Biology ... What a Pizza!!!

Suggested Assessment

The assessment is intended to measure the students ability to apply school knowledge to real life, it is achieved through the description and observation of behavior and implies a meta cognitive importance of the student.
The knowledge and the skills of the student, in other words the process by which individual resources are mobilized, are sized up:

- To know what to do: know what to do, when, even in new or unplanned situations;
- To know how to integrate the integrate the various knowledge;
- To be able to communicate.

The tests (structured, semi-structured, or unstructured test) are designed to assess the knowledge, not the skills, and are regarded to the final result but not to the mental process.

Therefore two aspects should be integrated:

- summative assessment: the knowledge is assessed through structured or semi-structured questionnaires, questions, short questions ... It is expressed in a mark that then is converted into grade, which can vary from 10 to 1.
- Formative assessment: it assesses the quality of learning skills. It is expressed in levels.

1. Summative assessment

It is achieved through structured or semi-structured test, which are introduced at the end of each work phase, through several types of oral tests in order to verify the learning of the following disciplinary knowledge:

- The carbohydrates: classification, food sources nutritional importance, chemical transformations during the rising and cooking.
- The proteins: composition and structure, role played in the rising, food sources, nutritional value, gluten intolerance.
- The Saccharomyces, reproduction, metabolism (alcoholic fermentation).
- Reactions that develop CO_2: the rising agents.

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The assessment based on incidence criteria is used, indicators and weights are determined by the teachers of the science department according to the following table:

Table of the indicators related to the written and oral tests

Weight	Type of test
1	a) question about the topics analyzed in the individual work or teamwork b) repetition of a concept or a topic just discussed in class c) intuition of the right answer to a question addressed to the whole class
2	a) presentation to the class of a topic or a laboratory experience assigned as individual work or teamwork b) questions, comments, and, in general, remarkable observations, depth of thought and collective utility during an activity, as well as observations on the differences between manual and notes or comparisons between the collected material c) correction of written reports on laboratory activities and guided tours d) laboratory activities carried out individually or in groups (behavior, correct execution, adherence to the laboratory protocol) e) school work or test and questionnaire, or other form of simple examination. f) oral test with a question, or more questions, but without the possibility of too articulated answers
3	a) written examination, scheduled or unscheduled, consisting of one, two, or more short-answer questions (max 10/15 lines), or consisting of a multiple choice test, or other form of verification which requires limited time commitment (30/60 minutes.) and that refers to a limited part of the program b) structured oral exam with two or more questions that allow articulated answers
5	oral exam that is particularly significant due to the number of questions and their conceptual importance and that may require clarification and / or critical elaboration of the answers with the teacher
6	school work that is planned and very demanding both because of the part of the program that should be studied, both because of the duration of the test and the number of questions (1 hour or more)

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A grade from 2 to 10 is assigned to the various tests and the average is calculated. Together with the grade, in the lower right corner, the "weight" is shown.

Example

	mark
Short question: what foods contain starch? What is the function of Saccharomyces?	7_2
Explain to the class what happens during the rising	6_3
With which experiment can you show that the yeast produce carbon dioxide? Explain	8_2
Final test	5_6

Calculation of the weighted average: (7x2 + 6x3 + 8x2 + 5x6): (2 +3 +2 +6) = 78: 13 = **6** (the mark can vary from 10 to 1).

2. Formative assessment

It aims to assess the learned skills :

- Management skills: ability to organize and manage a project (time, ways, means ..) in a group work (who does, what, when, how ..)
- Development of social skills: ability to interact with the group members and with the members of the other groups
- Technical skills: to use the web, to select the informations, to use a power point presentation
- Research skills: to determine the nature of the problem, to search for information using different sources, to search for solutions, to design a proper laboratory activity
- Organizational and working skills: to organize informations, using different language codes (written report, questionnaires, lab report, power point presentation...)
- Oral and written communication skills

Formative assessment refers to the various moments of the activity (see planning activities), divided into five steps

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Step 1

At the end of the first activities the student has to draw a concept map with the ingredients and the preparation process

	Level1	Level 2	Level 3	Level 4	Level 5
Ability to use and organize in a concept map the collected information	None	Minimum	Sufficient	Passable	Excellent

Step 2 and 3

Brainstorming in class, discussion, proposal for an experimental activity, research and group activities.

The student should examine the role that the different ingredients have in the preparation of pizza. He should also identify the rising agents and know their properties.

	Level1	Level 2	Level 3	Level 4	Level 5
Ability to organize the work (time, ways, means ..)	None	Minimum	Sufficient	Passable	Excellent
Ability to select and reorganize the useful informations	None	Minimum	Sufficient	Passable	Excellent
Participation to the group work	None	Only if personally involved	Not total	Good	Active
Ability to identify the most suitable experimental activities in order to understand the role of the different factors affecting the leavening (type of flour, water hardness, salt, sugar, temperature ..)	None	Minimum	Only if guided	Passable	Independent and safe of oneself

Step 4

Problematization and experimentation, research and teamwork.

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The student should know the role of the Saccharomyces in the rising and the fermentation process, he should also highlight the most important chemical reactions that occur during cooking (caramelization, Maillard reaction, dextrinization of starch)

	Level1	Level 2	Level 3	Level 4	Level 5
Ability to organize the work (time, ways, means ..)	None	Minimum	Sufficient	Passable	Excellent
Ability to select and reorganize the useful informations	None	Minimum	Sufficient	Passable	Excellent
Participation to the group work	None	Minimum	Sufficient	Passable	Excellent
Experimental activities (approach, execution, observation skills, report)	Only if guided	Little autonomy	Sufficient	Passable	Independent and safe of oneself

Step 5

Cooperative learning, reflection, data collection, discussion, preparation of a power point presentation, final report.

The student should identify the fundamental steps in the preparation of pizza and its chemical and physical transformations, summarizing them in a power point presentation. He should also show the presentation to the other groups and put into practice what he studied (cooking workshop).

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	Level1	Level 2	Level 3	Level 4	Level 5
Ability to organize the work (time, ways, means ..)	None	Minimum	Sufficient	Passable	Excellent
Use of the software	None	Minimum	Sufficient	Passable	Excellent
Participation to the group work	None	Only if guided	Not total	Good	Active
Oral presentation: personal elaboration of content, knowledge and use of scientific terminology	None	Hesitant	Sufficient	Good	Fluida e sicura
Critical reflection on the individual work and on the group work: strengths and weak points	None	Hesitant	Not total	Good critical thinking skills	Excellent critical thinking skills
Diligence: deadlines, work at home, classroom participation	None	Minimum	Sufficient	Passable	Excellent

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