Educator's Guide - Science of Cooking (SoC)

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Introduction

This document is designed to support the correct setup of the gamified experience Science of Cooking. It explains to the educator which materials need to be purchased in addition to those included in the box, as well as how to properly set up and carry out the activity.

This experience requires **continuous supervision** by the educator, who must guide the players step by step, assist them in handling the game components, and ensure that the activity proceeds correctly. Additionally, it is necessary **to prepare the baking soda block** at least one day before the scheduled activity, using the mold referenced in this link.

General Structure

The experience is built around a main box, which contains all the materials needed to launch and manage the activities. Inside the main box are four smaller boxes, numbered from 1 to 4, each linked to a specific challenge. Only box 1 is initially unlocked, while boxes 2, 3, and 4 are secured with combination locks or key locks. Each box is opened only after completing the previous challenge, creating a progressive, engaging, and motivating game path.

The narrative of the experience is guided by a tablet, which leads both participants and facilitators step by step. The tablet also contains narrative or interactive blocks that are unlocked only after completing certain challenges. These moments are highlighted in this document and clearly indicated to the facilitator.

To better support the facilitation, it is strongly recommended that the educator test the game independently in advance, in order to fully understand the flow of the narrative and gameplay.

Lastly, some materials are not included in the kit and must be purchased separately and prepared on the work table before starting the activity (e.g., vinegar, water, milk, etc.). These items are clearly listed and explained in the following sections of this guide.

Setup Guidelines for the Experience

To ensure a smooth and engaging experience, it is recommended to follow this general setup checklist:

- **Prepare the work table in advance** with all materials that are external to the game (e.g., ingredients, water, vinegar), making sure to keep them separated or covered if they are not needed immediately.
- **Print all necessary paper materials in advance**, especially those that will be cut or used directly by players (e.g., food illustrations, cutting cards, order cards). Must be printed only the png version or the pdf version, not both of them, according to your format preferences.
- **Arrange the game boxes in numerical order**, placing the right materials in them, with combination locks already secured on boxes 2, 3, and 4.
- **Set up the tablet** and ensure it is fully charged and ready to use, with screen blocks configured according to the provided instructions.

- **Check the condition of all materials:** make sure the baking soda block is dry, utensils are clean, litmus papers are intact, etc.
- **Create a tidy and accessible environment for the group,** with enough space and seating so that each participant can see and take part actively.
- **Read through all game instructions in advance,** so that you are fully prepared to facilitate and support the players throughout each phase.

Before You Start: 5 Things to Know

The main box contains 4 game boxes: only Box 1 is unlocked, while Boxes 2, 3, are secured with combination locks and Box 4 with key lock.

The tablet guides the entire narrative. Some content will only unlock after successfully completing the games.

Some materials must be purchased separately (e.g., vinegar, lemon, olives). These are clearly listed in each section.

Some materials are consumable or cut during the activities and will need to be replaced if you want to reuse the kit.

The baking soda block must be prepared at least one day in advance—otherwise, Game 3 cannot be played.

During the Game

The facilitator must always supervise the group: no phase is fully autonomous.

Players should not use all materials right away—some should be introduced at the appropriate time to avoid confusion.

The educator's role is to explain, supervise, and support—but also to avoid revealing the solutions to the games.

General Materials Information

Materials to Purchase Before the Experience

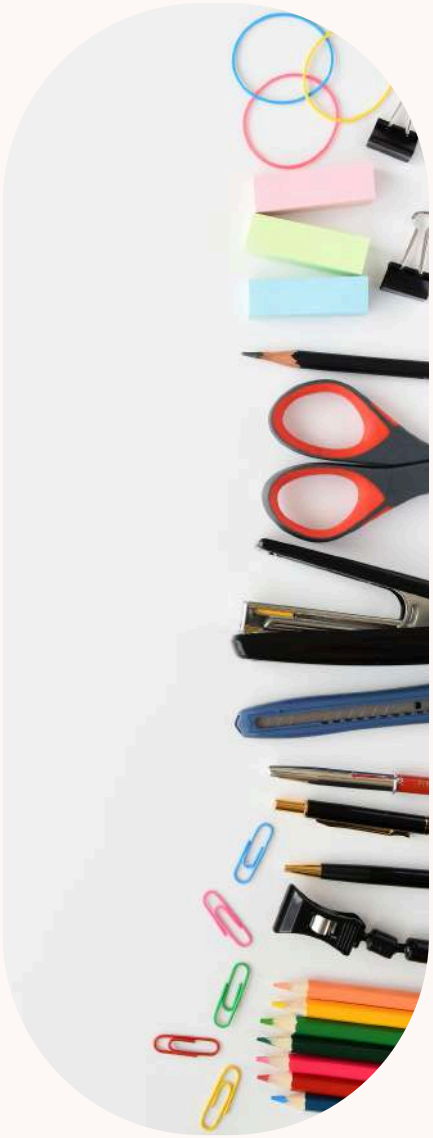
In addition to the materials listed for each game, there are several general items that must be prepared in advance, as they are not included in the kit:

