

ASSESSMENT – TEACHER' S GUIDE TO USE

This document summarizes the basic principles of the PLATON methodology assessment in the classroom. Below are the pedagogical bases of the assessment and the tools that have been specifically designed within the framework of the PLATON project. All the materials about **PLATON's assessment toolkit** are available [here](#).

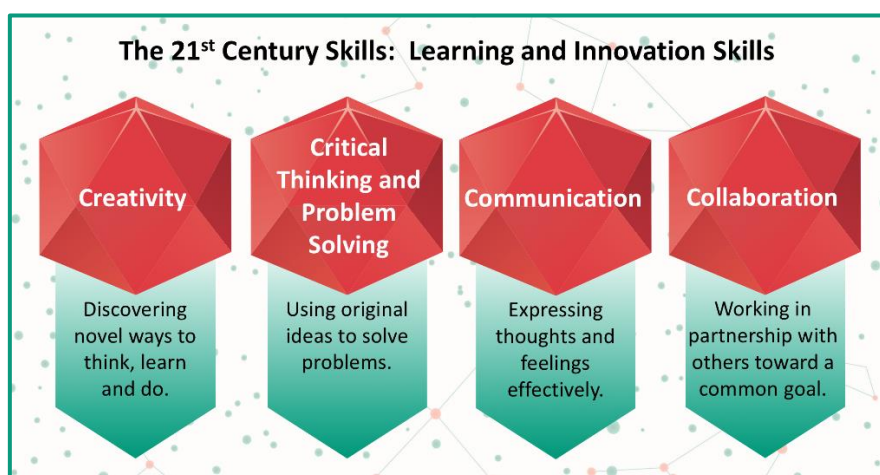
Deep-Science-Learning assessment of PLATON

Deep Learning is a new way of understanding education so that all data generated in a learning context is analysed to obtain valuable information. **PLATON's assessment toolkit** will allow you to collect evidence and data from each student and then process it to obtain a real assessment not only of the student's performance but also of the development of important skills and competences.

When considering this type of assessment, it is advisable to identify in each activity and in each phase of the inquiry cycle, what evidence of the student's performance will allow you to perform the assessment. Therefore, throughout this guide, you will find emphasis in the recording of assessment evidence in order to process all the data in the **final rubric** and obtain a final assessment of the student.

Development of the 21st century skills

The 21st century skills are the skills students need to succeed in the world of work, life and society.



In order for teachers to be able to gather evidence of how students evolve in the development of these skills throughout the inquiry cycle, PLATON project has defined an assessment tool that allows individual student assessment through a checklist.

This [template](#) can serve as a mid-term assessment tool. More indicators or observable behaviours the student demonstrates for each skill will mean a better score in the final rubric (Teacher should fill this template).

Assessment in Inquiry based Learning

Educators can use various ways to collect assessment evidences about student's learning, including a variety of observations, conversations and products such as: formal and informal observations, discussions, learning conversations, questioning, conferences, demonstrations, performances, projects, portfolios, peer and self-assessments or self-reflections.

