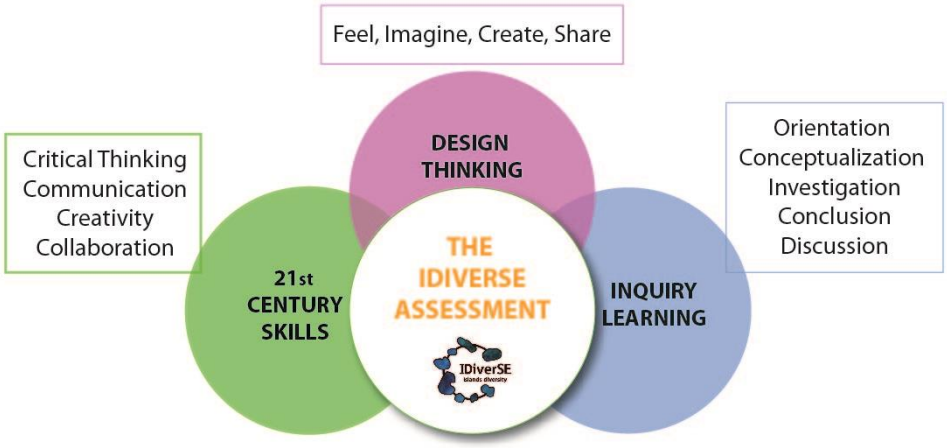
IDiverSE Assessment Protocol

Introduction

IDiverSE assessment focuses on assessing student learning in three fundamental areas: The **Design thinking method**, the **development of 21st century skills** and the **Inquiry learning process**. The methodological approach of IDiverSE seeks a global development of the student through the rigorous application of the scientific method, the resolution of real problems which leads to the development of fundamental skills and active collaboration with colleagues, students from other islands and social stakeholders in their environment.



The aim of the IDiverSE assessment is not only to measure a certain level of development or mastery in these areas, but also to guide students on how to improve their learning, providing them with the necessary tools and regular indications so that they can advance in their learning process. This formative assessment approach of IDiverSE seeks to give a constant feedback to students so that they are aware of their learning, to help them to be strategic and to direct their motivation towards the learning objectives.

Within this competence-based assessment approach, it must be borne in mind that skills are not observable by themselves; therefore, they must be inferred through specific student actions. In this sense, IDiverSE provides the teacher with assessment criteria and tools to collect observable evidence from students throughout the process and integrate it into the overall assessment approach. In addition, it provides analytical and technological tools that automatically collect evidence of student performance. Thanks to this kind of analytical tools, students can review their progress and teachers can adapt their methodologies according to students' needs.

In the **IDiverSE Assessment** there are three different steps:

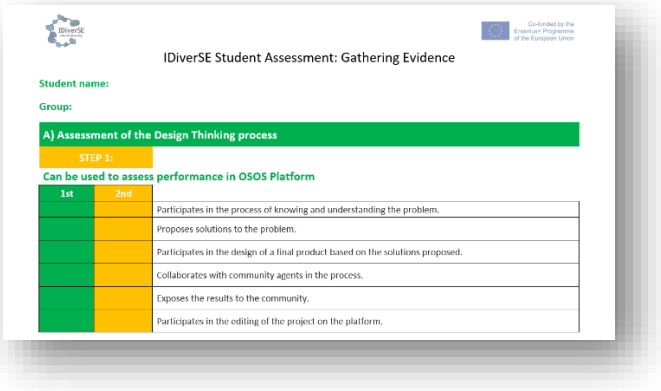
This protocol explains the assessment of each one of the IDiverSE areas and its integration in the **Global Assessment Tool**.

1. Gathering Evidences

The most important part of assessing students is observing their behavior in the classroom. For this, the IDiverSE assessment toolkit includes a simple checklist that teachers can use to note what the students needs to develop, improve or maintain throughout the learning experiences.

The checklist can be found here.

The IDiverSE student assessment checklist contains items that are important in the framework of the methodology used in the IDiverSE activities. Using it, teachers can gather evidence from students in 2 different moments (or more if necessary) so as to be able to provide them with a regular feedback. With this feedback, students can become aware of their progress and focus on further developing their learning and their skills. On the other hand, this tool can be useful for the teacher practice as it may provide the teacher with an indication of possible necessary alterations to their teaching strategies to promote a better progress for their students.



