

Appendix C - Rubric for Inquiry-based Chem lab report (level II – partial/complete)¹

Experiment name: _____

Experiment date: _____ Lab report assessment date: _____

Students' name: _____

Section 1: Getting familiar with a phenomenon (10 points) – choose one dimension

Dimension	Criteria	Assessment	Score
1.1 - Pre-experiment / video	1.1.1 - Making detailed observations		
	1.1.2 - Describe observation without interpretation		
	1.1.3 - Detailed and reasoned answers to questions		
1.2 - Scientific article	1.2.1 - Answer questions in a comprehensive and reasoned way		
	1.2.2 - Explanations are given for different levels of understanding using accurate and correct scientific language		
	1.2.3 - Ask questions whose answers do not appear in the article		
	1.2.4 - Ask questions which include at least two levels of understanding (macroscopic, microscopic, symbol, and process)		
1.3 - Internet research	1.3.1 - Finding and selecting relevant databases		
	1.3.2 - List the sources of information clearly		
	1.3.3 - Finding relevant information for experiment		
	1.3.4 - Answer questions in a comprehensive and reasoned way		
1.4 - Educational tour	1.4.1 - Answer correctly the preparation questions for the tour		
	1.4.2 - Perform tasks correctly while on tour		
	1.4.3 - Fully perform the recap tasks after the tour		

Section 2: Experiment Planning (40 points):

Dimension	Max	Criteria	Assessment	Score
2.1 - Asking research questions	5 pts	2.1.1 - Asking a variety of relevant questions		
2.2 - Formulating research question	10 pts	2.2.1 - Formulating research question showing the relationship between 2 variables		
		2.2.2 - Clear & concise research question		
2.3 - Formulate a Hypothesis	10 pts	2.3.1 - Formulating hypothesis related to research question		
		2.3.2 - Basing the hypothesis on scientific and relevant information (including microscopic and chemical equations)		
2.4 - Experiment		2.4.1 - Plan experiment based on research question & checks the hypothesis		

¹ <https://edu.gov.il/mazhap/chemistry/research-laboratory/Pages/research-evaluation.aspx>
Israeli Ministry of Education, Pedagogical Administration, Science Department A, Chemistry Education Supervision. Last update: August 2018

plan	15 pts				
		2.4.2 - State the type of experiment control and explain why			
		2.4.3 - State the fixed variables in the experiment			
		2.4.4 - Detailed & logical outline of the experiment process steps (including measuring the dependent variable)			
		2.4.5 - Plan multiple experiment sets which allow reliable analysis of results			
		2.4.6 - Provide detailed list of materials (stating volumes, weights, concentrations, etc.) and tools needed			

Section 3: Experiment Execution (50 points):

Dimension	Max	Criteria	Assessment	Score
3.1 - Experiment Handling	5 pts	3.1.1 - Using lab tools safely		
		3.1.2 - Work in an organized and clean fashion		
3.2 - Results display and analysis	15 pts	3.2.1 - Clearly organize and display results in a table format		
		3.2.2 - Process and display results using a graph (Excel)		
		3.2.3 - Describe the trends revealed		
		3.2.4 - Explain the results based on relevant and scientific information (including microscopic and chemical equations)		
3.3 - Draw conclusions	10 pts	3.3.1 - Draw conclusions that fit the experiment results		
		3.3.2 - Explain whether conclusions support the hypothesis		
3.4 - Summarized discussion	10 pts	3.4.1 - Critically analyze the results (refer to results accuracy and experiment limitation)		
		3.4.2 - Critically consider the validity of the conclusions		
		3.4.3 - Based on the experiment results, formulate 3 new research questions		
3.5 - Overall lab report	10 pts	3.5.1 - Using concise and scientific language		
		3.5.2 - Writing clearly in standard language		
		3.5.3 - Submit complete, readable, organized, and aesthetic report		

Experiment's summarized assessment:

Section 1	Section 2	Section 3	Overall score	Teacher's signature

Comments:
