Sapiens
Skill Assessment
for Personalised
Competence
Networks

Toolkit

sapiens-project.net

Contents

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1. Introducción

The SAPIENS Personalised Competence Assessment Tool is an innovative automated evaluation system that enables both professors and students to identify the competences that have been successfully acquired and those that require more attention. This tool helps teaching staff members to adapt their training programmes to better address the needs of individual students and the class as a whole. With the COVID-19 crisis and the adoption of online or blended learning education pathways, this new assessment tool supports new and updated evaluation systems, formats, and tools, thus addressing current challenges faced by educational systems in Europe.

The development of this tool is managed by Green Slope, a Spanish service company that specializes in the development and provision of integrated IT solutions. Overall, the SAPIENS Personalised Competence Assessment Tool provides an effective solution for addressing the evolving needs of digital education, and it is a valuable addition to the toolkit for professors and students alike.
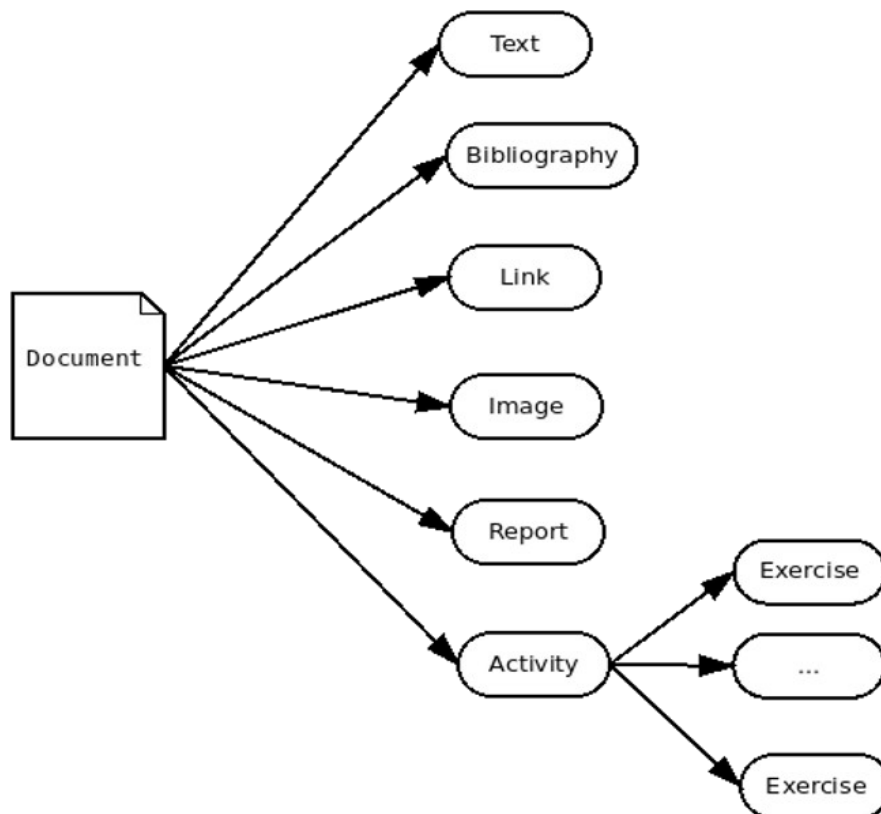
In this handbook, we discuss the main functionalities of our tool, which include User Management, Content Management, Microcompetences Management, Exercise Management, and Report Management.

- User Management involves creating new users, assigning professors/students to courses, getting a list of users grouped by roles, and searching users using filters.

- Content Management allows teachers to generate custom content for each student, create exercises, add exercises, and show or hide content. The system will show the allowed content to both students and teachers.

- Microcompetences Management allows the creation of microcompetences, which are assigned to exercises. Each exercise will have one or more microcompetences associated with it, and the system will analyze the microcompetences at different levels such as student, exercise, and course.

- Exercise Management involves assigning the generated content to students, allowing them to submit resolved activities, and automating the correction and providing help to the student.

- Finally, Report Management allows teachers to generate reports that can be associated with a student or exercise, as well as microcompetences. These reports provide valuable insights into student performance and help identify areas for improvement.

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The content in our system is organized into documents. Each document can contain one or more activities, and each activity can have one or more exercises.

To enrich the document, we provide different content types, including text, images, videos, audio, and interactive elements. These elements can be used to create engaging and interactive learning experiences for students.

Our system also allows teachers to track student progress through each activity and exercise, providing valuable insights into student performance and areas for improvement.

```
                                    Text
                            Bibliography
                                    Link
   Document                     Image
                                   Report
                                                     Exercise
                                  Activity            ...
                                                     Exercise
```

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2. Sequence of use of SAPIENS tool

This section provides a series of sequence diagrams that illustrate the most important actions in our tool.

2.1. Creation of teachers and students

In our system, the general manager creates the local managers, who are then responsible for creating the teachers and students. The following sequence diagram (Figure 2.1) shows the process of creating students and teachers.

- This icon represents to the windows to create students in SAPIENS tool.

- This icon represents to the windows to create teachers and assign them a rol inSAPIENS tool.

Note: You can create the students one by one. Or add a group of students uploading a file with a predefined format.
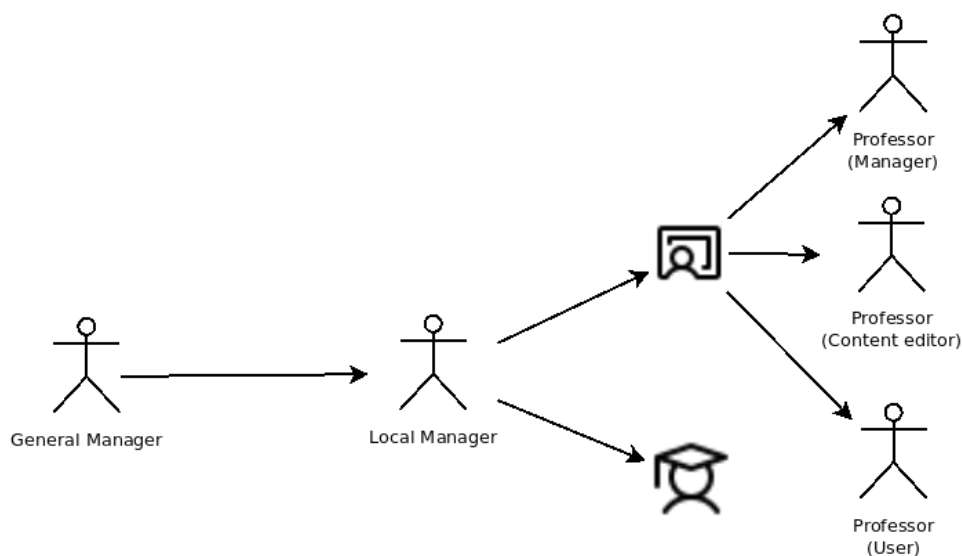

Figure 2.1- Sequence to create students and teachers.

1. The local manager accesses the SAPIENS tool and selects the option to create a new user.

2. The system displays a window to create a new student, where the local manager enters the student's information.

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3. The local manager confirms the creation of the new student, and the system saves the student's information.

4. The local manager then selects the option to create a new teacher and assigns them a role in the SAPIENS tool.

5. The system displays a window to create a new teacher, where the local manager enters the teacher's information and assigns them a role.

