Experiment sheet (for the teacher)

Title of the lesson plan: Food sensory and food careers – Triangle test (Class B)

The students in the class will participate in a triangle test.

Materials needed (for a class of 25 students)
1 liter of apple juice (without pulp) at room temperature
1 glass of orange juice (without pulp) at room temperature
1 lt of water
100 small paper glasses
1 big jar to prepare the sample B
A volume measuring container
Small paper or aluminum trays
A straw (or pipette)
Pen

Set up (preparation before the class) – here maybe the teacher could get some help from a student who is not going later to participate in the triangle test.
1. Collect all the materials
2. Make copies of the record sheet for each student.
3. Prepare sample A and sample B: Sample A is just apple juice. Sample B is prepared by adding 4 drops of orange juice in 50 ml of apple juice. So, the teacher needs to prepare:

a.   800 ml of just apple juice

a.   800 ml of apple juice in which 64 drops of orange juice have been added (note: in order to add drops of orange juice, you need to take a straw, immerse it in the glass of orange juice and then close the top of the straw with your finger. When you pull the straw out of the orange juice, drops will start dropping from the other end of the straw. You can allow these drops to fall in the apple juice.)

0.   On each tray, write the name of a student. In the end, you will have 25 trays, each one having the name of a student on it.

0.   Number the glasses according to the table 1 below (from 1 to 75).

0.   On each tray, place three glasses according to Table 1 below (plus one glass with water).

0.   Fill in the glasses with samples A and B, according to Table 1 below.

0.   Then, move the glasses around in each tray so that there is no sequence in the numbering.

Procedure
1.   Give the trays to the students together with a glass of water.
2.   Give each student a copy of the record sheet.
3.   Ask the students to be silent, really concentrate on the smell and taste of the juices and not look/talk to each other at all. Remind the students that in real life sensory panels, the panelists sit in isolated booths, not interacting with one another. But in our case, we need to

at least be silent, not talk to each other or make any comments. Tell the students that each student should concentrate on his/her own samples.
4. Allow the students time to do the tasting.
5. Collect all the record sheets
6. Record:
    Number of correct answers (identified the different sample): ....
    Number of false answers (did not identify the different sample): ....

Interpretation of results – Conclusion

For 25 students, the minimum number of correct answers required in order to be able to say that a significant detectable difference exists between A and B is 13 correct answers (at 5% significance level) (see statistical table 2 below).

So, if less than 13 students gave a correct answer (detected the different sample), then it can be concluded that there is no detectable difference between A and B.

If more than 13 students gave a correct answer, then it can be concluded that there is a detectable difference between A and B.

TABLE 1

Number written on each glass	Type of juice poured in the glass (A or B)	Name of student written on the tray (to get the trio of glasses)	Answer of student (A or B is the different one?)	Correct (√) or false (X)?
1	A			
2	A			
3	B			
4	A			
5	B			

6	A			
7	B			
8	A			
9	A			
10	A			
11	B			
12	B			
13	B			
14	A			
15	B			
16	B			
17	B			
18	A			
19	A			
20	A			
21	B			
22	A			

23	B			
24	A			
25	B			
26	A			
27	A			
28	A			
29	B			
30	B			
31	B			
32	A			
33	B			
34	B			
35	B			
36	A			
37	A			
38	A			
39	B			

40	A			
41	B			
42	A			
43	B			
44	A			
45	A			
46	A			
47	B			
48	B			
49	B			
50	A			
51	B			
52	B			
53	B			
54	A			
55	A			
56	A			
57	B			

58	A			
59	B			
60	A			
61	B			
62	A			
63	A			
64	A			
65	B			
66	B			
67	B			
68	A			
69	B			
70	B			
71	B			
72	A			
73	A			
74	A			

75	B			

Table 2: The number of assessors in a triangle test required to give correct judgements at three different significant levels. (Lawless and Heymann, 2016).

Number of Assessors	Significance Level		
	5%	1%	0.1%
7	5	6	7
8	6	7	8
9	6	7	8
10	7	8	9
11	7	8	10
12	8	9	10
13	8	9	11
14	9	10	11
15	9	10	12
16	9	11	12
17	10	11	13
18	10	12	13
19	11	12	14
20	11	13	14
21	12	13	15
22	12	14	15
23	12	14	16
24	13	15	16
25	13	15	17
26	14	15	17
27	14	16	18
28	15	16	18
29	15	17	19
30	15	17	19
31	16	18	20
32	16	18	20
33	17	18	21
34	17	19	21
35	17	19	22
36	18	20	22
37	18	20	22
38	19	21	23
39	19	21	23
40	19	21	24
41	20	22	24
42	20	22	25
43	20	23	25
44	21	23	26
45	21	24	26
50	23	26	28