



PARSEL teaching-learning materials compiled by the consortium
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Cooperating Institutions and Universities within the PARSEL-Project:



Assessment for the Adaptation of the PARSEL Materials in Practice – selected by the PARSEL Group of Freie Universität Berlin

Criteria for Formative Assessment (Following the pattern developed by Jack Holbrook, ICASE)

If the intention is to reflect the effects of a PARSEL Module's adaptation into practice in a formative assessment approach, the PARSEL Group of the Free University of Berlin recommends the use of the assessment guidelines following the pattern developed by Jack Holbrook (ICASE, 2007). Holbrook emphasises that the measure introduced on the next two pages "can take place on any suitable scale, which may be numerical (1-3, 1-5, 1-10 etc.), or it may be more judgmental (achieved the desired learning effects, partially achieved the desired learning effects, did not achieve the desired learning effects). Each intended learning outcome can be measured separately. The assessment may or may not be formally recorded."

We merged two different assessment instruments (of three) developed by Holbrook together, adapted them and developed one instrument out of these two. The third assessment instrument developed by Holbrook only underwent editing by the PARSEL Group of Freie Universität Berlin. Therefore; there are two assessment instruments left; the first instrument (or assessment tool) to assess:

1. The students' reactions, answers, activities and performances **based on the Teacher's Oral Questioning and/or on the Teacher's Observations within the classroom;**

and the second instrument (or assessment tool) to assess:

2. The students' written records **based on the Teacher's Marking of Written Materials.**

The student assessment tool based on the Teacher's Oral Questioning and/or on the Teacher's Observations within the classroom (following patterns of Holbrook, 2007)

	Dimension	Criteria for Evaluation The student...	Date:			
			Student:			
			1	2	3	4
Q1	Questions to individuals in a whole class setting and/ or in settings of group-work	answers questions at an appropriate (cognitive) level				
		shows willingness to participate				
		tries to challenge/support the problem solving processes during the class/group discussion/s				
		is able to explain the work of the class/group				
		can explain the actions undertaken by each member				
		can exhibit (demonstrate) non-verbal activity				
		shows knowledge of the science related to the task				
		understands the science related to the task				
		thinks in a creative manner (exhibits vision)				
		offers appropriate scientific problem solving ideas				
		uses appropriate scientific language				
		can make justified decisions				
is willing to support other members in the class/group in giving answers or finding problem solving ideas						
O1	Functioning in the group during experimentation or discussion	<i>contributes to the group discussion during the inquiry phases (e.g. by raising questions, planning investigation/experiment, putting forward hypotheses/predictions, analyzing data, drawing conclusions, making justified decisions).</i>				
		<i>cooperates with others in a group and fully participates in the work of the group.</i>				
		<i>takes ownership for group work (e.g. by guiding the group, thinking creatively, helping those needing assistance, encouraging group members).</i>				
		<i>shows tolerance towards group members.</i>				
		<i>knows which tests or measurements to perform.</i>				
O2	Performing the investigation or experiment	<i>performs the investigation/experiment according to the instructions or plan created.</i>				
		<i>uses lab tools or the measurement equipment in a safe and appropriate manner.</i>				
O3	Presenting the investigation or experiment orally	<i>understands the objectives of the investigation/experimental work.</i>				
		<i>presents the activity in a clear and practical manner with appropriate justified decisions.</i>				
		<i>presents by illustrating knowledge and understanding of the subject.</i>				
		<i>presents with clarity and confidence using an audible voice.</i>				
		<i>uses appropriate scientific language.</i>				

The student assessment tool based on the Teacher's Marking of Written Materials (Holbrook, ICASE)

	Dimension	Criteria for Evaluation The student...	Date:			
			Student:			
W1	Writing 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				
W2	Recording experimental data collected	makes and records observations/data collected appropriately (in terms of numbers of observations deemed acceptable/accuracy recorded/errors given)				
W3	Interpreting or calculating from data collected and drawing 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				
W4	Answering 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				
W5	Drawing charts/ diagrams/tables/ models/symbolic representations	is able to provide graphical representation as required				
		is able to present graphical representations of a suitable size and in suitable detail				
		is able to provide full and appropriate headings for diagrams, figures, tables				
W6	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				