6. The local manager confirms the creation of the new teacher, and the system saves the teacher's information with their assigned role.

2.2. Creation of a course and assignment of students

In our system, the professor (manager) is responsible for creating courses and assigning students to those courses. The following sequence diagram (Figure 2.2) illustrates this process:

1. The professor accesses the SAPIENS tool and selects the option to create a new course.

2. The system displays a window to create a new course, where the professor enters the course details.

3. The professor confirms the creation of the new course, and the system saves the course information.

4. The professor selects the option to assign students to the course.

5. The system displays a window with a list of available students.

6. The professor selects the students they want to assign to the course and confirms the selection. The system saves the student assignments to the course.

In addition, the professor manager can also create new students as part of the course creation process.
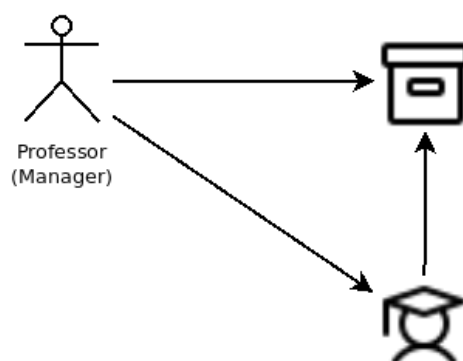

Figure 2.2. The professor (manager) creates the course and assigns the students to the course.

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2.3. Creation of course material

In our system, the content editor teacher is responsible for creating the course material. The following sequence diagram (Figure 2.3) shows the process of creating course material.

1. The content editor teacher logs in to the SAPIENS tool and selects the option to create new course material.

2. The system displays a window to create new course material, where the content editor teacher enters the material's information, such as the title, description, and content type.

3. The content editor teacher adds the content to the material using the available content types, such as text, images, videos, audio, and interactive elements.

4. The content editor teacher confirms the creation of the new course material, and the system saves the material's information and content.

The system then displays the new course material in the list of available materials, where it can be assigned to a course.Creation of a course is responsible of the content editor teacher as we can see in Figure 2.3
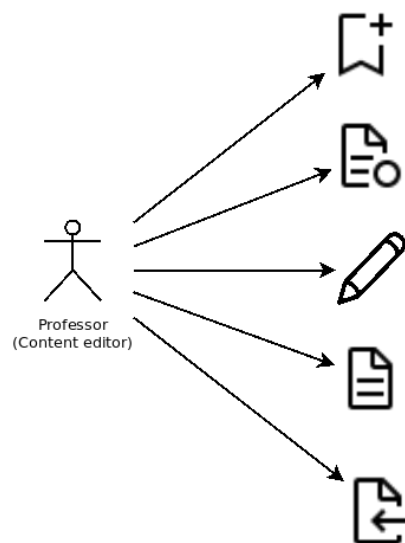

Figure 2.3. The content editor teacher is in charge of creating material for the course.

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In our system, the following sequence of steps (Figure 2.4) is followed to create a course, starting from the creation of the course material.

1. The content editor teacher creates the course material, as described in Figure 2.3.

2. The content editor teacher assigns microcompetences to the exercises associated with the material.

3. The content editor teacher creates one or more exercises associated with the course material.

4. The content editor teacher creates an activity and assigns the created exercises to it.

5. The content editor teacher creates a document and associates the created activity to it.

Professor
(Content editor)
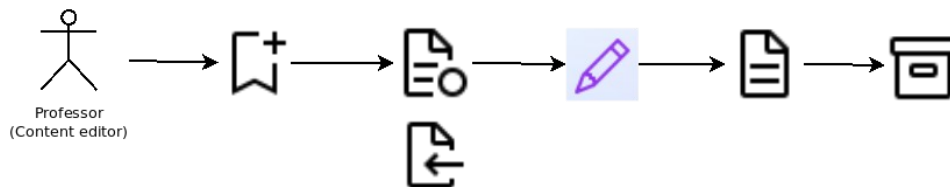
The content editor teacher adds the created document to the course.

3. Functionalities

This section refers to the functionalities of the tool.

3.1. Users

In our SAPIENS tool, there are three types of users with different roles and functionality:

Administrator:

- Can create and manage other users

- Can manage courses, materials, and exercises

- Has access to all functionalities in the tool

Professor:

- Can manage courses, materials, and exercises assigned to them

- Can create and manage activities and documents for their courses

- Can assign exercises and activities to students

Student:

- Can access the courses and materials assigned to them

- Can complete exercises and activities assigned to them

- Can view their progress and grades

It is important to note that only administrators can create other users in the system. The table below summarizes the main characteristics of each user role:

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3.1 General information about the different users available

User	Rol	Tag	User creation
Student	Student	ROLE_STUDENT	na
Teacher	Admin	ROLE_TEACHER_ADMIN	na
	Editor	ROLE_TEACHER_EDITOR	na
	Teacher	ROLE_TEACHER	na
Admin	General	ROLE_ADMIN_LOCAL	All
	Local	ROLE_ADMIN	All

Now, let's see how to create the different users. For this purpose, let's suppose that we have theusers shown in Table 3.2

Table 3.2 Examples of users

User email	Role
sapiens.student@gmail.com	ROLE_STUDENT
sapiens.teacher@gmail.com	ROLE_TEACHER
sapiens.teacheradm@gmail.com	ROLE_TEACHER_ADMIN
sapiens.teacheredi@gmail.com	ROLE_TEACHER_EDITOR

3.1.1. STUDENTS

In order to create the students, we have to go to the Students window. Figure 3.1 show how this window looks like. The information for reach student is the ID, the name, the last name, the gtoupand the email.
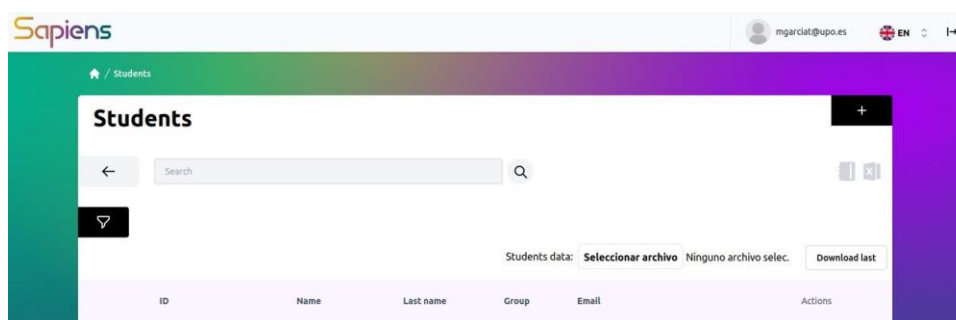

Figure 3.1 Students main window.

To create a new student, we have to clock on the + button. If so, you will be directed to a new window. The fields to fill in are the same shown in the Students window and the courses to which, the student belongs to. Figure 3.2 shows the new student form.

Figure 3.2 New student form.

Soon, the students will can be created importing the infromation from an excell file.

3.1.2. TEACHERS

As in the case of students, the process to create teachers is similar. Once you click on the Teachersbutton, you are directed to the main Teachers window. Figure 3.3 shows such window. As we can see, the information shown, for each teacher, is the name, last name, the email and the role.

Figure 3.3 Teachers main window.

In order to create a new teacher, the + button has to be pressed. In this case we will be directe to anew windows in which we will have to fill in several fieds as it is shown in Figure 3.4. The last field refers to the role associated to the teacher.

Figure 3.4 New teachers form.

