Popcorn - a fat free snack

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Alternative assessment

Alternative Assessment is the general term in use today for the process of finding out how well students have mastered the curriculum, or alternatively for how well they can meet certain criteria that represent competence in a particular subject. *Testing* is one way to do assessment. There are many others, including the use of student *portfolios,* or testing by evaluating student *performance*. Everything that you might take into account in assigning a student's grade is part of assessment. Written classroom tests may form only one part of this general process.

Traditional testing became very narrow in many schools in the 1980s, when grades were based almost entirely on results of completing multiple-choice items on classroom tests that were similar to *standardized tests*. Research has almost always shown that there is very little relationship between such test grades and any measure of students' ability to use science knowledge and skills in practical contexts from labwork to jobs. Traditional testing has been criticized as artificial and as emphasizing memory and routine calculations or forms of reasoning over the more complex skills that are actually used in doing science.

As a result, in science and many other subjects the goal of assessment has been redefined to require "*authentic assessment*", which means that what we test should be basically the same as what scientists or technologists actually do -- and obviously they do not spend their time taking multiple-choice tests! In science, if we followed this principle strictly, all assessment would be performance assessment. We would expect students to do research-like or engineering-like projects (inquiry or design) and we would evaluate their science learning based on their successful use of concepts and principles from the curriculum in their projects.

Assessment criteria

The suggest assessment is based on the teacher's observations and on the evaluation of the group report that was done by the students during the inquiry activity.

During the activity, the teacher observes the students and grades them according the rubrics that are included in the "Student evaluation tool based on the teacher's observations assessment tool". Writing a group report is one of the duties of the students concerning the inquiry activity. This report is assessed by the teacher according the "Student evaluation tool that assesses a report of a research experiment".

Student evaluation tool that assesses a report of a inquiry experiment

Name of experiment: _____ Date:_____
Names of students in the group:_____

The component	Dimensions	Criteria for the assessment	Assessment	Average
Observations (at the pre-research stage and during the research) 10%	Recording and organizing the observations	Record various observations (include qualitative and quantitative components)		
		Record precise and detailed observations		
		Distinguish between the observation and the interpretation (describe the observation and do not interpret)		
		Organize the observations in a logical manner (in a table based on the experiment's stages)		
The theoretical stages of the research 35%	Asking the questions	Ask a variety of questions (at least 5 questions)		
		Ask relevant questions (Appropriate to the findings from the pre-research phase)		
	The research question	Select a relevant research question for the pre-research phase		
		Select a research question that can be examined in the school's lab		
		Phrase the research question in a clear and relevant manner (based on the rules)		
		Ask a high level research question (if possible, a question that associates 2 variables)		
	The Hypothesis	Set a hypothesis that corresponds to the selected research question		
		Reason the hypothesis in a serious manner		
		Base the hypothesis on relevant scientific knowledge		
		Base the hypothesis on correct scientific knowledge		
		Phrase the hypothesis in a clear and relevant manner		
	Designing the experiment	Design the research that examines the hypothesis		
		Present the experimental phases in a detailed manner (including the control)		
		Present the experiment in a clear and logical manner		
		Submit a detailed list of the materials and the equipment that is appropriate for the planned research		
	Presenting the results	Present the results in a clear and scientific manner (by using table, chart, graph, etc.)		
		Interpret the observations and analyze the data		
	Drawing the conclusion	Draw conclusions that are based on the research's results		
		Draw conclusions that refer and that are appropriate to all the research's results		
		Explain and reason the conclusions while		

The post-research stage 30%		basing them on relevant and appropriate scientific knowledge		
		Relate the conclusions with the research question		
	Concluding group discussion	Critically examine the results (precision of the measurements, the experiment's limits, etc.)		
		Critically refer to the conclusions (the correlation between the conclusion and the hypothesis)		
		Following the experiment, phrase new hypothesis or raise new questions		
The experiment's report 5%	Written expression	Use a precise and proper scientific language throughout the report		
		Submit a readable, aesthetic, and organized report		

Student Evaluation Tool Based on the Teacher's Observations

Experiment's Name: _____
Date: _____

Dimension	Criteria for evaluation The student:	Students' name in the group			
Performing the experiments (at the pre-inquiry and inquiry phases) **25%**	Performs the experiment according to the instructions				
	Maintains an orderly and clean work table				
	Knows which tests and measurements to perform				
	Uses properly the lab tools and the measurement equipment				
	Average				
Functioning in the group **25%**	Contributes to the group discussion during the theoretical inquiry phases (raises questions and hypotheses, designs the experiment, and -draws conclusions)				
	Has patience for the group's members				
	Knows and understands the objectives of the inquiry's various phases (active observation)				
	Thinks in a creative manner and exhibits vision				
	Average				
Presenting the experiment - orally **50%**	Presents the activity in a clear and practical manner				
	Presents knowledge and understanding of the subject				
	Uses precise and proper scientific language				
	Average				