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WP2 - Curriculum modules and LLL centre programmes development

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

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WP2 "CURRICULUM MODULES AND LLL CENTER PROGRAMS DEVELOPMENT"

- WP2 "Curriculum modules and LLL centre programmes development" includes the activities necessary for design and implementation of new master study curriculum and LLL programs on urban agriculture.

- Curriculum modules meet objectives and priorities for each partner countries' needs based on results delivered in WP1.

Needs analysis results from WP1 – soft skills

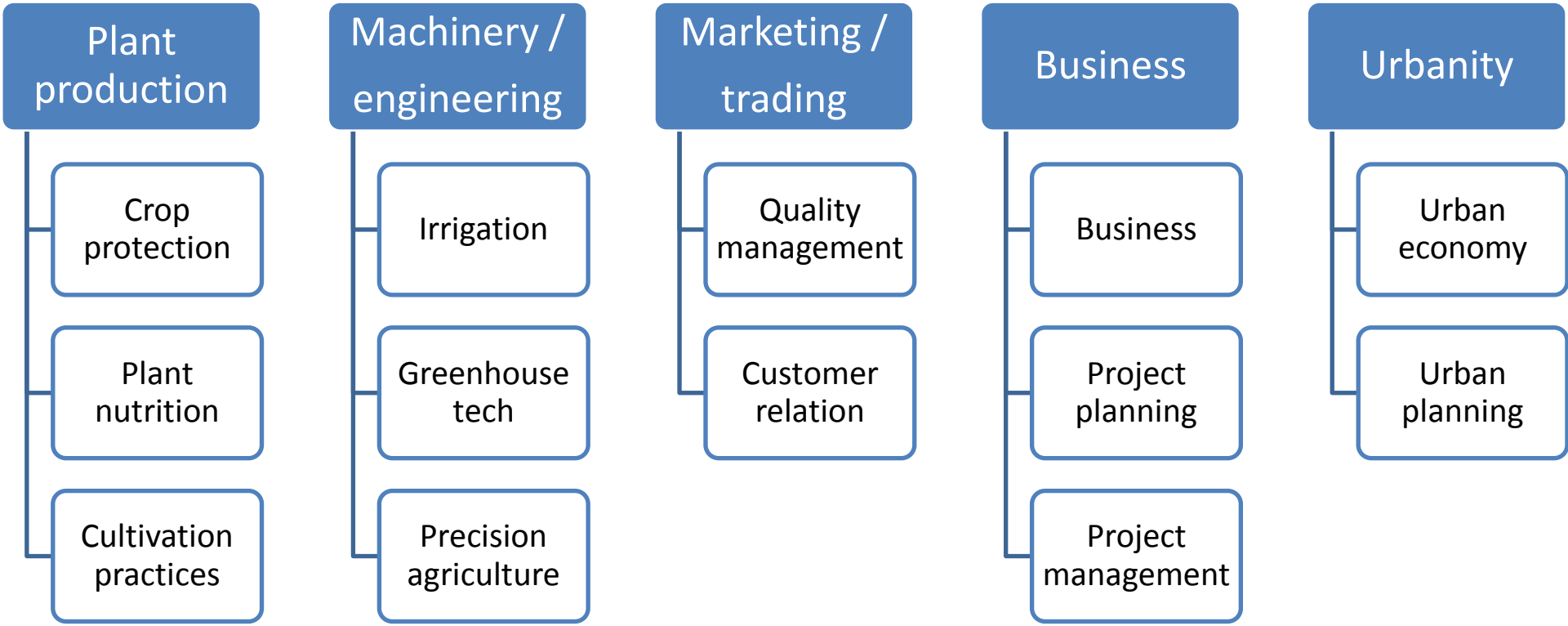
Communication

Creativity

Time management

Flexibility

Needs analysis results from WP1 – hard skills



Deliverable 2.1 – Curriculum draft

- By using the indication from WP1 needs analysis, we designed the master on Urban Agriculture, a two years master of 120 ECTS
- Fundamental importance within the master have the learning techniques related to Problem Based Learning (PBL) and Experiential Learning (EL), which promote the development of critical thinking skills, problem-solving abilities, and communication skills.
- 30 ECTS are related only to PBL and EL activities
- **Deliverable 2.2 is dedicated to PBL and EL methodologies**

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Deliverable 2.2 - Learning projects design guide for teachers