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3.1.3. THE VIEW

Depending on the role, the view of the tool after log in changes. Figure 3.5 presents the view of a student (sapiens.student@gmail.com). The tool shows the courses and the documents associated toeach course.
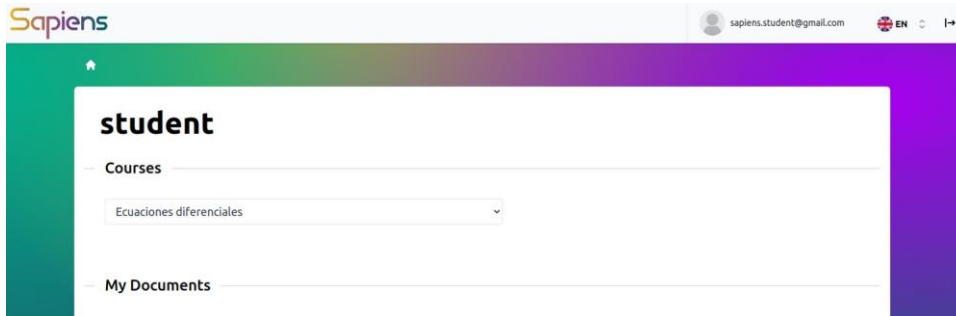
Figure 3.5 View of the tool for the student role.

For the teacher (admin), the view is shown in Figure 3.6. As we can see, it can create other teachers,as well as, students.
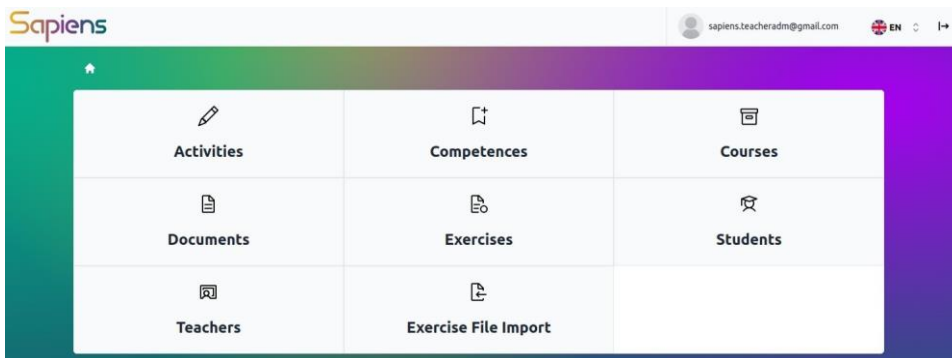
Figure 3.6 View of the tool for the teacher (ROLE_TEACHER_ADMIN).

The view of the content editor teacher is presented in Figure 3.7. The main difference with respectthe administrator teacher is referred to the students. The content editor teacher cannot add students to the course.
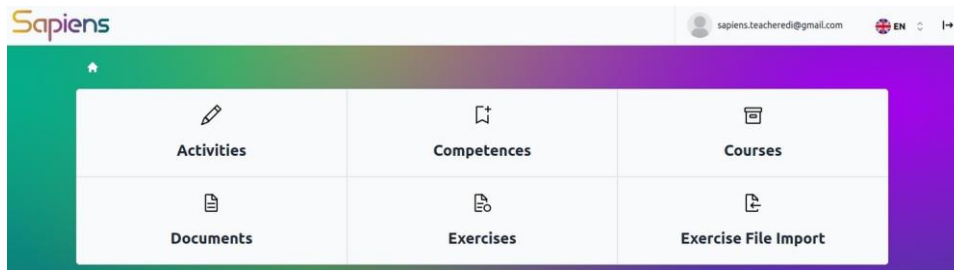
Figure 3.7 View of the tool for the teacher (ROLE_TEACHER_EDITOR).

Finally, Figure 3.8 presents the view of the teacher that uses SAPIENS. It shows the list of courses theteachers belongs to. In this case, it is empty because we have no courses associated to the teacher yet.
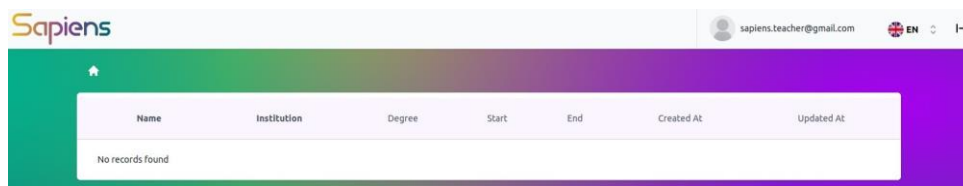
Figure 3.8 View of the tool for the teacher (ROLE_TEACHER).

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3.2. Competences

Clicking on the Competences button, you are directed to the windows shown in Figure 3.3
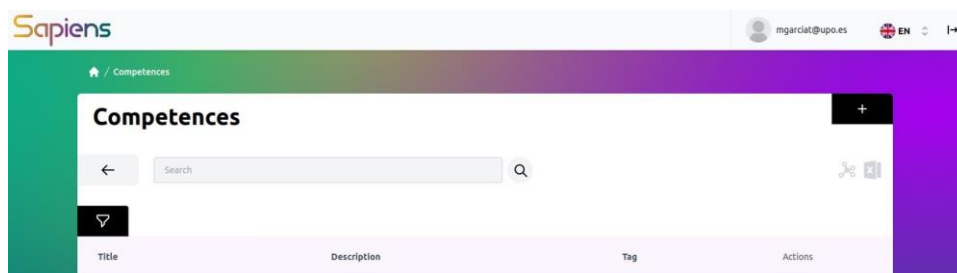
Figure 3.3

To create a new competence, you can press the + button and you will be directed to the windowsshown in Figure 3.4. In this case, only the name of the competece is required. The other fields areoptional. You can associate the competence type. Table 3.2 shows the different types that are already defined in SAPIENS tool.
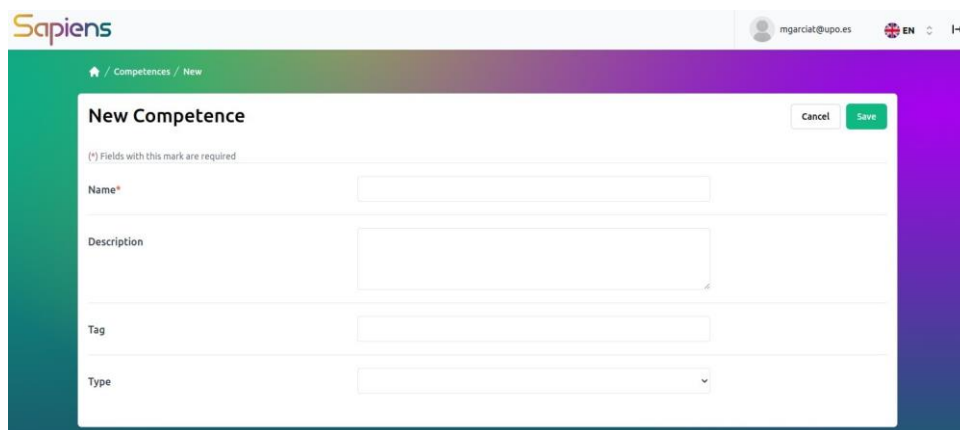
Figure 3.4

Competence type

Competence type
REMEMBER
UNDERSTAND
APPLY
ANALYZE
EVALUATE
CREATE

3.3. Courses

The creation of a course is a process very similar to the creation of users and competences. As wecan see in Figure 3.5, the main windows show the list of courses created in the tool. In order to create a new one, you have to click on the + button.

