

Reflecting on Inquiry Based Learning in Science Education

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This reflection-tool is a simplified version of a reflection tool (Borda Carulla et al 2012) developed within the EU-FP7-Project Fibonacci (www.fibonacci-project.eu)

The Self-Reflection-Tool was designed to provide teachers with the means to enhance inquiry in the science classroom, mainly through observation of and reflection on classroom practises. It helps teachers to get a better understanding of what is meant by teaching and learning through scientific inquiry, by providing the teachers with the means to reflect on their own teaching.

The tool was no designed to score teachers on their teaching nor does it convey all positive features of science teaching practise, only those specific to an inquiry-based pedagogy.

How to use the tool:

Important indicators of Inquiry Learning are expressed as questions, which teachers can ask themselves about a sequence of science activities which were intended to enable pupils to learn through inquiry. An important reason for undertaking self-evaluation is that it raises awareness of relevant aspects of pupils' work that may otherwise go unnoticed and not given the attention they deserve.

Within the AMGENTEACH MOOC on Inquiry Learning we use the tool to reflect on the Inquiry Learning Situation at the beginning of the MOOC (activity about spoiled jam). Pls answer the following questions for yourself after you took part in the activity with the spoiled jam.

1: Questions on “Carrying out the investigation”:

Item	Exampels of good practice in the classroom (P = pupils)	Yes/No	Notes
Did you work on a question which you identified as important, even though introduced to you?	Indicated by being able to explain in own words what they were trying to do or find out.		
Did you make predictions based on your ideas?	Ps could give a reason for what they predict, even if it was inaccurate, showing that it was not just a guess.		
Did you take part in planning the investigation?	Ps suggested in general terms what to do to solve a problem or answer a question even if they needed help with details.		
Did you include ‘fair testing’ in you planning if appropriate?	Ps suggested what things to change, what to keep the same for a fair test.		
Did you carry out an investigation on your own?	Ps were actively involved in collecting information (either from real objects or from secondary sources such as books, posters, websites).		
Did you gather data using methods and sources appropriate to the inquiry question?	Ps were making observations, measurements, using appropriate equipment, or gathering evidence in other ways (including secondary sources) that were relevant to the question or problem.		
Did the data gathered enable you to test your predictions?	The nature of the data collected by observations, measurement, or from secondary sources enabled them to test their predictions and answer their inquiry questions.		
Did you propose explanations for your results?	In a group or whole class discussion, Ps gave possible reasons for what they found even if it did not answer the question being investigated.		

2: Questions on "Recording the investigation":

Item	Exampels of good practice in the classroom (P = pupils)	Yes/No	Notes
Did you make some record of what you did and found?	Ps made some collective or individual record of what they did in the form of a drawing or writing or artefact as appropriate to the age group.		
Did you include in your record a clear statement of the inquiry question or problem?	Any written group or individual records includes a title or statement that indicates the inquiry question or problem.		
Did your records indicate what data were collected and how they were collected?	Any records, either collective or individual, indicate in words or drawings what was observed or measured and how this was done.		
Did you record observations and data collected in a systematic way?	Any record, either collective or individual, presents data in a table or organized list or show results in the form of a diagram.		
Did you state a conclusions in your record?	Any records, either collective or individual, include a statement of what was concluded from the investigation, that is, not just the results but what they mean in more general terms.		

3: Questions on "Supporting the investigation":

Item	Exampels of good practice in the classroom (P = pupils)	Yes/No	Notes
Did the activity encourage you to ask questions?	Teacher asks, for instance, 'What would you like to know about...?' Or provided a 'question box' or board where Ps could post their questions		
Did the activity help you to formulate productive (investigable) questions?	This might be through discussing the kinds of questions that can lead to investigation and which include an indication of what to do and what to look for in order to answer it.		
Were you asked to make predictions?	At some stage of discussing an investigation teacher asks Ps 'What do you think will happen if ... or when...? Why do you think that?'		
Were you involved in planning investigations?	Perhaps teacher provides a planning framework, or discusses with Ps the possible steps in the investigation, asking for their ideas in relation to parts of the plan so that they regard it as their own and not planned entirely by the teacher.		
Did the activity support you to keep notes and record results systematically?	This might be through showing Ps how to organize data in a table or suggesting a list of headings or a checklist of items to be included in their report.		

Literature:

Borda-Carulla, S., & Harmen, W. (2012). Tools for Enhancing Inquiry in Science Education. Available under www.fibnacci-project.eu