the debate.
3. Designing a form gathering information about fluoridation.	creating a question and use it to obtain information from a secondary source.
4. Co-operate as a member of a group	taking part in joint investigations, developing the questionnaire and in ensuring that suitable answers are obtained at the dental office so that the group can follow their investigations when they return to school.
5. Communicating through participation in group work and debate	taking an active part in the group discussion and putting forward points during the debate.
6. Explaining the causes of tooth decay and its prevention.	discussions following the brainstorming session and completion of questionnaire.

**Assessment:**

*Formative Assessment Strategies*

- A. Not able to suggest whether fluoridation of the water supply is a good or bad idea.
- B. Able to recognize the advantages of fluoridation of the water supply, but also its limitations. Able to decide fluoridation of toothpaste was a more a suitable approach to combating teeth decay.
- C. Able to appreciate whether the fluoridation of the water supply was an infringement of peoples rights and whether more emphasis should be placed on the publicizing of fluoride toothpaste.

Able to give a Science Method grade (objective 3)

- A. Not able to develop a questionnaire. Relies on the work of others.
- B. Able to make a positive contribution to the development of a questionnaire on the causes of tooth decay and the effects of fluoridation.
- C. Able to guide others to create a questionnaire that show insight into the causes of tooth decay and the positive and negative aspects of fluoridation.

Able to give a Personal Skills grade (objective 4 and 5)

- A. Not able to work with others to resolve and communicate ideas.
- B. Able to work with others to make a decision and communicate concentrate ideas during a debate.

- C. Able to actively participate and convince others to support the idea put forward in a debate.

Able to give a Science Concept grade (objective 6)

- A. Not able to explain tooth decay, nor suggest how this can be prevented.
- B. Able to explain the causes of tooth decay and put forwards ways in which this can be prevented.
- C. Aware of the causes of tooth decay and why fluoridation is effective in preventing this. Understands the make up and function of different types of teeth.

*Summative Assessment Strategies*

Able to give a Science Method grade (objective 3)

- A. Not able to develop a questionnaire. Relies on the work of others.
- B. Able to develop a questionnaire that seeks information on the causes of tooth decay and of fluoridation.
- C. Questionnaire developed seeks information on the causes of tooth decay and the positive and negative aspects of fluoridation both for tooth paste and especially with respect to its addition to the water supply.