IDiverSE Student Assessment: Gathering Evidence

Student name:

Group:

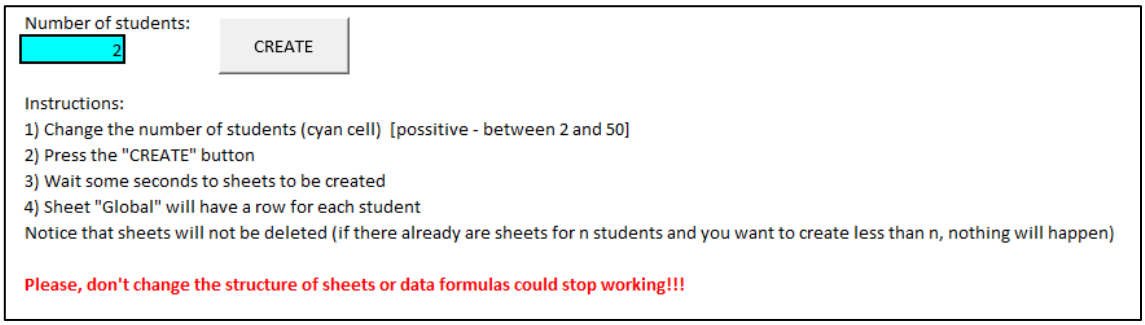
A) Assessment of the Design Thinking process		
STEP 1:		
Can be used to assess performance in OSOS Platform		
1st	2nd	
		Participates in the process of knowing and understanding the problem.
		Proposes solutions to the problem.
		Participates in the design of a final product based on the solutions proposed.
		Collaborates with community agents in the process.
		Exposes the results to the community.
		Participates in the editing of the project on the platform.

The evidence gathered using this checklist, teachers can then proceed with the assessment of students using the Global Assessment Tool which integrates the evidence collected with the checklist and the assessment rubric as will be explained below.

1. Using the Global Assessment Tool

The tool that has been designed to help IDiverSE teachers carry out the assessment of the student's activity is the **Global Assessment Tool**.

The first action when a teacher uses the Global Assessment tool is to identify how many students will be assessed, or, alternatively, if the teacher will assess groups instead of individual students, how many groups will be assessed. If the teacher has 20 students, he/she will write “20” in the blue cell of the “config” sheet. If the teacher wants to do the assessment by workgroups and he/she has five groups, he/she will write “5” in the blue cell of the “config” sheet. After that, by clicking in the “create” button, the tool will automatically generate one sheet per student/workgroup in the spreadsheet, and in the “global” sheet this number of student/workgroup will be aggregated for the final global assessment.



Number of students: 2 CREATE

Instructions:
1) Change the number of students (cyan cell) [possitive - between 2 and 50]
2) Press the "CREATE" button
3) Wait some seconds to sheets to be created
4) Sheet "Global" will have a row for each student
Notice that sheets will not be deleted (if there already are sheets for n students and you want to create less than n, nothing will happen)

Please, don't change the structure of sheets or data formulas could stop working!!!

Final Assessment of the IDiverSE Learning Process

STEP 3: Global Assessment

	Design thinking				21st Century Skills				Inquiry						
	40%				40%				20%						
N Student	FEEL	IMAGINE	CREATE	SHARE	S1: Creativity	S2: Critical Thinking	S3: Communica-tion	S4: Collaboration	1: Orientation	2: Conceptuali-sation	3: Investigation	4: Conclusion	5: Discussion	final grade (out of 10)	Comments
student 1	3,50	2,50	3,50	2,00	2,00	2,50	3,50	3,50	2,50	3,00	3,50	3,00	2,50	7,20	
student 2	3,00	2,50	3,50	1,50	2,50	2,00	3,50	3,00	2,50	3,50	3,50	3,50	3,00	6,98	
student 3	3,50	2,00	3,00	1,50	2,50	2,00	3,00	3,50	2,00	3,00	3,50	3,00	2,00	6,60	
Average	**3,33**	**2,33**	**3,33**	**1,67**	**2,33**	**2,17**	**3,33**	**3,33**	**2,33**	**3,17**	**3,50**	**3,17**	**2,50**	**6,93**	

