

Chemistry ... What a Pizza!!!

Student Activities

Your Tasks

Task 1

Each student has the task to carry out a research and to draw a concept map on the ingredients and the production process of pizza.

Analysis of the product

Let's know the pizza in more detail:

- What are the basic ingredients of the dough? (do not consider the stuffing in order to simplify the study)
- In which ratio the ingredients should be mixed?
- Is it important the sequence in the recipe?

1. Perform a web search concerning the ingredients and the preparation of the dough for pizza.
2. Draw a concept map with the ingredients used and the recommended doses for 500g of flour. Mark the differences between the various recipes.
3. Identifies the variables that, in your opinion, could affect the final result.
4. Choose one of the variables and try to set up an experiment to evaluate the influence of your factor on the final result.
5. Draw a flowchart: dough, first rising, second rising, baking.

Task 2

The research results are discussed in class and a final map of the ingredients and the procedure is developed.

Task 3

Students learn more in detail the reaction of leavening.

Problematization

Analyze the leavening process:

- What chemical reaction takes place during the leavening?
- What are the reagents and products of this reaction? Can you identify them?
- What is the function of the leaven?
- Changing the amount of the reagents, which results could be achieved?
- Changing working conditions (time, temperature ...), which results could be achieved?

At the end of the team work, in which you can use the resources that you deem appropriate (discussion with your mates, web searches, texts consultations, interviews with professionals or simply interviews with your mother or your grandmother...) write, with your teammates, the possible responses to the questions that are listed above. Also design possible experiments to verify the responses.

Task 4

Laboratory qualitative analysis

Students, divided into groups of 4-5 elements, carry out tests.

Experimentation

1. The fermentation develops a gas: detection of CO_2 through testing with barite water
2. The fermentation produces alcohol: detection by testing with potassium dichromate

Task 5

Laboratory, semi-quantitative analysis

To students, divided into groups, are assigned different tests. Each group will submit a written report on its activities including the graphs for comparison of the data collected. At the end of the research, students are asked, using a multimedia presentation, to describe to team mates the activities carried out.

Experimentation

Measure the rate of reaction through the volume of CO_2 produced, the fermentation proceeds at different rates:

- a. changing the% of sugar
- b. changing the temperature
- c. changing the amount of leaven

Professional Reflection-Oriented Focus on Inquiry-based Learning and Education through Science
d. changing the relationship between substrates and catalysts

Elaborate the obtained data by creating comparative charts with Excel and describe the experimental work in a relationship.

Task 6

Hotel management school, let's make pizza and talk to the expert

The students go to a Hotel management school where they present their work and have the opportunity to ask questions of an expert in culinary technique and a cooking teacher. Also they proceed with the preparation and the tasting of the pizza.

Developed by Francesca Maria Foresi
Istituto di Istruzione Superiore "Corridoni Campana"
Osimo (AN), Italy