Figure 3.5

Once you press the + button, you will be directed to the windows shown in Figure 3.6.

Figure 3.6 Windows to create a new course.

3.4. Exercises

There are two ways to create exercises in SAPIENS tool. If you already has the exercise in excel format, you can export it to SAPIENS using the Exercise File Import button. If not, you can create itaccesing to the Exercises windows.

3.4.1. EXERCISE FILE IMPORT

In this case, you are supposed to have the exercise in excel format. In this case, you have to click onExercise File Import button. Then, the exercise will be created and will be shown in Exercises windows.

4.4.2. EXERCISES

To create an exercise in the SAPIENS tool, you need to first navigate to the "Exercises" section and then click on the plus button to add a new exercise. Once you do this, you will be prompted to add the general information about the exercise such as the title, description, and any other relevant details.
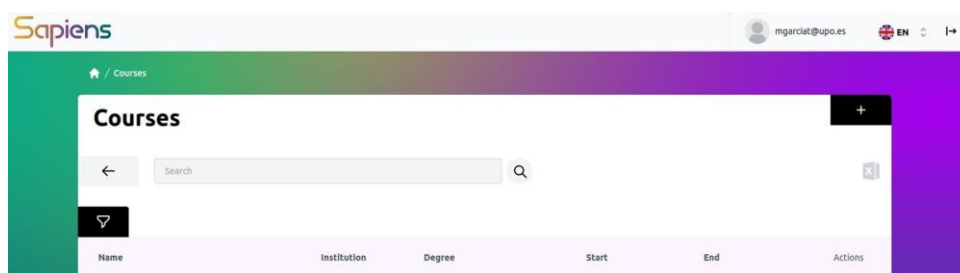
After you have provided this information, you can start filling in the main body of the exercise by adding text to the "Text" section. This section should include the main question or problem that the exercise is trying to address.

If you want to provide additional support for students who may be struggling with the exercise, you can also fill in the "Hint" section with any relevant hints or tips. Additionally, you can provide an explanation for teachers by filling in the "Solution" section.

If you need to add more complex features to your exercise, you can do so by clicking on the "Parameters and More" button. This will give you access to a variety of options such as adding parameters, calculations, tutors, images, links, and margins to your exercise. These features can help you create more detailed and comprehensive exercises that provide a rich learning experience for students.

To further explain, parameters are placeholders for values that can be changed depending on the specific instance of the exercise. For example, if an exercise involves calculating the area of a rectangle, the length and width of the rectangle can be set as parameters, allowing for different values to be inputted by students in different instances of the exercise.

Calculations, on the other hand, allow for more complex operations and can involve multiple parameters. For example, an exercise may involve calculating the distance between two points on a coordinate plane. The x and y coordinates of each point can be set as parameters, and a calculation can be defined to determine the distance between them.

In addition, exercises involving calculations require a correct answer to be inputted by the student. This can be a specific value, or a range of values or text depending on the exercise. The exercise creator can also define multiple acceptable answers or provide hints for arriving at the correct solution.

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The tutor function in SAPIENS allows the teacher to provide additional guidance or hints to the student during the exercise. To use this feature, the teacher needs to define a condition under which the tutor will be triggered and provide the advice text. To assist students in their learning, the teacher can define specific conditions that will trigger the tutor to provide advice if the student's answer matches certain criteria. This advice can range from a simple hint to a more detailed explanation of the concept or strategy needed to solve the problem. Logical functions can be used to define these conditions, such as if a specific value is entered incorrectly. For example, if the area of a rectangle was calculated as x+y instead of x*y, the tutor can advise the student to try using multiplication instead. The tutor's advice can also include links to relevant resources or materials for further learning and practice. The tutor function can be a helpful tool for students who are struggling with a particular concept or problem, as it provides them with additional support and guidance to help them succeed.

In addition to the main question body, hints, solutions, parameters, calculations, and tutors, the SAPIENS platform also allows the inclusion of images, links, and margins in exercises.

To add images, the user needs to provide the appropriate parameters, such as image size and alignment. This can be done through the "Parameters and more" button mentioned earlier. Links can also be added with the corresponding parameters, including the URL, link text, and target window. Margins can be adjusted to ensure proper spacing and formatting of the exercise.

By allowing the integration of these multimedia elements, SAPIENS offers a more dynamic and engaging learning experience for students. Teachers can include relevant images to aid in understanding and links to additional resources for further exploration. Proper margins also ensure that exercises are presented in a clear and organized manner.

3.5. Activities

In SAPIENS tool, you can create multiple activities for a course. Let's say you have already created or imported three exercises named BI11, BI12, and BI21. Out of these, BI11 and BI12 belong to Unit 1, while BI21 belongs to Unit 2.

To create activities for these exercises, you need to create an activity for Unit 1 (BIA1) and another for Unit 2 (BIA2). BIA1 will include BI11 and BI12 exercises, while BIA2 will contain BI21.

To create activities, you need to access the "Activities" window and click on the "+" button. This will redirect you to a new window, as shown in Figure 3.9. From there, you can select the exercises that you want to include in the activity, add a title and description for the activity, and set a due date for completion. Once you have created the activities, students can access them from their dashboard and start working on them.

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Figure 3.7 Exercises BI11, BI12 and BI21 available in SAPIENS tool.

Now we have to create the activities. Let's create an activity for Unit 1 and another one for Unit 2,called BIA1 and BIA2 respectively. BIA1 will include BI11 and BI12 exercises while BIA2 will containBI21.

The activities are created accessing to the Activities windows. Figure 3.8 presents the view of suchwindows. In order to create an Activity we have to click on + button. In that case we will be redirected to a windows as it is shown in Figure 3.9.

Figure 3.8 Main windows of Activities.

In the activity creation windows we will have to fill in several fields.

Figure 3.9 Windows to create a new activity.

Once the activities have been created, we can see them in the Activities main windows. Figure 3.10show how the activities BIA1 and BIA2 are shown in the windows.

Figure 3.10 Main windows of Activities.

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3.6. DOCUMENTS

To summarize, after creating or importing exercises into SAPIENS tool, the next step is to create activities that group together relevant exercises. Activities can be created by accessing the Activities window and clicking on the plus button. Once activities are created, documents can be created and associated with the activities. The Documents window can be used to create a new document, which requires adding the activities associated with it. Once the document is created, it is shown in the Documents main window. The student view of the course displays the activities associated with the document in the SAPIENS tool.
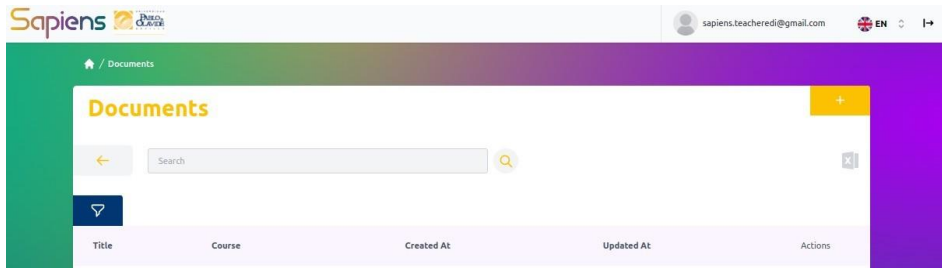
Figure 3.11