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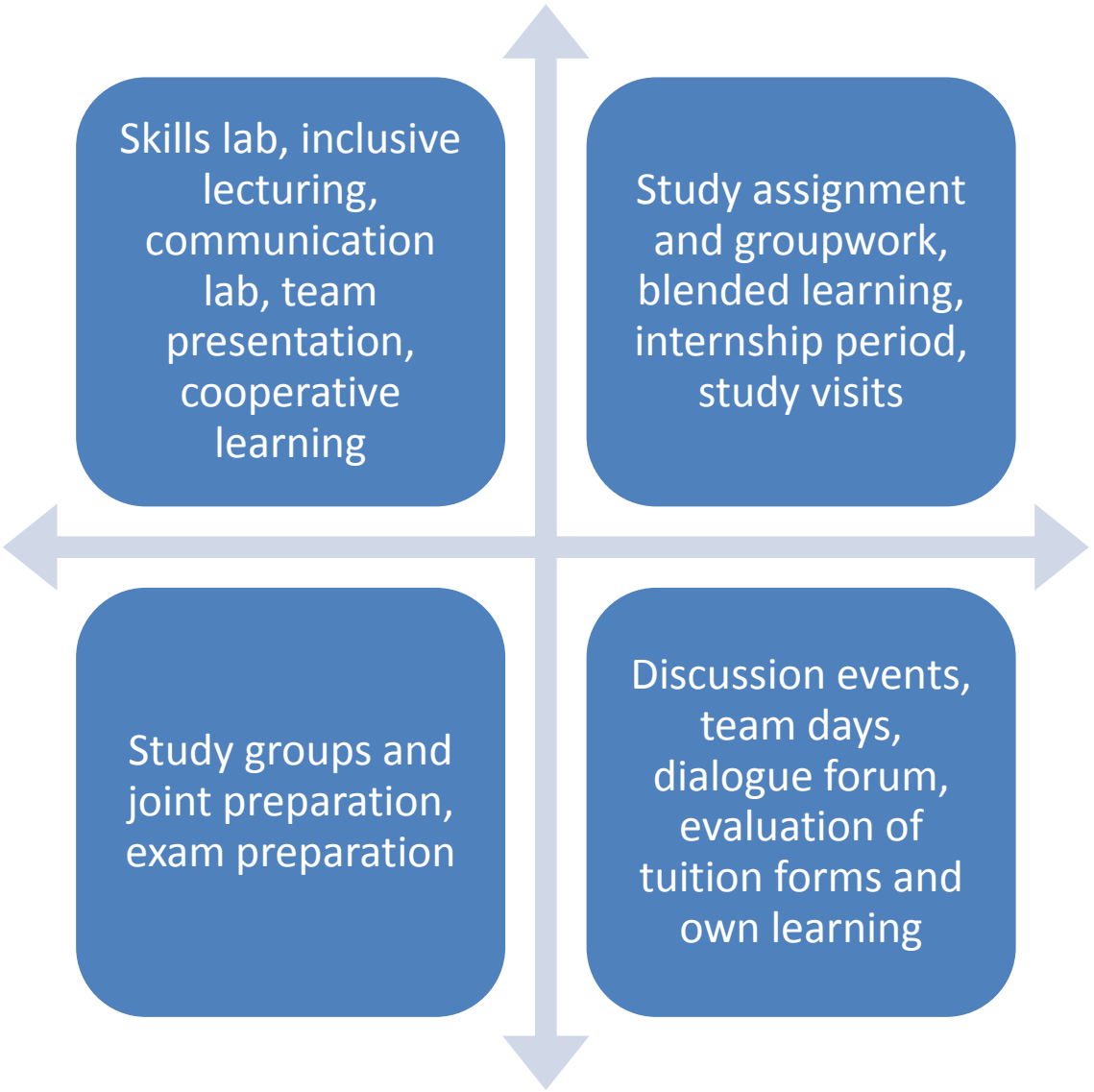
AIMS

- Describe Active learning - in particular problem based learning and experiential learning methodologies
- Explain how to design and manage Active learning and how to evaluate students and
- Provide examples of activities that can be used to assess Active learning.

ACTIVE LEARNING

- Starting point: in Active Learning, learning is **not what we know in a particular subject or how much we know of it, but what we do with it.**
- In several Higher Education Institution around Europe, this innovative way of learning are included in the design of academic curriculum accordingly to four categories.



