Waist Deep in Waste – Necessity or Irresponsibility?

Developers:

Institute: ICASE
Country: South Africa

Assessment

Part A Assessment based on Skills Acquired

Award of social value grade (objective1)

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 during the discussion

√ Student is able to put forward some useful discussion points and able to reach a decision with the help of the teacher

√√ Student is able to lead the discussion and put forward important points in the discussion. The student is able to reach an appropriate decision with justification, unaided

Award scientific method grade (objective 2, 3 and 4)

Teacher observes the students and notes their design and observations. Teachers marks their survey analysis

x Student not able to classify plastics, nor contribute to the design of experiments. Notable to analyse findings

√ The student is able to classify plastics, contribute ideas for testing gases and in carrying out the survey leading to analysis of the findings with the help of the teacher.

√√ The student is able to classify plastics and is able to put forward unique yet practical plans for testing gases out without the help of the teacher. The student can devises procedures for the survey and is able to analyse the findings in a meaningful way.

Award of a personal skill grade (objectives 5 and 6)

Teacher observes the students in their groups

x Student is not 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. Is able to put forward written work with the help of the teacher.

√√ 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 in written form and encourage others to agree with these ideas.

Award a science concept grade (objective 7)

Teacher marks the students report

x Student is unable to explain thermoplastic and thermosetting.

√ Student can explain thermoplastic and thermosetting and give examples.

√√ Student can not only explain the meaning of thermoplastic and thermosetting, giving examples, but can explain the influence these have on waste and its disposal.

Part B Assessment by Lesson

Lesson 1

	Dimension	**Criteria for evaluation The student:**	**Students' name in the group**			
1	Ideas on handling plastic waste	Puts forward appropriate ideas for hansling the plastic disposal problem.				
2	Designs a survey	Creates an appropriate survey to determine the avergae amount of plastic waste discarded				
		Puts forward an appropriate prediction/hypotheses				
		Develops an appropriate procedure for carryig out the survey.				
		Provides answers in sufficient detail especially when called upon to give an opinion or decision				

Lesson 2

	Dimension	**Criteria for evaluation The student:**	**Students' name in the group**			
1	Analyse outcomes	Analyse the outcomes of the survey in a justifiable manner				
		Draws appropriate conclusions related to the outcomes.				
2	Record experimental data collected	Makes a suitable record of the survey findings				

Lesson 3

	Dimension	Criteria for evaluation The student:	Students' name in the group			
1	Writes a plan or report of an investigation	Creates an appropriate experimental plan to suggest how the products of burning can be identified.				
		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	Records observations appropriately and				
3	Makes conclusion	Draws appropriate conclusions related to the prodcuts of burning the plastics.				
4	Answers questions	Distinguishes between thermoplastic and thermosetting plastics.				
		Provides answers in sufficient detail especially when called upon.				

Lesson 4

At the end of this lesson, students are expected to be able to :

a) put forward a justified decision on how best to deal with waste, especially plastic waste.

	Dimension	Criteria for evaluation The student:	Students' name in the group			
1	Scientific or socio-scientific reasoning	Illustrates creative thinking/procedures in solving the problem of how to deal with waste.				
		Gives a justified socio-scientific decision to an issue or concern, correctly highlighting the scientific component.				

Part C Assessment by Teacher Stategy

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

	Dimension	Criteria for evaluation The student:	Students' name in the group			
1	Devise a survey and procdures for carrying it out	can devise procedures for the survey on what plastic forms waste and is able to analyse the findings in a meaningful way.				
2	Answers questions in writing.	provides correct written answers to questions given on the meaning of thermoplastci and thermosettgni materials and be able to give examples. Explain the effects of the differnet ypes of plastics have on waste and its disposal. .				
3	Classify plastics and test gases given off on burning	able to classify plastics and is able to put forward unique yet practical plans for testing gases out				

Student Assessment Tool based on the Teacher's Oral Questioning

	Dimension	Criteria for evaluation The student:	Students' name in the group			
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				

Student Assessment Tool based on the Teacher's Observations

	Dimension	Criteria for evaluation The student:	Students' name in the group			
1	Functioning in the group during experimentation or discussion	Contributes to the group discussion during the inquiry phases (raising questions, planning investigation/experiment, putting forward hypotheses/predictions, 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	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.				
3	Scientific or socio-scientific reasoning	Illustrates creative thinking/procedures in solving problems during the discussion				
		Assists the group to arrive at a justified socio-scientific decision to an issue or concern, correctly highlighting the scientific component				
		Able to use precise and appropriate scientific terms and language.				
		Presents with clarity and confidence using an audible voice.				