In Figure 3.12 the windows to create a document is shown. It requires to add the activities associated to the document.
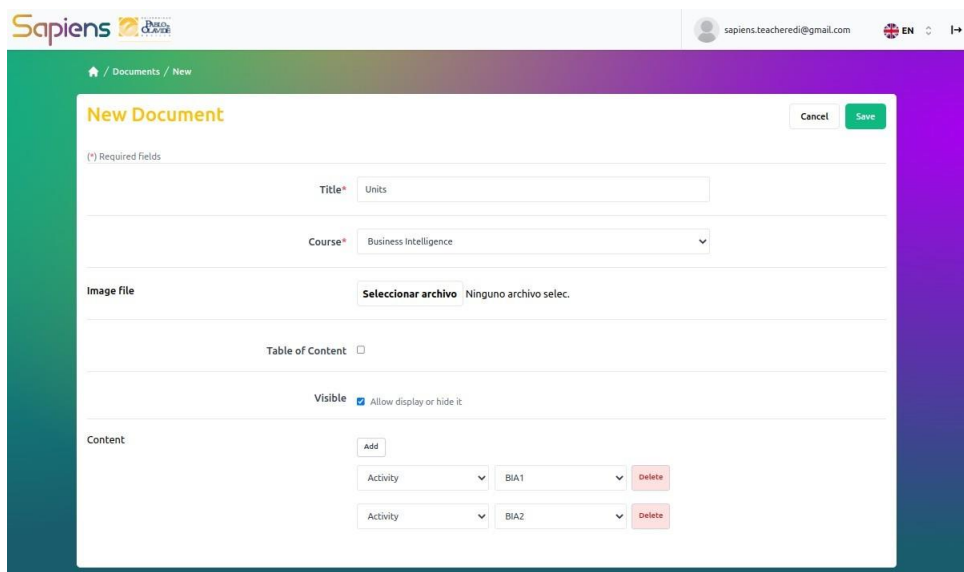
Figure 3.12 Windows to create a new document.

Oncre the document is created, it is shown in the Documents main windows.
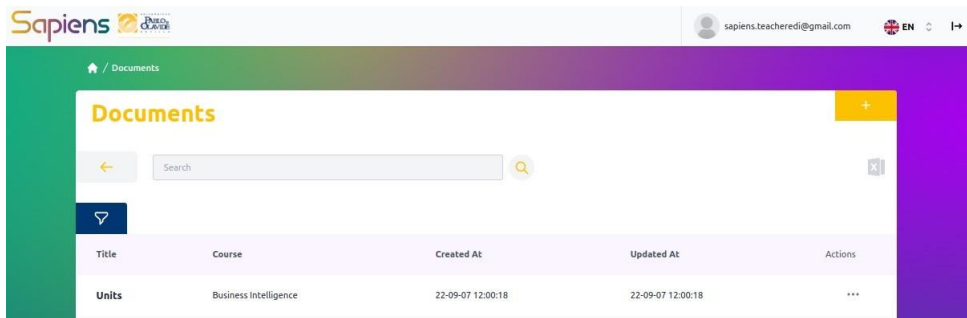
Figure 3.13 Documents main windows with the document Units created.

Finally, we can have a look at the student view in Business Intelligence course. As we can see, theactivities associated to the document is shown in the student SAPIENS tool view.
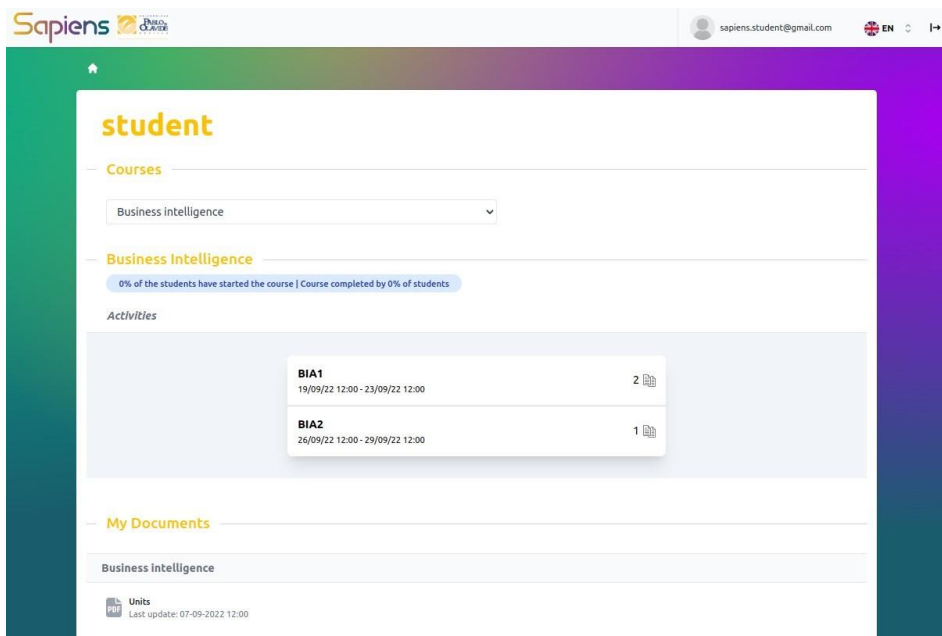
4. Roles hierarchy

SAPIENS is managed by a general manager from ULA. The General Manager is responsible of managing the system and the local manager from each instituion that belongs to the SAPIENS project. The hierarchy is ahown in Figure 3.1.
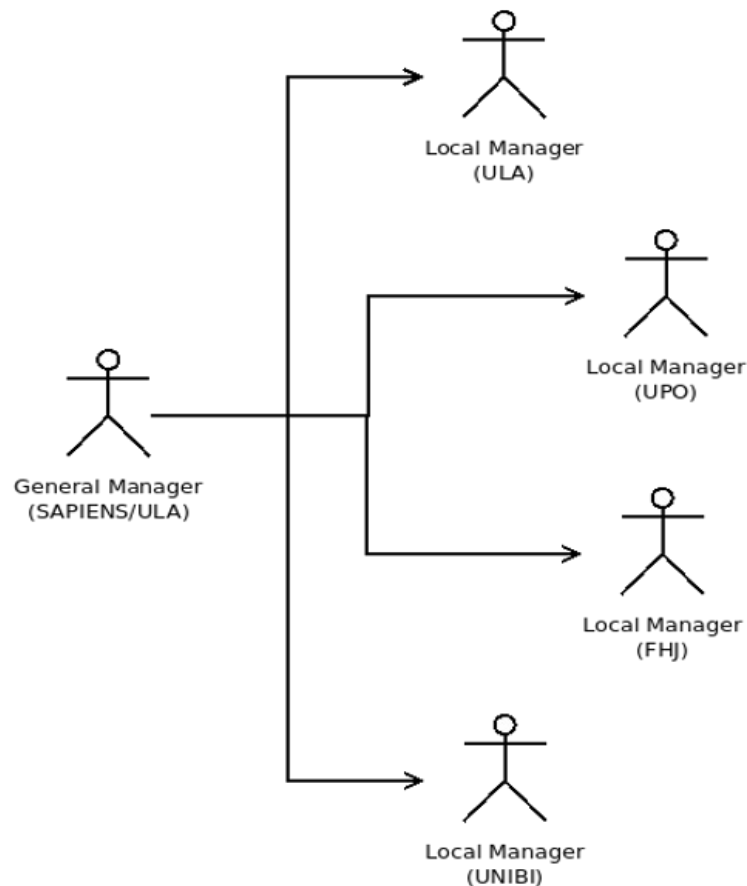
Figure 4.1 The administrator roles.