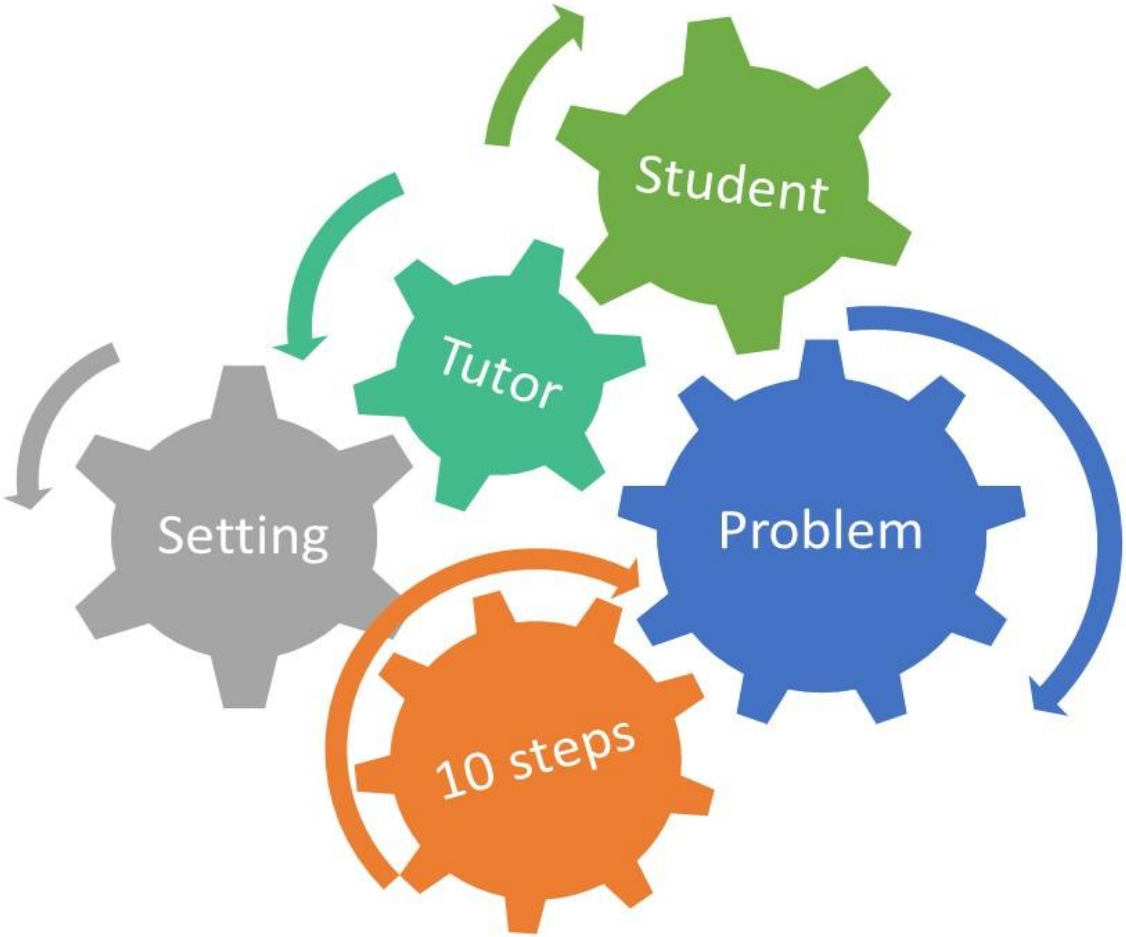
PROBLEM BASED LEARNING

Problem-based learning (PBL) approach is a teaching methodology that is said to provide students with the appropriate knowledge to solve problems.

- Learning in a problem-based curriculum starts with a problem.
- In the process of solving one problem, the learner may discover other problems leading them to jump back and forth between steps.
- This interactive process allows students to become active learners.
- Problem-based learning (PBL) is a teaching strategy first developed in the medical education field to help students develop both content knowledge and the clinical reasoning skills needed by medical professionals.
- This educational methodology was born in the 1960s, at McMaster University in Canada.
- From the Faculty of Medicine, gradually, this methodology has been applied within the university courses for the training of health personnel, dentists, veterinarians, school leaders, engineers and finally in secondary and primary schools.