- 2 combination padlocks (for boxes 2, 3) - 1 with 3 digits, 1 with 4 digits
- 1 padlock with key (the key will be hidden in the soda block and used to open box4)
- 1 tablet
- 4 boxes (20x30x30, or big enough to contain the games' materials)
- 1 big box (to contain the boxes, optional)
- Paper towels or absorbent cloths (for cleaning and drying materials)
- Disposable latex gloves or similar (at least 4 pairs)
- Protective goggles (1 or more - optional, but recommended)
- Permanent markers for marking lines on the beaker (1 yellow, 1 blue)
- Mold to create the baking soda block (e.g., half-sphere mold)
- Bags for preserved foods
- Storage bags or airtight containers for storing opened food items (optional)
- Extra spoons, knives, or cutting boards in case you want to involve multiple groups at once

Note: It's important to purchase all required materials well in advance, so you have time to test and prepare everything before the session.

Materials That Are Consumable or Disposable

Some materials are single-use or perishable, and must be replaced if you plan to reuse the kit with other groups:



Game 1:

- Turmeric, sugar, lemon juice, sparkling water
- Litmus paper (single-use)

Game 2:

- Paper cutouts of sliced bread, cheese wheel, salami, and strawberries (must be reprinted each time as they will be cut by players)

Game 3:

- Baking soda block (must be remade each time)
- Vinegar, water, milk

Game 4:

- Preserved or fresh foods (sun-dried tomatoes, olives, bacon, salted fish…)
- Any opened or handled food items (must be discarded or refrigerated if still usable)

It is recommended to reprint paper materials after a few uses to ensure maximum clarity and quality.

A Fresh Lemonade

Description

As a welcome drink for his guests, Chef Antonino decides to prepare a refreshing lemonade,

but he needs a hand!

The recipe he has is for 1 liter of lemonade, but he only needs a single glass of 300 ml.

Game Objective

The aim of this game is to help players understand the concept of correct food proportions. Players are given a recipe to prepare 1 liter of lemonade, but they are asked to produce only 300 ml. Therefore, they will need to divide each ingredient by 3, and use litmus paper to test the acidity of the mixture at different stages.

Materials Included in the Box

- 1x pipette
- 1x beaker
- 1x teaspoon
- 1x recipe
- 1x tablet (the tablet is one and it's the same for all the four games)
- 1x glass (minimum 350 ml)
- 1x litmus paper. Note: The litmus paper should cover the full pH range from 0(acidic) to 14 (basic), with 7 as neutral. The colors typically indicate: red = acidic, blue = basic, green = neutral.
- 1x calculator

Materials to Be Purchased Separately

- 1x bag of turmeric (minimum 3 pinches)
- 1x bag of sugar (minimum 9 teaspoons)
- 1x lemon juice (250 ml)

The lemon juice must be pure. If not available pre-squeezed, buy lemons and
squeeze them until you obtain 250 ml.

- 1x bottle of sparkling water (750 ml)

Additionally, it will be necessary to draw two lines on the beaker using colored permanent markers: the first line should be yellow and marked at 75 ml, the second should be blue and marked at 250 ml.

Setup and Execution

To set up this game, it is important that all the materials to be purchased separately are placed on the work table, but used by the players only when needed. To complete the setup, also take out of the box 1 the beaker, pipette, teaspoon, glass, and calculator. The litmus paper can be taken out later, as it will only be needed at a more advanced stage. At this point, take the recipe out of the box. Players must read it to understand the initial quantities of the ingredients. Then, following the tablet instructions, they must divide each ingredient by 3 to obtain the correct amounts. Set the recipe aside after use, but remember it will also be needed to unlock game number 2.

In detail, as specified on the tablet screens, players must measure the ingredients in thefollowing order:

- Lemon juice;
- Turmeric;
- Sparkling water;
- Sugar.