The main roles of the systems are teachers and students. Both roles are managed by the local managers. Figure 3.2 presents such roles and the main activities associated to teachers and students.
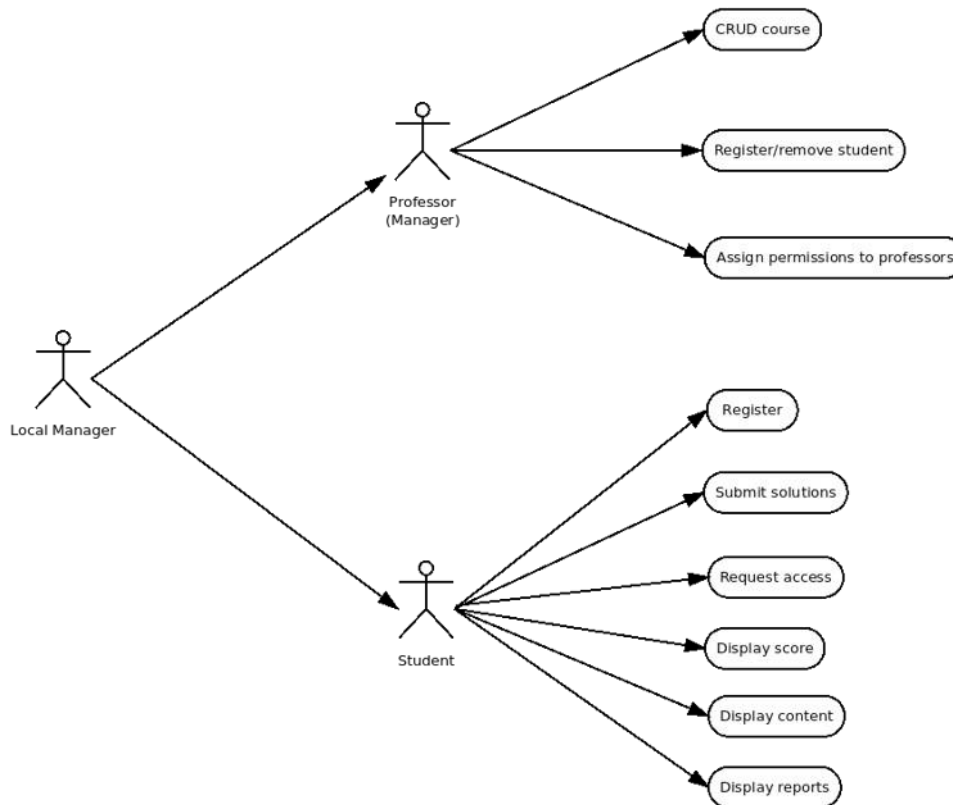
Figure 4.2 The main roles associated to an institution.

There are three different roles of teachers: the manager, the content editor and the user. The local manager is responsible of the teacher (manager) who is in charge of the content editor teacher. Thisrole refers to the teacher that will create material for the course. Figure 3.3 shows the activities associated to the content editor teacher rol.

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Figure 4.3 The different functionalities associated to the content editor techer role.

Finally, a course have have a group of teachers that use the material for teaching purpose. This rolerefers to the user teacher. Figure 3.4 shows the functionalities associated to this rol.
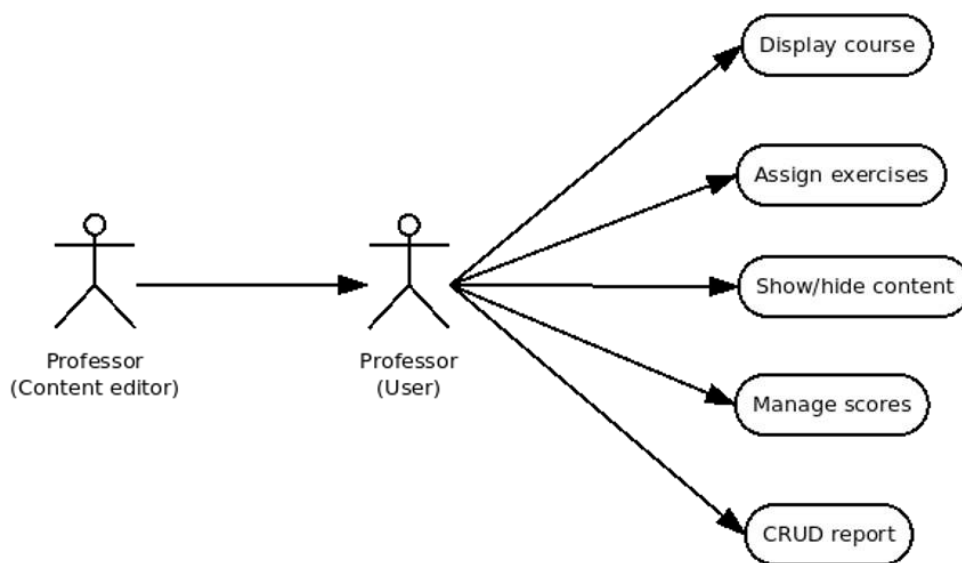
Figure 4.4 The main functionalities associated to the teacher (user).

5. Evaluation through SAPIENS.

5.1. Supporting student learning

Nowadays, a series of actors are involved in the teaching-learning process, where the protagonist is acquired by the students in the education act, while the role of mediators is acquired by the rest of the agents in this act. Thus, it is necessary to encourage the personal initiative of the learner so that he/she plays an active role. In this direction, consideration should be given to the fact that the learner raises questions motivated by his or her desire to learn and that the learner is able to intervene and rethink the way he or she learns.

That said, if the student is the protagonist of his or her own educational process, it is the student who has to learn. It is important not to lose sight of this because on many occasions, in trying to help students, we end up doing things for them that they could do themselves. Thus, what should be a help and a guide, ends up becoming a hindrance to their personal growth. Therefore, the role of education today requires a rethinking of the role of the teacher.

It is materially impossible for a teacher to have an encyclopedic knowledge and to manage to keep up to date with all the new scientific discoveries taking place today and for his or her knowledge not to fall into obsolescence at some point. Faced with this, the new role of the teacher as a guide and orientator must focus on teaching students to research, to seek information, to have learning experiences, to reflect on them and to systematize them. He/she must be a facilitator of content and learning situations that help to acquire knowledge, skills, and attitudes. It is this process of enquiry, research and action that will lead to student learning.