CHARACTERISTICS OF THE PBL METHODOLOGY

5 key elements of the PBL methodologies are:



1. THE TUTOR

- must be a promoter of meetings and discussion in the group;
- must be able to identify issues on which there is no agreement between the members of the group;
- must be able to involve all the students of the group in discussions, and operational decisions;
- must introduce moments of crisis or elements that favour the creativity of the group, to lift from monotony and find original ways to personal learning;
- must call for respect for the rules of the PBL and an adequate use of study time;
- must know the sources from which to draw the necessary information to study the case and the places where they are available (libraries, internet point of the faculty, etc.);
- must be open to any kind of cultural solicitation and does not tend to exclude certain preconceived themes or personal convictions or to impose its own moral position and/or experience

2. THE PROBLEM

- It is the starting point of the learning process.
- The problem is usually a neutral description of an event or set of phenomena; it is formulated in the most concrete way possible and has a degree of complexity adapted to the students' previous knowledge.
- The problem is usually presented to the students in written form and can be presented as a story, illustration, graph, case.
- The problem must be realistic and it must have the capacity to generate hypotheses, giving rise to a balanced vein of arguments. It must require adequate study time.

3. THE STUDENTS

Groups are usually made up of 6-8 students who actively participate in the discussion of the problem under the guidance of the tutor, do an initial brainstorming, formulate explanatory hypotheses, identify the topics of study, study independently on texts of their choice or recommended by the teachers in a specific bibliographic list, then summarize to colleagues and evaluate the group process.

The role of students is active. They actively participate, learn to discuss a problem and listen to each other.

4. THE LEARNING SETTING

A learning environment is dedicated, including many small cards for the meeting of individual groups of students, a well-stocked library open for many hours, a computer consultation room, a series of educational workshops for simulations and role-playing games where you can perform integrated activities.

5. THE 10 STEPS PROCEDURE

The tutor guides the students according to the procedure of the 10 steps.

The procedure requires that in the learning experience **the problem is first encountered, without any previous preparation or study**. The problem situation is presented to the students in the same way as it is presented in reality, the student works with the problem in a way that allows him to reason, challenge and evaluate his knowledge.

STEP	ACTIONS	QUESTIONS FOR STUDENTS
STEP 1	Clarify terms and concepts that are not completely comprehensible	Are there any terms or data that are not clear to you or that you do not understand?
STEP 2	Define the problem	What information do you have? What is the thing to explain?
STEP 3	Analyse the problem searching for explanatory assumptions and hypothesis	What are the possible explanations for this problem? What are the causes? Why is there this problem? Or if we are faced with the resolution of a case: how could this problem be solved?
STEP 4	Formulate a systematic inventory of the hypothesis	What is the most likely hypothesis? How do the various hypotheses connect?

STEP 5	**Formulate learning objectives**	**What gaps in knowledge do we have? Where can we find confirmation? Answers? In-depth studies? On which books? And where are these books?**
STEP 6	Individually study and collect additional information outside the group	
STEP 7	Synthesize and evaluate recently acquired information	What did we find? How do you integrate the various information found? Do we all agree?
STEP 8	Formulate research questions	What is still missing from the complete solution of the problem? Do we still have to look for new elements?
STEP 9	Evaluate group work	How did each of you participate? What was your commitment to researching information? What worked in the group? What went wrong?
STEP 10	Evaluate personal work	How did I work for this problem? Have I worked hard? Have I studied?