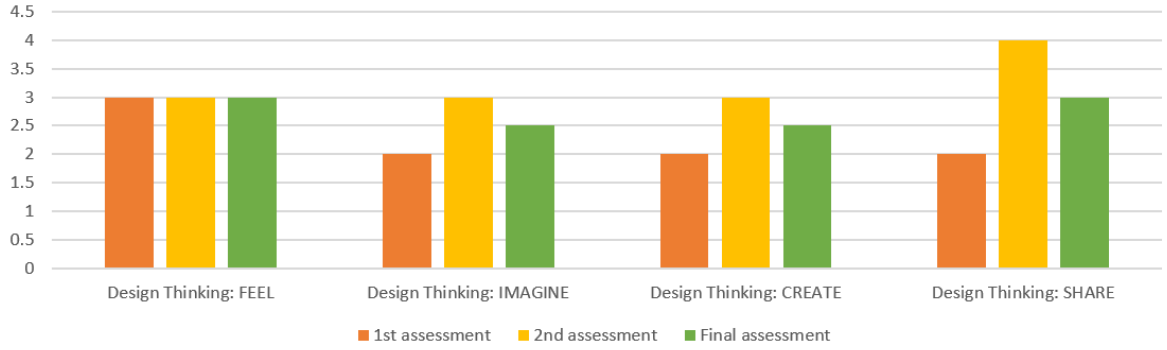
After using the checklist, the teacher can relate the evidence collected with the proficiency levels of the rubric to make the assessment in the second step. The assessment rubric is based on the different assessment components and on four different levels of proficiency.

STEP 2: Assessment Rubric

	Level 1	Level 2	Level 3	Level 4	1st assessment	2nd assessment	Final assessment
Design Thinking: FEEL	Does not clearly understand the problem and has difficulty in identifying the factors that influence the problem.	Understands the problem but has difficulty identifying the factors that influence the problem.	Clearly understands the problem, and understands which are the factors that originate this problem.	Is empathetic with the problem and is able to understand the factors and consequences in their environment and in other contexts.	3	4	3,5
Design Thinking: IMAGINE	Has difficulties in proposing solutions.	Proposes several solutions but has difficulties in reflecting on the suitability and effectiveness of the solutions and in choosing one.	Is able to propose several possible solutions and to choose a solution, however in the selection process, has difficulties in evaluating the suitability and effectiveness of solutions.	Is able to propose a large number of possible solutions and to evaluate collaboratively the suitability and effectiveness of the proposed solutions until a common solution is found.	2	3	2,5
Design Thinking: CREATE	Has difficulties in developing a final product based on the possible solutions proposed.	Is able to develop a final product based on a solution but has not investigated whether it has served to solve the problem raised.	Is capable of developing a final product based on a solution and test it to assess whether or not the solution has served to solve the problem.	Is able to develop a final product based on a solution, test it to assess whether or not the solution has served to solve the problem and is aware of the limitations inherent in the product and the problems.	3	4	3,5

IDiverSE assessment offers the opportunity of doing two different moments of assessment, enabling a formative assessment. If the teacher wants to do a formative assessment, he/she can use the first and second column of the assessment, and, if not, he/she can use only the last column.

In addition, by using the tool in two different moments, the teacher can compare the results of the intermediate and final assessment of the students and generate graphs automatically. These graphs can be used when sending follow-up reports to students.



Finally, in the third step, the tool generates and automatic global assessment of the class in the "global" sheet to obtain the final grade.

In this global sheet, the teacher can personalize the weight assigned to each area of the IDiverSE methodology. In order to do this, it is enough to change the percentages that appear in red below the title of each assessment area. The formula will then recalculate based on the new percentage assigned.