In educational practice, this role of the teacher involves accompanying students during the learning process. In this sense, t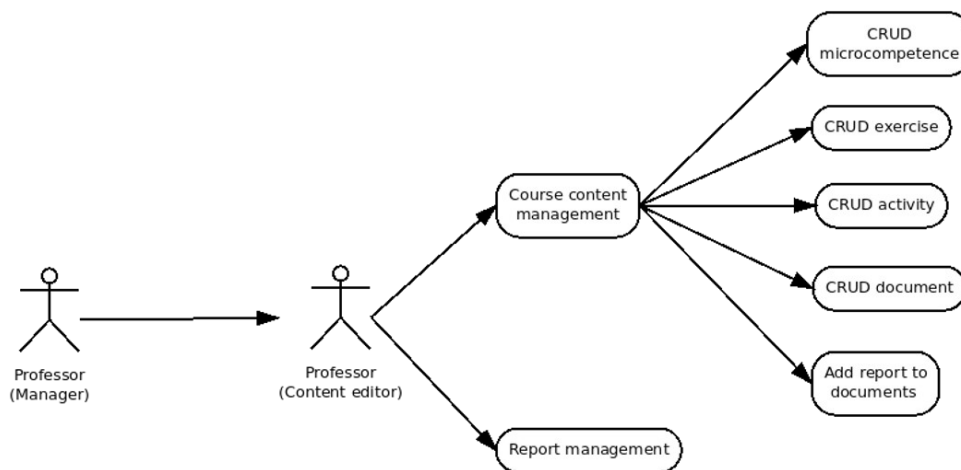his is a key aspect to consider when designing and developing the teaching-learning process. This is because this task requires a structured and concrete planning before starting the process itself. A decisive issue in this respect is evaluation. Therefore, given its importance, evaluation should not be the last thing to be reflected in the planning.

To assess today, all dimensions of the person need to be taken into account. Therefore, another type of assessment is required in addition to criterion-referenced and normative assessment. The aim is for each student to perform according to his or her potential and, therefore, we must demand from each one everything that he or she can give, based on his or her own reality. To do this, we can start from a diagnosis of their abilities and criteria must be established according to their potential attainable levels. This means (i) specifying clearly and precisely what each student is reasonably capable of achieving, (ii) demanding of each student according to his or her own abilities, and (iii) assessing performance from the point of view of satisfactoriness (to perform to the maximum or not according to one's own abilities) but also from the point of view of sufficiency (to reach or not to reach the minimum levels proposed in each assessment).

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5.2. Performance appraisal/competency assessment

a. What is performance appraisal / competency assessment?

Competences are skills and capabilities that a person has. They are used to proactively manage certain activities and projects both individually and in a team. These skills are a measure of what a person can do and determine the person's strengths. In other words, competence would be the ability to be able to effectively carry out a task in a specific environment. Performance, on the other hand, is the result that a person obtains when fulfilling an obligation or task. Thus, in this case, the focus is usually on the specific performance of a person given a certain period.

Within the evaluation process, one of the most important questions is what is to be evaluated, i.e. what information is to be collected and what is to be reflected upon in order to make decisions. The first thing to bear in mind is the objectives that were set during the planning phase. Thus, the contents of the evaluation will seek to measure the degree of achievement of the goals that were proposed during programming. These objectives, in turn, refer to the competences that students are expected to acquire in terms of knowledge, skills and attitudes.

The mere acquisition of knowledge is not enough. Cognitive skills, while essential, are not enough. It is therefore necessary to acquire transversal competences, such as critical thinking, diversity management, creativity, or the ability to communicate, and key attitudes such as individual confidence, enthusiasm, perseverance and acceptance of change.

In this sense, in educational contexts it is essential to assess competencies, understood as the combination of knowledge, skills and attitudes that are necessary or required in each environment or contextual framework (society). In short, assessing competences involves analyzing the information we gather in the teaching-learning processes to assess it in relation to the resolution of certain problems or situations and, based on this assessment, to make decisions for the future. To assess competencies, a series of conditions must be borne in mind:

- It is essential to determine the assessment criteria to be considered as indicators (i.e. indicating whether or not the competences have been achieved). Indicators should be explicit in terms of behaviors to be developed by learners.

- It is also necessary to specify in detail what actions or tasks learners must perform to achieve and demonstrate the competences on the basis of which they will be assessed.

For all of the above reasons, it is considered necessary to focus the assessment of competences on the performance of tasks that enable students to master the content and transform this mastery into competences. Thus, it is essential to link the performance of tasks to the achievement of products arising from them so that they can be a source of information for assessing basic competences. However, one of the first challenges faced by teachers is to associate each competence with assessment criteria.

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b.   Types of evaluation

Different types of assessment can be identified. Specifically, in this case, the types of assessment will be explained in terms of two variables: the timing and the nature of the assessment. In terms of timing, i.e., when it is applied, we can distinguish three basic types.

- Initial assessment that takes place before any training process is launched and serves as a diagnosis of the situation and detection of students' prior knowledge.

- Continuous evaluation where, throughout the process, evaluation activities are implemented that make it possible to know the progress of learning during its development. This means that evaluation should be carried out as the process develops.

- Global assessment consists of an evaluation, the results of which are usually used to award a pass or fail grade at the end of the process. This is commonly known as final exams or tests.

The following types of evaluation can also be distinguished by their nature:

- Norm-referenced. It consists of comparing the results of the evaluation of a person or a group of people with a reference group in order to order, qualify or classify them with respect to the average obtained in said reference group. This comparison can be with the same group in different measurements or with the average obtained in a different group in similar circumstances, or even with respect to larger groups. For example, when comparing the results obtained by a group of students with those obtained from international reports such as the PISA report.

- Criterion-referenced. This type of assessment presupposes the prior establishment of characteristics or standards of behavior. These characteristics or standards will be used to compare the results of one or more students to see whether they conform to what has been previously stipulated. Therefore, it is necessary to specify concretely before the start of the course what is to be achieved to compare the behavior of one or more students with these criteria or standards. For example: prior to the start of the course, it is established that in the first month of the course, students must be able to perform several mathematical operations in a given time. Activities are carried out and, after a month, a mathematical test is carried out, measuring the time and number of operations performed, and a comparison is made with the established criterion to check whether the result is below, above or has reached the established criterion.

- Summative evaluation. The main characteristic of this type of assessment is to evaluate the results achieved at the end of a period to identify the learning obtained and the extent to which it has been achieved. In many contexts, this is the one that carries the most weight at a social level for awarding marks. For example, this type of assessment includes final, termly, or half-yearly assessments that cover many blocks or subjects worked on and that give the possibility to pass or not to pass to the next course or to award or not to award a final certification.

- Formative assessment. The fundamental characteristic of formative assessment is the regulation and adaptation of teaching and learning activities so that students achieve learning. On the one hand, it allows the regulation of the process by the teacher in continuous didactic communication with the learner. On the other hand, it

allows self-regulation by the student to determine the actions to follow to improve their own learning and to become more autonomous. In addition, it is the instrument that controls, organizes, and doses teaching. It must also be borne in mind that it must be based on dialogue, understanding and improvement. And it must also meet the real needs of the students.

5.3. Main evaluation methods, procedures, and tools.

It has been said that evaluation involves obtaining data on a given reality. Well, this data can be recorded and analyzed by the different actors in the process. Thus, it can be said that there are different evaluation methods depending on the person who is evaluating (hetero-evaluation, self-evaluation, and co-evaluation).

- Hetero assessment: data is provided by the learner and collected and analyzed by someone other than the learner, usually the teacher.

- Self-assessment: the learner assesses him/herself. There is also talk of self-assessment of the teacher, but in the first case it is a question of obtaining information about learning and in the second case the information obtained is about the teacher's professional work.

- Co-evaluation involves teacher and student jointly obtaining data and analyzing it, usually through a joint interview, through dialogue, to make decisions.