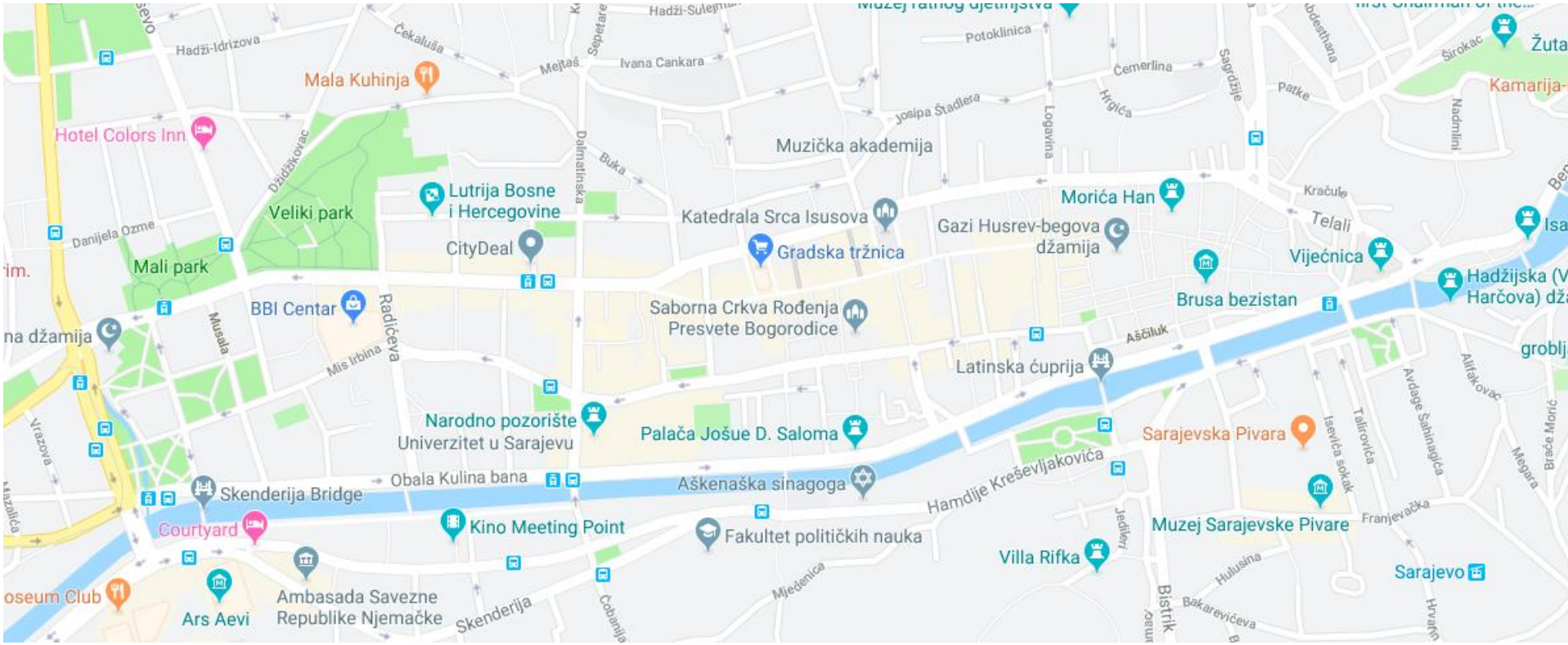
HOW TO MANAGE A PBL ACTIVITY

PBL activities consist of 4 phases:

- Conception
- Planning
- Execution
- Closure

For each phase, we have related activities, deliverables and evaluation tools. The deliverables represent what the project groups actually deliver to the professor.

A PBL Activity for Children: The Walking Debate



Would you close the Centre of Sarajevo to the car traffic?

1. BEFORE THE BEGINNING (ACTIVITIES FOR TUTOR)

- Decide on the number of projects: one for the whole class, for sub-projects or for separate projects
- Decide whether mono-multi-interdisciplinary or extracurricular projects
- Decide the themes
- Building the groups

2. CONCEPTION

First of all, students have to address the project idea, by a three steps procedure

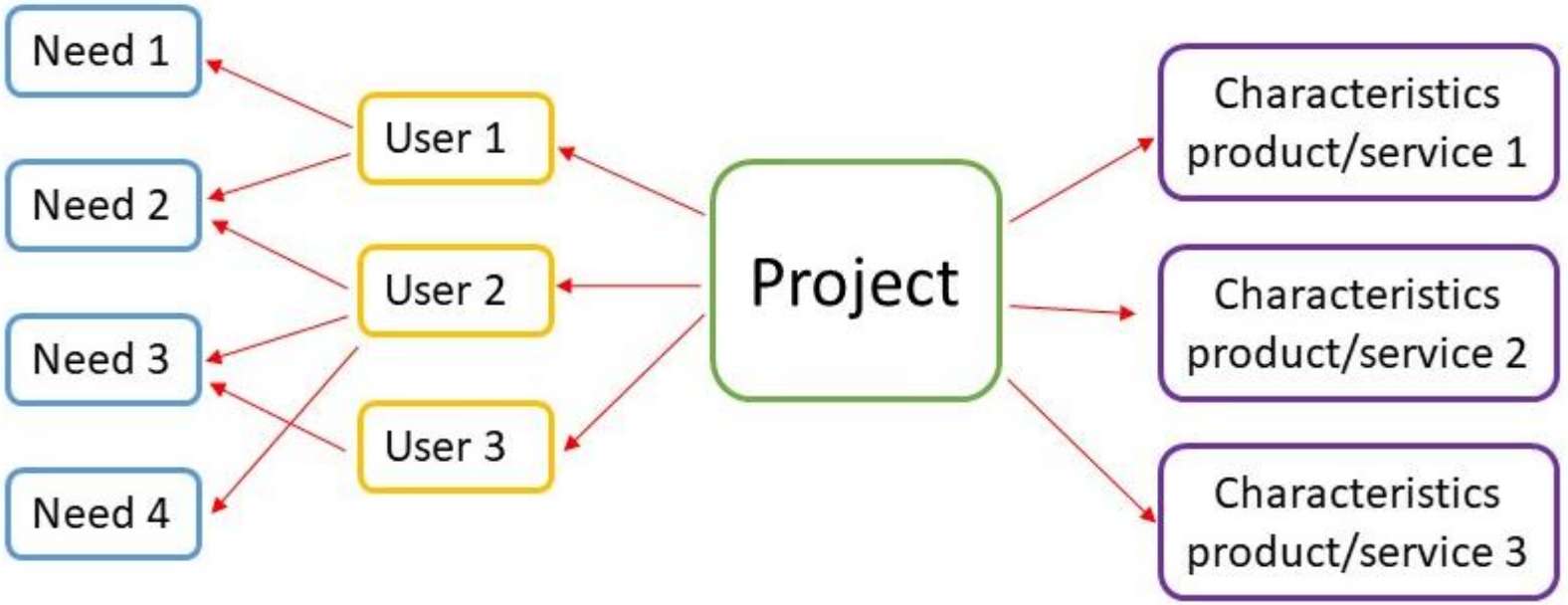
1° Identify the potential users of the product or service that are about to be implemented