PLATON		Assessment of the 21st Century Skills	
		Gathering evidences	
Name of the student: <input type="text"/>		Group: <input type="text"/>	
Skill 1: Creativity <input type="checkbox"/> Be open to new points of view and things that are unknown. <input type="checkbox"/> Ask original questions and propose innovative ideas. <input type="checkbox"/> Implement innovative ideas for data collection and be open to new learning experiences. <input type="checkbox"/> Be ingenious in interpreting conclusions and theories and be open to new learning. <input type="checkbox"/> Be ingenious and open when it comes to connecting conclusions with everyday life.		Skill 2: Critical Thinking and Problem Solving <input type="checkbox"/> Be critical of the information presented and reason when relating experiences. <input type="checkbox"/> To question the why of things, to analyze and value all ideas and to propose new ones. <input type="checkbox"/> Be accurate, rigorous and methodical in collecting data and drawing conclusions. <input type="checkbox"/> Interpret information and draw conclusions based on the best analysis. <input type="checkbox"/> To reflect and analyze on the research processes, the conclusions reached and the relationship with...	
Skill 3: Communication <input type="checkbox"/> Express and argue previous views and experiences. <input type="checkbox"/> Formulate hypotheses, argue and reason the different points of view. <input type="checkbox"/> Disseminate rigorously the research results and data collection methods used. <input type="checkbox"/> Express the interpretation of the conclusions and listen to the interpretations of others. <input type="checkbox"/> To show innovative ways of communicating research results and actively participating in discussions.		Skill 4: Collaboration <input type="checkbox"/> Be open to sharing opinions and experiences. <input type="checkbox"/> Propose collaborative test systems accepting the contribution of others. <input type="checkbox"/> Collaborate in obtaining data with other members and jointly contribute to the extraction of conclusions. <input type="checkbox"/> Contribute to the correct interpretation of results and the definition of new theories. <input type="checkbox"/> Contribute to the group in the process of analysis and reflection of the research process.	

By looking at evidence and seeing how students are learning and progressing, educators can adjust their instruction accordingly and provide specific feedback to help students achieve greater success in their learning.

The assessment process in Inquiry based learning is very important because it allows of the deepening of students' understanding and encourages student's involvement in the learning process.

KEY CONSIDERATIONS FOR ASSESSING INQUIRY

Assessment in inquiry can be used for several different purposes such as:

- To retrieve valuable information about the instruction process, allowing for a better guidance of next steps, and helping students to monitor their progress towards achieving their learning goals.
- To give and receive specific and timely descriptive feedback about the student learning to raise personal awareness about the progress and the opportunity of self-led improvement.
- To allow students to develop skills of peer and self-assessment.

Planning the assessment

Educators should plan the assessment prior to beginning an inquiry activity/lesson. To further guide the planning of the activity and its assessment, the following should be considered:

- Decide how to monitor and assess students' progress on an ongoing basis.
- Plan for monitoring and assessing the expected learning outcomes from the curriculum throughout the inquiry process.
- Plan for co-constructing success criteria with students.
- Plan self-assessment and peer feedback.
- Plan for individual work as well as small group collaboration opportunities.

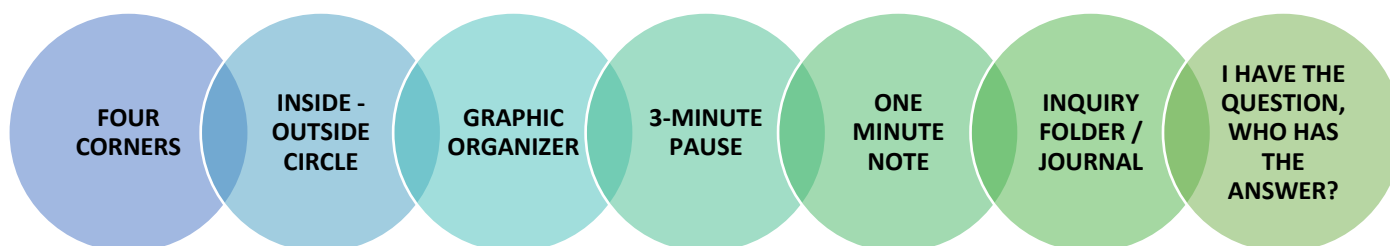
A [template](#) has been designed that can help the teacher plan the assessment (Teacher should fill this template).

The template is a grid with the following sections:

- Curriculum connections
- Big Ideas of Sciences
- Inquiry Question
- What students need to learn:
- What students need to be able to do:
- Prior knowledge activations:
- Instructional activities:
- Tools for assessment:
- Final assessment tool:

Tools for assessment

The **formative assessment** activities can help us to know the level of understanding of the student body at different stages of the inquiry cycle. Here are some examples of **face to face assessment activities**.



