Assessment

Milk – Keep refrigerated

Assessment criteria

The assessment of this Task can be based on a number of student assessment tools. Note that formative assessment is more appropriate for practical activities and group work, to the extent that summative assessment might be redundant.

The following tables provide criteria for further assessing the students' work. Table 1 provides criteria for assessing the pre-experimental work, in particular the out-of-school preparation phases (Phase 1, and observations and data obtained before starting Phase 3), which deal with the various kinds of commercially obtainable milks and yoghurts, as well as with the making of statements or the formulation of epistemic questions by the students. Table 2 focuses on the execution of the practical work. Table 3 gives criteria for assessing the final in-class discussion (Phase 4). Finally, Table 4 assesses the attitudes of student toward this activity and science in general. Information about the latter assessment could derive from anecdotal evidence collected by the teacher, by informal questioning/interviewing of students, or by written questionnaire that is distributed to the students at the end of the activity. Students can be asked to add their comments for improving the activity. Needless to comment that the proposed student assessment tools are mere suggestions. Teachers can include their own criteria for assessment.

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Table 1 – Criteria for assessing pre-experimental work, making of statements, and/or student formulation of epistemic questions.

Pre-experimental work – general impression	The student has responded successfully	The student has responded in part	The student has done limited work	The student did not produce any work
Making of statements	The student has responded successfully	The student has responded in part	The student has done limited work	The student did not produce any work
Formulation of epistemic questions	The student has responded successfully	The student has responded in part	The student has done limited work	The student did not produce any work

Table 2 – Criteria for assessing execution of practical work [1]

Examination of the effect of temperature on milk's life	Excellent	Adequate	Poor
Preparation of yoghurt	Excellent	Adequate	Poor

[1] Kempa (1986) has considered that the following qualities should be taken into account in schemes for the assessment of practical abilities: (a) recognition and formulation of a problem (NOT APPLICABLE HERE); (b) design and planning of experimental procedures (NOT APPLICABLE); (c) setting-up and execution of experimental work (manipulation); (d) observational and measuring skills (including the recording of data and observations); (e) interpretation and evaluation of experimental data and observations.

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Table 3 – Criteria for assessing in-class discussion.

Examination of the effect of temperature on milk's life	Student participation was excellent	Student participation was adequate	Student participation was poor
Kinds of milk			
Kinds of yughurt	Student participation was excellent	Student participation was adequate	Student participation was poor
Overall assessment	Student participation was excellent	Student participation was adequate	Student participation was poor

Table 4– Criteria for assessing students' attitudes toward the performed activity and science in general.

Students' opinion about the milk activity	High	Average	Low
Students' opinion about the yoghurt activity	High	Average	Low
The activities have contributed to increased knowledge and understanding about milk and yoghurt	Yes a lot	Yes a little	No
The activity has contributed to increased knowledge and understanding of science	Yes a lot	Yes a little	No
Arrange in order of interest the phases of the activity*	Pre-experimental work	Execution of experiments	Final discussion and conclusions
Arrange in order of importance/usefulness the phases of the activity**	Pre-experimental work	Execution of experiments	Final discussion and conclusions
In comparison with traditional practical activities the activity was	Much better	About the same	Worse
Has the activity improved their image of science?	Yes, a lot	Yes, somehow	No

* From 1 (most interesting), to 3 (least interesting).

** From 1 (most useful/important), to 3 (least useful/important).

Bibliography

Kempa R. (1986). *Assessment in science* (Ch. 5). Cambridge: Cambridge University Press.

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