2° Analyse their needs

3° Imagine, evaluate the characteristics of the product or service that you want to implement to meet the needs that have emerged

2. CONCEPTION

The definition of the project idea can be summarized in a **concept map**. **This deliverable summarises the project idea**, including the analysis of the users and their needs and the evaluation of the appropriate product/service. It is a very important pedagogical moment: it engages the students in operations of analysis, synthesis and evaluation that are not present in traditional didactic practices.



3. PLANNING

The main ac

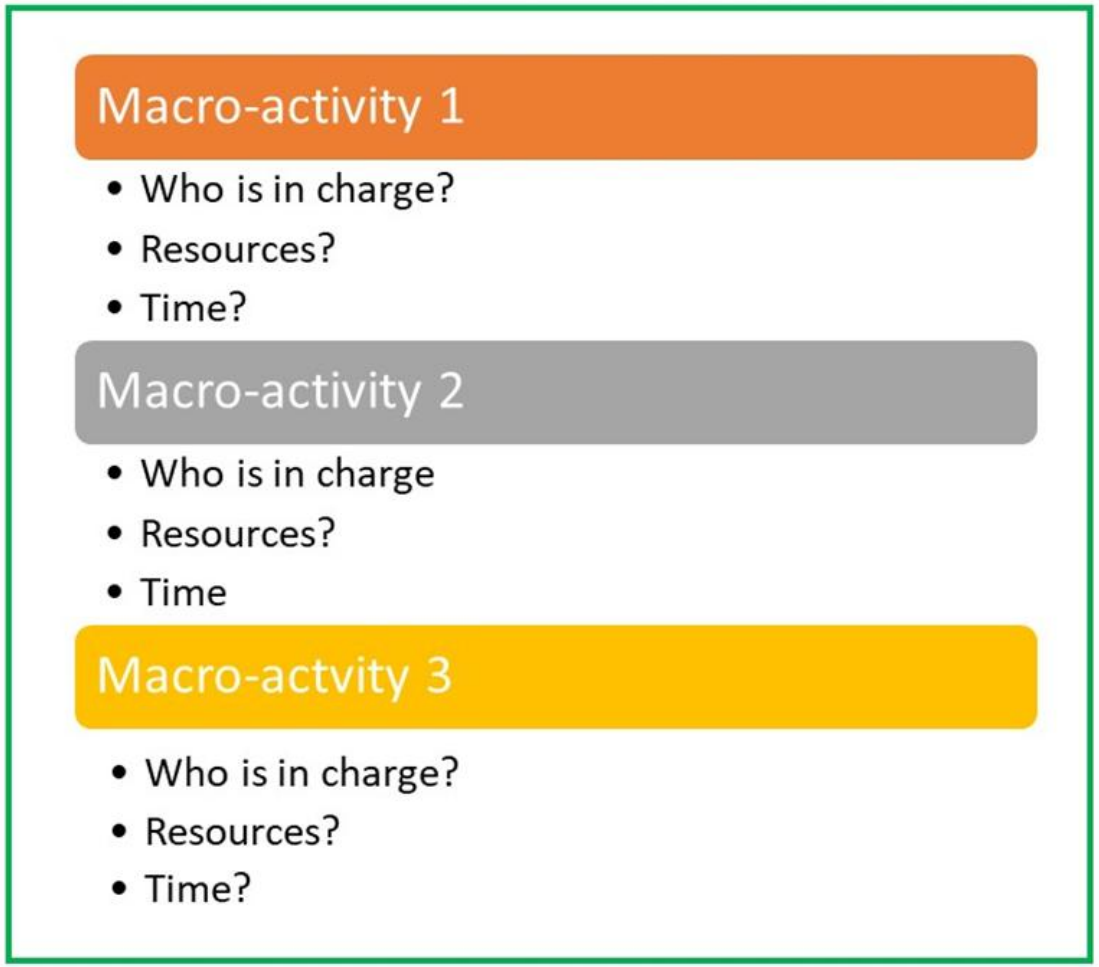
- Define the eeded;
- Assign the p, in short, define who a
- Estimate th ous activities.