In addition, some **free on-line tools** allow us to assess students' performance in PLATON-style activities. These tools allow to record data and thus obtain evidence of student learning.



Student Inquiry Organizer

Name: _____ Group: _____

My question is: _____

What I already know about this topic: _____

How I plan to find out more about this: _____

What I have learned: _____

Answer/solutions to my question: _____

To make the **final assessment**, an example is proposed as a **report activity** in which the student must specify all the steps, decisions taken, and conclusions reached in the inquiry process. It is a good way to know the students' level of understanding (Students should fill this template).

Finally, one way to assess how the inquiry process and the development of specific skills has been carried out is through an **integrated assessment tool** that allows the teacher to record student achievements and note down the observations of the process as well as to record the process of justification and decision making by students in each phase. The **template** and the **video tutorial** about how to use it, are provided to support this type of integrated assessment.

ASSESSING STUDENTS' PROGRESS TEMPLATE							
	Proficiency levels				Grade	Observations	Weighting of grades
	1	2	3	4			
UNDERSTANDING OF THE INQUIRY CYCLE:							
11. Setting the scene	He/she does not pay attention to what he/she says and does not share his/her views on the subject.	Gives attention to others say but he/she does not share his/her views and ideas with others.	Gives attention to others say and refers to his/her opinions.	Gives full attention to others say taking time to understand, asking questions and sharing his/her opinions.	1,00		10%
12. Looking back	He/she does not pay attention to others say and does not refer to previous knowledge.	Gives attention to others say but does not refer to previous knowledge.	Gives attention to others say and refers to previous knowledge.	Gives full attention to others say, talks to others to convey information effectively and refers to previous knowledge.	2,00		10%
13. Making predictions and asking questions	Has difficulty making predictions and questions, identifying variables of the research problem.	Makes predictions and questions but has difficulty referring to previous knowledge and identifying variables of the research problem.	Makes predictions and questions, refers to previous knowledge and identifies variables of the problem.	Uses logic and reasoning to make predictions and questions, refers to previous knowledge and identifies variables of the problem.	3,00		10%
14. Setting up a research or experiment	Has difficulty understanding the research problem, designing and developing an implementation plan to solve the problem.	Understands the research problem but has difficulty to design and develop an implementation plan to solve the problem.	Understands the problem, develops an implementation plan to solve the problem but does not identify the strengths/weaknesses of the investigation plan.	Understands the problem, develops an implementation plan to solve the problem and uses logic and reasoning to identify the strengths/weaknesses of the investigation plan.	4,00		10%
15. Experimenting and gathering data	Has difficulty performing experimentation and does not use scientific rules to data collection and interpretation.	Performs experimentation but does not use correctly scientific rules to data collection and interpretation.	Uses scientific rules to perform experimentation and data interpretation, but does not assess the validity and does not recognize possible errors.	Understands the problem, develops an implementation plan to solve the problem and uses logic and reasoning to identify the strengths/weaknesses of the investigation plan.	2,00		10%
16. Working with data and drawing conclusion	Does not take into account the proposals of others and conclusions are not based on solid arguments.	Takes into account the proposals of others in his/her conclusions but does not assess the results to obtain conclusions and does not base on solid arguments.	Takes into account the proposals of others and communicates conclusions based on solid arguments but does not assess the results to obtain the conclusions.	Assesses the result derived in order to draw correct conclusions, takes into account the proposals by others and communicates conclusions based on solid arguments.	3,00		10%
17. Communicating and reviewing of findings	Has difficulty communicating the results derived and preparing presentations to show all the research process.	Communicates the results derived using solid arguments but has difficulty preparing successful presentations to show all the research process.	Communicates the results derived using solid arguments and prepares successful presentations to show all the research process.	Communicates the results derived using scientific terms properly and scientifically valid arguments and prepares successful presentations including the most relevant information.	2,00		10%