After measuring each ingredient, players will pour it into the large glass to recreate the lemonade. They will then stir to dissolve the sugar properly and, finally, use the pipette to collect a few drops of the solution and apply them to the litmus paper to evaluate the acidity.

It is recommended to supervise every step of the activity, especially the acidity evaluation using the litmus paper, to ensure the experience is carried out correctly.

Code to unlock the tablet screen

The code to unlock the tablet screen is: (**Acid**).

The Tasty Cutting Board

Code to Open the Box

The code to unlock box 2 containing game 2 is: (988)

Description

Chef Antonino needs to prepare a tasty cutting board for his guests, and he's asking the players for help. It's essential to do it sustainably and without waste: every ingredient must be cut precisely to be used in the best possible way! The ingredients are ready: cheese, salami, bread, and fruit. It's up to the players to organize them perfectly, following geometric instructions to minimize waste.

Every slice counts!

Game Objective

Players will need to cut and correctly arrange the ingredients to create a sustainable cutting board, using the cutting cards and ingredient cards for guidance.

List of Materials Inside the Box

For this game, all materials are included in the box, so there is no need to purchase anything separately:

- Sliced bread figure (6 possible slices)
- Cheese wheel figure (8 possible slices)
- Salami figure (9 possible slices)
- Strawberry figure (8 strawberries present)
- 4x pairs of scissors
- 1x tablet (the tablet is one and it's the same for all the four games)
- 4x rectangular cardboard cutting boards
- 4x order cards
- 4x cutting cards

Setup and Execution

To carry out this game, player supervision is essential, as they will be using scissors. The goal is to cut out the food figures, slicing them into the correct number of pieces according to the requests of different guests. Players will then recreate each guest's cutting board using the appropriate number of slices. The first elements to extract from box 2 are the order cards and cutting cards, which help identify which food item each guest receives.

Next, extract the food figures, cutting boards, and scissors.

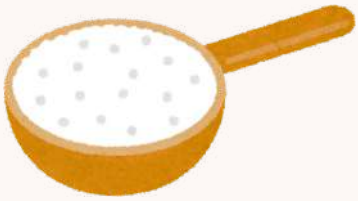
**If you consider that it will be too difficult for participants to determine the number of items ordered for each guest, you can write the numbers from the digital board to a printed order card. You may want to use a dry-erase marker so that you can erase the numbers for other groups if necessary.*

At this point, the educator must supervise the slicing process to ensure it is done safely. Players will then recreate all four cutting boards, ensuring the number of slices matches the requirements shown on the cards and the representations displayed on the tablet.

Code to unlock the tablet screen

The order for selecting the cutting boards is: **Agata, Elena, Carlo, Giorgio.**

Chemistry in the Kitchen!



Code to Open the Box

The code to unlock box 3 containing game 3 is: (1537)

Description

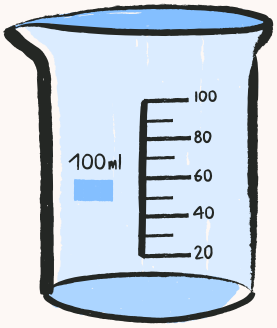
Chef Antonino needs to retrieve the ingredients from his pantry to prepare a special menu. However, someone has played a nasty prank and trapped the pantry key inside a solid block of baking soda! Antonino is desperate, but fortunately, Marie arrives just in time to help. She hands over a note that will help dissolve the block, then rushes off to her laboratory. Players must work together to free the key, using chemistry to solve the problem.

Game Objective

The goal of the game is to free the key trapped inside the baking soda block by using vinegar, solving the riddle, and observing the chemical reaction.

List of Materials Inside the Box

- 1x clue note
- 1x set of letter tiles
- Lab goggles (not mandatory)
- Latex gloves
- Round bowl
- Shallow rectangular container
- 1x tablet (the tablet is one and it's the same for all the four games)



A clearly visible MAX fill line should be marked on the round bowl to ensure players do not overfill it with vinegar.

Materials to Be Purchased Separately

- 1x bottle of vinegar
- 1x bottle of milk
- 1x bottle of water
- Paper towels

List of Materials to Be Prepared Before the Activity

- 1x key trapped in a baking soda block
- Creating the Baking Soda Block

Take a small container and add:

- 3.5 teaspoons of baking soda
- 1 teaspoon of water

Mix well until you obtain a mixture that is compatible but not too wet.