The plans are made to be rebuilt!!

At the end of this phase, each member of the group must be associated with the tasks to be performed and on which it will be evaluated.

3. PLANNING

The **minimum project plan** is the deliverable in which students report the essential information: macro-activity, resources, who does what and the expected time.



4. EXECUTION

- This is the phase of the advanced knowledge.
- The development of projects involves the resolution of many problems encountered in the process.
- What differentiates the resolution of problems typical of the university environment from those of the daily extra-university is that in the classroom students are used to dealing with structured problems, with only one solution, such as mathematical, physical or other. In everyday life problems are unstructured, without a precise solution, where being good means finding the solutions less worse.
- The way of proceeding for the solution of problems encountered during the development of a project is similar, for successive approximations, and the student narrating and narrating the solutions found gets used to the reflection during the action.

4. EXECUTION

The **narration document** is the document/diary that narrates the reflections, strategies, choices, doubts, fears and certainties of the students in facing the different moments of the project's development. It is organized in three columns. The first column contains a date, the second contains a surname or group text, the third a reflection or an action.

5. CLOSURE

- The bulk of the project is now complete.
- Now they will have to present the work done, communicate the results achieved.
- The presentation as we conceive it will be done in multimedia mode and will be addressed to the rest of the class, the teacher or teachers. Sometimes it can be extended to various stakeholders or even to a larger auditorium, taking advantage of public moments.
- Each member of the group will present the part of the work carried out by him and this will allow an individual evaluation as well as group. The presentation becomes a fundamental moment to train the students in communication.

HOW TO EVALUATE PBL LEARNING

- In order to evaluate students work during and at the end of the PBL activity, it will be ask to students to develop some deliverables.
- Deliverables will be:
    - Conceptual map (conception phase)
    - Project plan (planning phase)
    - Narration document (execution phase)
    - Oral presentation (closure)

MATRIX EVALUATION FOR DELIVERABLE

Make a list of characteristics that can be evaluated and establish a method of evaluation (see example for respect of time delivery below)

	1	2	3	4	5	SCORE
Respect of delivery time	7 days delay	4-6 days delay	< 3 days delay	On time		
Activities identification						
Activities description						
Time extimation						
Interaction with professor						

In this way, tutor will be able to evaluate all the phase of the project by using the same methodology.

At the end, the tutor will sum the points gained in the different deliverables, and will announce the final evaluation.