In addition to this, it is worth highlighting the need to talk about assessment instruments and the criteria under which they will be assessed. It is different to assess content which are concepts, facts, or data (knowledge) than to assess whether the learner has developed a skill (procedures) or adopted a value (attitudes). Depending on the type of content in question there will be one better test than another: (i) knowing (knowledge): written and oral tests; (ii) knowing how to do (skills, strategies, procedures): tests on knowledge of strategies, tests on the use of strategies, and tests on the learner's self-regulatory capacity; and (iii) knowing how to be (attitudes, values): observation techniques and direct feedback techniques. Each of these classifications is described in more detail below.

- Tests to assess knowledge. The contents referring to knowledge can be evaluated through written tests such as:

- Elaboration of answers. These are statements in which the learner has to write down what is being asked. An example in history would be: "Write where and when the first modern Olympic Games were held". In this example the learner will write an answer on a structured basis, because his or her answer will be unambiguous and simple. But there may be tests in which the basis is semi-structured. For example: "Write a paragraph of no more than 100 words describing the advantages of belonging to the European Union. Please allow no more than 10 minutes to complete your answer". In this last test time and length guidelines are given to the learner. If the base is unstructured, a type of question would be written which is often included in traditional exam papers. For example: "Write down everything you know about your country". This type of test is unsuitable because the objectivity of the marking is questionable.

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- Answer choices: these require the student to select one or more specific answers. This would be the case for tests with true-false questions. This would also be the case for tests with multiple-choice questions. For example, these consist of a statement and four alternatives from which the learner must select one that is correct or most appropriate. In this type of test, it is very important to reduce the chance factor in order to be able to know the real learning of the student. For this purpose, there is the possibility of deducting a percentage of the mark depending on the number of questions in the test. In this case, the student must know this information before starting the test. Similarly, association tests can also be classified in this category. These tests are usually represented by two columns and the learner must establish the relationship between the columns and rows. For example: match the following columns by writing the number with the corresponding letter on the answer sheet: 1 c 2 a 3 c.

- Context-sorting. These are tests in which the student is required to organize a series of data on the basis of a specific reasoning. This reasoning can be chronological order (ascending, descending), size, length, etc. For example: order the following Roman numerals from largest to smallest: XVL / XIX /XX / IV / MMXII.

- Common core or multi-item. This type of test allows more complex knowledge to be assessed. It consists of a stimulus on which several questions are asked. This stimulus can be a graph, a map, a table, an audio recording, etc. For example, given the following sentence, answer the following questions. Phrase: "To dialogue, first ask questions; then... listen." Questions: 1. Who is the author? A) Antonio Machado, B) Joaquín Costa, C) Juan de Mairena. 2. The last word is un. A) Noun, B) Verb, C) Adjective, D) Adverb, E) None of the above.

In addition, knowledge-related content can be assessed by means of oral tests. Oral tests consist of the student answering, as the name suggests, a series of questions posed by the teacher, orally answering and can be either unstructured or structured.

Tests to assess attitudes. Turning now to tests to assess acquired skills or the ability to implement a procedure, the following tests can be found:

- As previously noted, it is necessary to collect information regarding the knowledge that the student has regarding the procedure to be performed. For this, any of the explained techniques referring to knowledge could be useful. Possibly if the student is asked to verbalize what he is going to do before carrying it out, it can be detected if he is aware of the steps he must take, the order and how to take them. Questionnaires, that is, written tests, can also be administered.

- In order to evaluate the use that the student makes of the strategies, it is possible that the type of test is a demonstration, and that the student is the one who assesses himself through modeling (one student shows another how it is done). For example: to demonstrate if a student correctly carries out the steps to solve a problem, it would not be enough to see the results, but it is necessary to see the process that has been followed.

- The self-regulatory capacity is one that allows the person to detect their own failures and correct them while carrying out procedures. To measure this issue, there are standardized, valid and reliable questionnaires, interviews, self-reports and practical tests with specific tasks and exercises. In subjects such as Technology, you can find

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various examples of content assessment related to know-how. Consider the recently named "digital competition". Part of what this competition involves is demonstrating being able to select valid sources of information on the Internet. This requires knowledge and assumes that the student will be able to distinguish and discard those sources that do not meet the given condition, this is a skill. Likewise, while carrying out the task, they must demonstrate the ability to focus their attention and not be distracted or dispersed by all the information to which they have access. To find out if the student is capable of this or not, there are questionnaires prepared by experts.

Tests to assess the acquisition of values. Finally, assessing the acquisition of values is possible through systematic direct observation and through direct feedback techniques. Behavioral observation is about developing an ability to focus attention and record facts to help learners improve, not in an inquisitive way but with a positive critical eye. Two characteristics are fundamental to observation:

- Systematic: it responds to a series of previously made decisions. These decisions are, for example: the time during which it will be carried out, which register will be used so that it is appropriate for the circumstance and the subsequent analysis, on which behaviors we will focus our attention and under what circumstances they will be presented, what is the most appropriate time to carry it out, etc.

- Objective: collect the information as skeptical as possible, i.e. without prejudice and trying to adjust to the facts and not to the opinions of the pupil. Cross-checking the information with the observation of other

Teachers are essential if the records obtained are to be considered valid and reliable.

The following instruments can be used to record the information obtained from the observation the following instruments:

- Anecdotal record. In which only those events that occurred sporadically and that could go unnoticed or become distorted in the memory are written down. It is important to write down everything that can remind you of what happened: day, time, time of day, people involved and relevant details.

- Checklists. They allow recording the presence or absence of a predefined list of behaviors based on observations. For example, to check for responsibility. Behaviors: (i) homework is handed in on time, (ii) is sitting in his/her seat before the teacher arrives. Responses: yes / no.

- Rating scales. In this case, not only is it recorded whether or not a certain behavior occurs, but also to what degree it has occurred, i.e. a value judgment is made about the observed event on a scale with minimum and maximum values.

The following are also the direct reporting techniques in which the teacher obtains data from the in which the teacher obtains data directly from the learner regarding attitudes as a manifestation of the values they have been acquiring.

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- The interview which consists of a conversation between teacher and student (usually) which is carried out with a previously established objective of seeking information about certain aspects. The interview can be structured with a script in which the student is asked questions independently of his or her answers or unstructured where the teacher will pose questions depending on what the student says during the conversation.

- Questionnaires and inventories that allow information to be collected on a range of issues. They consist of a selection of questions on a topic to which the student responds by completing them, generally in written form. For example, to identify some values related to self-esteem and self- knowledge we could ask the following questions: What do you like most about yourself? What do you think you are particularly good at? What can you do better? An inventory consists in structuring a series of questions, but with possible answers for the learner to choose from.

- Tests are scales that are developed by specialists in the field and that are duly typified, standardized, valid and reliable because they have undergone a process of statistical (or any other type of) analysis that has been accepted by the scientific community. Here we can mention the Likert-type test scales. This type of scale consists of a series of statements in the form of items referring to hundreds of aspects in which, through the numerical evaluation of the degree of agreement or disagreement that we would agree or disagree with what they state, results can be obtained in frequency and averages which in turn are compared with scores obtained by a reference population. Normally these ratings range from one to five, with one being the lowest value (little or no agreement) and five being the highest (complete agreement). Designing these questionnaires requires in- depth knowledge of research methodology and the topic to be assessed.

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Authors

Isabel López Cobo (Universidad Loyola)

David Becerra Alonso (Universidad Loyola)

Pilar Gómez del Rey (Universidad Loyola)

Miguel García Torres (Universidad Pablo de Olavide)

Pilar Naranjo Río-Miranda (INCOMA)

Rupert Beinhauer (FHJ)

Judith Huget (UNIBI)