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DEVELOPMENT OF 21ST CENTURY SKILLS:																											
Skill 1: Creativity	Is not very open to new points of view, has difficulty proposing and implementing innovative ideas and is not very rigorous in interpreting conclusions and theories.	Is open to new points of view and new learning experiences, asks original questions and interprets correctly conclusions and theories but has difficulty proposing and implementing innovative ideas and is not very rigorous in interpreting conclusions and theories.	Is open to new points of view and new learning experiences, asks original questions and interprets correctly conclusions and theories but has difficulty proposing and implementing innovative ideas and is not very rigorous in interpreting conclusions and theories.	Is open to new points of view and new learning experiences, asks original questions, proposes and implements innovative ideas and is rigorous in interpreting conclusions and theories.	2,00		6%																				
Skill 2: Critical Thinking and Problem Solving	Has difficulty proposing and analyzing ideas and is not rigorous and methodical in collecting data and drawing conclusions.	Proposes ideas but is not enough critical of the information and has difficulty collecting data and drawing conclusions.	Proposes ideas, analyzes and values all the data and information but is not enough rigorous and methodical in collecting data and drawing conclusions.	Proposes ideas, analyzes and values all the data and information, gives logical reasons, questions the why of things and is rigorous and methodical in collecting data and drawing conclusions.	3,00		6%																				
Skill 3: Communication	Has difficulty formulating hypotheses and communicating or disseminating the research results and data collection methods used.	Communicates the research results but has difficulty formulating hypotheses and using innovative dissemination tools.	Formulates hypotheses, argues and reasons different points of view, disseminates rigorously the research results but has difficulty using innovative dissemination tools.	Formulates hypotheses, argues and reasons different points of view, disseminates rigorously and through innovative ways the research results and data collection methods used.	4,00		6%																				
Skill 4: Collaboration	Has problems working in groups and making important contributions at different stages of the research process.	Is open to work in groups and share opinions, but does not contribute to the interpretation of results, the extraction of conclusions or the reflection about the research process.	Is open to work in groups and share opinions, collaborates in obtaining data with other members but does not contribute enough in the extraction of conclusions or in the reflection about the research process.	Collaborates in obtaining data with other members and contributes to the group in the interpretation of results, the extraction of conclusions and the reflection about the research process.	4,00		6%																				
INTERDISCIPLINARY VISION OF THE BIG IDEAS OF SCIENCE:																											
Connection between big ideas of science	Has difficulty connecting previous knowledge and identifying other areas of knowledge related to the research problem.	Connects previous knowledge but does not know how the research topic relates to other areas of science.	Knows how to relate the research topic to previous knowledge and other areas of science, but does not explicitly argue the relationship between the big ideas of science.	Knows how to relate the research topic to previous knowledge and other areas of science and argues correctly the relationship between the big ideas of science.	3,00		6%																				
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Feedback: <i>Great work, but you can do a lot better.</i> Skills to be improved: <i>To improve, you can be more active in the discussion by asking questions to other colleagues.</i> Inquiry skill to be improved: <i>To improve you have to be more rigorous in data collection.</i> Big ideas of science to rework: <i>Your noble concepts well to other areas of science.</i>																											

Using to this template, teachers can assess their students according to each component automatically obtaining the students' final assessment. In addition, the teacher can personalize the feedback for students, indicating in which inquiry component or skill he/she should improve (Teacher should fill this template).

Final assessment: Grade: _____

Implementation of the inquiry cycle	4,25
Development of skills	1,95
Interdisciplinary vision	0,45
Final	6,65

Feedback: *Great work, but you can do a lot better.*

Skills to be improved: *To improve, you can be more active in the discussion by asking questions to other colleagues.*

Inquiry skill to be improved: *To improve you have to be more rigorous in data collection.*

Big ideas of science to rework: *Your noble concepts well to other areas of science.*