EXPERIENCIAL LEARNING

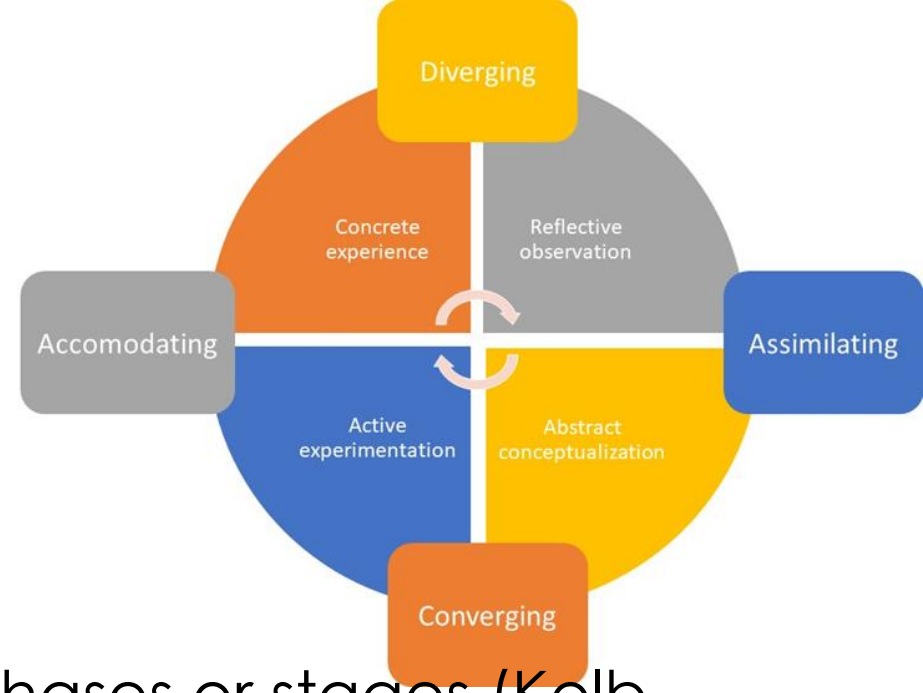
Learning is a process in which knowledge is created through the transformation of experience.

It is a process where the construction of knowledge takes place through the **observation and transformation of experience**. Not, therefore, through the passive acquisition of notions, concepts, relationships.

It is realized through the action and the experimentation of situations, tasks, roles in which the student, active protagonist, finds himself to put in field his own resources and competences for the elaboration and the reorganization of theories and concepts aimed to the attainment of an objective.

It allows the student to face situations of uncertainty by developing adaptive behaviours and improving the ability to manage their emotionality in times of greater psychological stress.

EL: APPROACHES AND THEORIES



Kolb's Experiential Learning Theory (Kolb, 1984) is circular and not only outlines the phases of experiential learning, but also offers a model of formative practice.

It is divided into 4 sequential phases or stages (Kolb cycle):

- Concrete experience (learning through perceptions)
- Reflective observation (learning through observation and listening)
- Abstract conceptualization (learning through the analysis of information flows)
- Experimentation phase (learning through action, experimentation)

CHARACTERISTICS OF THE EL METHODOLOGY

The most important characteristics of EL methodology are:

(a) Highly active learner role

(b) Habit of learning from experience

(c) Speed and constancy of learning

(d) Strengthening problem solving

(e) Collaboration capacity

(f) Transformations of the perceptions of reality (values, attitudes, behaviours, with a new mindset).

DIFFERENT FORMS OF EL

Internships. A more broad term used to describe experience-based learning activities that often subsume other terms such as cooperative education, service-learning or field experiences. The mission of this experience may be to support the integration of theory and practice, explore career options, or foster personal and professional development.

Service Learning. In these experiences, students participate in an organized service activity that meets identified community needs and reflect on the service activity to better understand course content and gain a broader appreciation of the discipline and an enhanced sense of civic responsibility.

Practicum. A relative of the internship, this form of experiential learning usually is a course or student exercise involving practical experience in a work setting (whether paid or unpaid) as well as theoretical study, including supervised experience as part of professional pre-service education.

DIFFERENT FORMS OF EL

Undergraduate research experience. Students function as research assistants and collaborators on faculty projects.

Community-based research. Faculty and students cooperate with local organizations to conduct studies to meet the needs of a particular community. Students gain direct experience in the research process.

Field work. Supervised student research or practice carried out away from the institution and in direct contact with the people, natural phenomena, or other entities being studied. Field work is especially frequent in fields including anthropology, archaeology, sociology, social work, earth sciences, and environmental studies.

Study abroad. Students usually engage in courses at higher education institutions in another country. The experiential learning component is the cultural immersion which provides novel challenges for navigating living in a new place. The coursework connected to a study abroad can also include internships and service-learning experiences.

HOW TO EVALUATE EL ACTIVITIES

Also for EL, the use of matrix to evaluate students activity is strongly recommended.

A good matrix serves three purposes: (1) it creates a systematic way to evaluate students on content knowledge, (2) it provides quick and easy feedback to both the professor and the students, (3) it measures teaching.

Matrix also allow the professor to identify the areas that students need the most improvement.

Over time, if similar matrix are used through the semester, professors can easily map patterns of growth and regression in student work.

One way to ensure that students are meeting the criteria is to discuss the matrix in class. If students are aware of what is required from them before they begin the assignment, then they are less likely to stumble into common pitfalls.

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Many thanks for your attention

… and now let us start with practical examples