Final Assessment of the IDiverSE Learning Process

STEP 3: Global Assessment

	Design thinking (40%)				21st Century Skills (40%)				Inquiry (20%)						
N Student	FEEL	IMAGINE	CREATE	SHARE	S1: Creativity	S2: Critical Thinking	S3: Communica-tion	S4: Collaboration	1: Orientation	2: Conceptuali-sation	3: Investigation	4: Conclusion	5: Discussion	final grade (out of 10)	Comments
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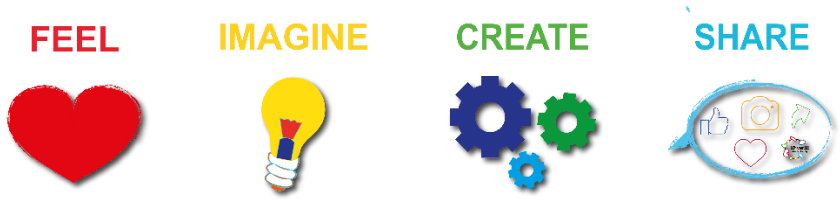
student 2	3,00	2,50	3,50	1,50	2,50	2,00	3,50	3,00	2,50	3,50	3,50	3,50	3,00	6,98	
student 3	3,50	2,00	3,00	1,50	2,50	2,00	3,00	3,50	2,00	3,00	3,50	3,00	2,00	6,60	
Average	3,33	2,33	3,33	1,67	2,33	2,17	3,33	3,33	2,33	3,17	3,50	3,17	2,50	6,93	

It would be advisable for the teacher to send individual reports of this assessment to the students in different moments of the learning experience so that they are aware of what their real performance has been and focus on improving as a constant effort.

As mentioned before, the Global Assessment of IDiverSE focuses on four main areas:

A) Assessment of the Design Thinking process

Throughout the implementation of the IDiverSE activities, students follow the Design Thinking methodology, which leads them deeply inside a problem (or topic), allowing them to create meaningful and practical solutions, directly targeted to their community. The Design Thinking methodology follows 4 steps: **Feel**, **Imagine**, **Create** and **Share**.



Students are thus invited to reflect in a collaborative way about which are the actions and the steps they are carrying out throughout the four phases. In this framework, the teacher will have to observe the performance of the students in order to assess the Design Thinking process. For this, the checklist of the first step of the global assessment tool can be used.

To assess the students regarding the Design Thinking process, teachers can also observe the work done by the students in their projects on the OSOS portal.

B) Assessment of the 21st Century Skills Development

During the IDiverSE activities, students will develop different skills and competences. More than just retaining knowledge, students of the 21st century should develop certain key skills in order to obtain a deeper learning experience and to succeed in terms of work, life and citizenship.

Among several listed 21st century skills, IDiverSE considers the 4 C's: Creativity, Critical Thinking and Problem Solving, Communication and Collaboration, which are the most relevant when considering Inquiry and Interdisciplinary learning.

The assessment of the 21st century skills can be mainly done by observing students' behaviours throughout the activities, as well as their work in the different used platforms.

C) Assessment of the Collaborative Inquiry process

All the IDiverSE activities accommodate a collaborative component, through the **Globallab** platform, where students from the different islands of the world follow the same protocol to collect data in order to compare the results and make a global analysis in a collaborative way.

globallab® Global Student Laboratory

To assess the students´ performance through **Globallab** platform teachers can use the first step of the assessment protocol, the checklist to assess during the classroom the students´ activity.

D) Assessment of the Inquiry process

All IDiverSE activities follow an inquiry learning approach, making it possible for the teacher to evaluate the students' proficiency in Inquiry. Teachers can evaluate students proficiency in inquiry using the checklist and the global assessment tool, considering the observations they have made of the students' behaviours and work in the different platforms. More specifically:

Some IDiverSE activities include an online activity developed in the **Graasp** platform where students follow the inquiry learning methodology. In this platform, there are specified applications to perform the inquiry process: Hypothesis Scratchpad, Data Viewer, Experiment Design Tool, conclusion Tool, etc. These apps can help students in their inquiry learning tasks and help to create hypotheses, design experiments, make predictions, formulate interpretations of the data, etc. Thanks to these apps the teachers can 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. In addition, some Learning Analytics apps give teachers an overview of students' progress in the inquiry activity. All student activity around **Graasp platform** provides us with valuable information about students' research skills.