Take a mold identical or similar to the one shown in this link.
Firmly press the baking soda and water mixture into the mold, inserting the key and **covering it with more mixture until the mold is half full**.
Once the half-mold (half sphere) is tightly packed, let it sit and dry overnight, preferably near a source of air or heat, such as on top of a radiator.
Handle the baking soda block with care and follow all instructions to achieve a solid result. If the educator does not have time to let the block dry properly, an alternative is to create the block as described and then dissolve it in vinegar without removing it from the mold.

*To ensure the firmness of the block you can add a pinch or two of baking powder to the mixture.

Setup and Execution

To set up the activity, you'll need a bottle of vinegar, a bottle of milk, and a bottle of plain water, as the players must figure out which liquid will dissolve the baking soda block.

This activity requires careful supervision by the educator, since the baking soda block contains the trapped key, and it's important not to break it before placing it in the vinegar.

After extracting from box 3 the three bottles from the box, take out the clue note and the letter tiles, so the players can figure out which liquid will dissolve the block.

Once the correct liquid has been identified, extract the two containers and place the round bowl inside the rectangular container to prevent spilling and protect the work surface.

Then, players will:

1. Pour vinegar into the round bowl
2. Put on gloves and goggles
3. Insert the baking soda block into the liquid to dissolve it

Finally, players must retrieve the key and dry it using the provided paper towels, so they can use it to unlock the next lock.

Code to Unlock the Tablet Screen

To unlock the next screen on the tablet, enter the word: **vinegar.**

The Chef's Menu

Code to Open the Box

There is no code to open the box—players must use the key that was recovered earlier.

Description

At last, thanks to the help of the group, Chef Antonino has managed to retrieve the pantry key!

However, the work isn't finished yet: to complete his special menu, Antonino must use the right ingredients, each preserved with the ideal method.

The challenge now is to organize the pantry by matching each ingredient with its correct preservation method. The chef needs the players' help to identify how the foods were preserved and to combine them into a recipe that will amaze the guests.

Game Objective

Correctly associate each preservation method with its corresponding fresh food, using both tactile/visual representations and the descriptive cards.

Once all matches have been made, the tablet will ask players to identify the differences between fresh and preserved foods. At the end, it will display a final recipe incorporating all 4 selected ingredients.

List of Materials Inside the Box

- 4x descriptive cards for preservation methods
- 1x tablet (the tablet is one and it's the same for all the four games)

Materials to Be Purchased Separately

- 1x package of sun-dried tomatoes
- 1x package (or can) of salted fish
- 1x package of smoked bacon
- 1x package of olives in oil

Setup and Execution

The level of immersion in this section is in the hands of the educator. It is necessary to purchase the four preserved food items, and their characteristics should be analyzed together with the players.

To make the experience more engaging, you may choose to open the packages (after verifying allergies or preferences) so that players can smell, touch, and observe the foods. To carry out the game properly, extract all items from box 4. The cards will help players understand the features of each preservation method, which must then be matched to the corresponding preserved food.

Finally, players will use the tablet to explore the differences between fresh and preserved versions of the foods.

Code to Unlock the Tablet Screen

To advance to the final recipe, players must answer a true or false quiz correctly.

Correct answers:

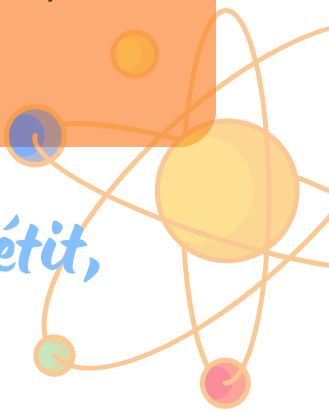
- Tomato: True
- Fish: False
- Bacon: True
- Olives: True

Conclusion

The Science of Cooking experience is designed to spark participants' scientific curiosity, critical thinking, and collaboration through engaging, multisensory activities. The role of the educator is essential: to guide, observe, facilitate, and support each phase of the process, ensuring safety, clarity, and accessibility for all players.

An important part of the process is also the evaluation of the game experience. At the end of the activities, it is recommended to gather impressions and feedback from participants: what excited them, what they found challenging, what concepts they learned, and what emotions they experienced. This can be done through a short group discussion, a feedback form, or a simple oral reflection. Such insights are valuable for improving the quality of the experience and enhancing its educational impact.

By following the guidelines in this document, you will be able to lead the activities effectively and meaningfully, offering participants a memorable educational journey that blends play, discovery, and learning.



Enjoy the experience... and bon appétit, science lovers!

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