



Are We Overusing Plastics?



Assessment

This guide to assessment strategies is put forward from different perspectives. In part A the assessment is based on the skill to be developed in the student. Part B is based on the assessment strategies to use in each lesson, whereas part C illustrates the assessment by the 3 different approaches which a teacher may use for formative assessment – observation, by oral communication, or by marking of written work. Summative assessment strategies are not shown, but these could relate to viva type oral communication and/or to the marking of written tests/examination questions.

Part A Assessment based on Skills Acquired

Award of social value grade

Teachers listens to the debate

- x Not able to contribute to the debate
- √ Participates in the debate and puts forward a point of view with justification
- √√ Not only participates in the debate and puts forward a point of view but is able to do this with persuasion and can offer counter-arguments to points made by others.

Award scientific method grade

The teacher marks the student record during the lesson before allowing the students to carry out additional experiments

- x Not able to suggest additional tests of any kind.
- √ Able to suggest additional tests but not able to suggest how they should be carried out without the help of the teachers.
- √√ Able to suggest additional tests which are suitable and appropriate and be able to suggest how to carry them out.

Award of a personal skill grade

Teacher observes the students during the group work

- x Does not cooperate with others during the group discussions and activities.
- √ Participates in group work meaningfully, in the discussions and in the recording of work in written form.

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√√ Not only participates in the group work and in the discussions and written work, but takes on a leadership role helping others to participate.

Award a science concept acquisition grade

Teacher marks the written work of students

x Not able to explain the manner of recycling plastics and non-biodegradability in a meaningful way

√ Able to explain recycling and the non biodegradability of plastics

√√ Able to fully understand and record in a meaningful way, different methods by which polymers are formed, the lack of bio-degradability of plastics and the manner in which plastics can be recycled.

Part B Assessment by Lesson

Lesson 1

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Create a list	Able to make an extensive list of plastics in daily use.	
2	Answers questions	Able to explain the meaning of the word plastics	
		Able to discuss the plastics used in daily life	
3	Draws tables.	Able to provide a suitable table for the list of plastic materials.	

Lesson 2

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Categorise plastics	Able to group plastic items made of the same material	
		Able to group different types of plastics	
2	Write a report	Able to write a report on the categorisation and the difficulties for reasons such as (a) mixture of plastics (b) plastic has specific properties.	

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Lesson 3

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Devises tests	Puts forward suggested tests to carry out on testing the properties of plastics	
		Indicates the procedures for carry out the tests in a safe manner.	
		Puts forward an appropriate prediction/hypotheses	
2	Carries out test and Records experimental data collected	Makes and Records appropriate observations. Draws appropriate conclusions.	

Lesson 4

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Answers questions	Explain thermoplastic and thermosetting plastics and how these are produced in industry	
		Explain the meaning of biodegradability and why this is considered important. How toxic are the products of biodegradability.	
2	Writes a report	Records understanding of plastics, polymerisation and the differences between thermoplastics and theromosetting plastics.	
3	Socio-scientific decision making	Decide, with justification, whether we are overusing plastics.	

Lesson 5

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
2	Writes a report	Records the processes undertaken in the plastics recycling factory and the variability related to cost, demand and other factors.	

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Part C Assessment based on 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 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	
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	
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	Draws charts/ diagrams/tables/ models/symbolic representations.	Able to provide graphical representation as required	
		Able to present graphical representations of a suitable size and in suitable detail	
		Able to provide full and appropriate headings for diagrams, figures, tables	

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6	Scientific or socio-scientific reasoning	Illustrates creative thinking/procedures in solving problems	
		Gives a justified socio-scientific decision to an issue or concern, correctly highlighting the scientific component	

Assessment Tool based on the Teacher Observations

	Dimension	Criteria for evaluation The student:	Mark/grade given (x,√,√√)
1	Functioning in the group during activities and discussions	Contributes to the group work during the listing of plastics materials used and the discussion on the use of plastics.	
		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.	

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