

Preventing Holes in Teeth-Are beliefs justified?



Assessment

Part A Assessment by application of Skills

Able to award a social values grade (objective 1)

The teacher listens to the students putting forward their points of view during class discussion

- x Student unable or unwilling to put forward useful points for the prevention of tooth decay.
- √ Student is able to put forward useful evaluation points and able to reach a decision on the effects of different toothpastes on tooth decay
- √√ Student is able to lead the discussion and put forward important evaluation points to be considered. The student is able to make an appropriate decision with justification, unaided.

Able to award a science method grade (objectives 2 and 3)

Teacher observes the students and notes their plan and observations

- x Student not able to contribute to the planning on the abrasiveness of toothpastes.
- √ The student is able to put forward a plan to determine the abrasiveness of toothpastes and is able to carry out the experiments. The student is able to make appropriate observations with the aid of the teacher.
- √√ The student is able to put forward a good experimental plan and undertake the experiments, leading to meaningful observations and analysis

Able to award a personal skills grade (objectives 4 and 5)

Teacher observes the students in their groups

- x Student is neither cooperative, leaving the work to others and not joining in the discussions in a meaningful way
- √ Student cooperates as a member of a team and is able to discuss the procedures to adopt and put forward useful suggestions on the suitability of different toothpastes
- √√ Student is able to cooperate and help other students to join in the work of the group. The student is able to put forward useful suggestions to the group and encourage others to put forward their ideas.

Able to award a science concept grade (objectives 6 and 7)

Teacher marks the students report

- x Student is unable to explain tooth decay in a meaningful way and to give meaning to the concept of hardness.
- √ Student can explain tooth decay and the meaning of hardness
- √√ Student fully understands tooth decay, ways to prevent this and can explain the importance of the hardness of the tooth enamel using scientific terminology

Part B Assessment by Lesson

Lesson 1

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Creates written report based on sources of information	Finds suitable sources of information	
		Extracts meaningful information for a presentation to other students	

Lesson 2

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Presentation	Presents the information obtained in a clear and practical manner.	
		Presents showing an understanding of the subject.	
		Uses precise and appropriate scientific terms and language.	
		Presents with clarity and confidence using an audible voice.	
2	Cooperates in a group in writing a report	Cooperates with others in the group in compiling the report.	
		Illustrates leadership skills – guiding the group by thinking creatively ensuring no overlap in the report from the presentations.	
		Shows tolerance with, and gives encouragement to, the group members.	

3	Shows understanding	Able to explain the causes of tooth decay and methods for their prevention	
4	Asking questions	Willing to ask questions during the presentation of others.	
		Able to recognise where the group did not have answers to questions	
		Cooperate with others in making a written record of the questions for which the group did not have answers.	

Lesson 3

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Answers questions	Provides correct written answers to questions given orally	
		Provides answers in sufficient detail especially when called upon to give an opinion or decision	
2	Writes a plan or report of an investigation	Puts forward an appropriate research/ scientific question and/or knows the purpose of the investigation/experiment	
		Creates an appropriate investigation or experimental plan to the level of detail required by the teacher	
		Puts forward an appropriate prediction/hypotheses	
		Develops an appropriate procedure (including apparatus/chemicals required and safety procedures required) and indicates variables to control	

Lesson 4

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Record experimental data collected	Makes and Records observations/data collected appropriately (in terms of numbers of observations deemed acceptable/accuracy recorded/errors given)	

2	Interpret or calculate from data collected and making conclusions	Interprets data collected in a justifiable manner including the use of appropriate graphs, tables and symbols	
		Creates a written report on the experiments and includes appropriate conclusions related to the research/scientific question	

Lesson 5

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Scientific or socio-scientific reasoning	Gives a justified socio-scientific decision to an issue or concern, correctly highlighting the scientific component	
		Records the decision of the group and presents to other groups	

Part C Assessment by teacher strategy

Assessment Tool based on the Teacher's Marking of Written Material

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Writes a plan or report of an investigation	Puts forward an appropriate investigation/experiment	
		Creates an appropriate investigation or experimental plan to the level of detail required by the teacher	
		Puts forward an appropriate prediction/hypotheses	
		Develops an appropriate procedure (including apparatus/chemicals required and safety procedures required) and indicates variables to control	
2	Record experimental data collected	Makes and Records observations/data collected appropriately (in terms of numbers of observations deemed acceptable/accuracy recorded/errors given)	

3	Interpret or calculate from data collected and making conclusions	Interprets data collected in a justifiable manner including the use of appropriate graphs, tables and symbols	
		Draws appropriate conclusions related to the research/scientific question. Creates a report	
4	Answers questions	Provides correct written answers to questions given orally or in written format	
		Provides answers in sufficient detail especially when called upon to give an opinion or decision	
5	Scientific or socio-scientific reasoning	Illustrates creative thinking/procedures in deciding whether beliefs are justified.	
		Gives a justified socio-scientific decision whether the beliefs about toothpaste ingredients are justified, correctly highlighting the scientific components.	

Student Assessment Tool based on the Teacher's Observations

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Functioning in the group during experimentation or discussion	Contributes to the group discussion during the experimental phases (planning the investigation/experiment, putting forward hypotheses/predictions, carrying out the experimentation, analyzing data, drawing conclusions, making justified decisions).	
		Cooperates with others in a group and fully participates in the work of the group.	
		Illustrates leadership skills – guiding the group by thinking creatively and helping those needing assistance (cognitive or psychomotor); summarising outcomes.	
		Shows tolerance with, and gives encouragement to, the group members.	

2	Performing the investigation or experiment	Understands the objectives of the investigation/experimental work and knows which tests and measurements to perform.	
		Performs the investigation/experiment according to the instructions/plan created.	
		Uses lab tools and the measurement equipment in a safe and appropriate manner.	
		Behaves in a safe manner with respect to him/herself and to others.	
		Maintains an orderly and clean work table.	

Student Assessment Tool based on the Teacher's Oral Questioning

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Questions to individuals in a Whole Class setting	Answers questions at an appropriate cognitive level using appropriate scientific language	
		Shows interest and a willingness to answer	
		Willing and able to challenge/support answers by others, as appropriate	
2	Questions to the group	Able to explain the work of the group and the actions undertaken by each member	
		Understands and can explain the science involved using appropriate language	
		Willing to support other members in the group in giving answers when required	
		Thinks in a creative manner, exhibits vision and can make justified decisions	
3	Questions to individuals in the group	Able to explain the work of the group and actions taken by each member	
		Understands the purpose of the work and shows knowledge and understanding of the subject using appropriate scientific language	
		Can exhibit non-verbal activity (demonstrate) in response to the teacher's questions, as appropriate	

