

## Supplementary

### **Supplementary SA: Scenario Based Questionnaire & Background Questionnaire**

Student Diagnostic questionnaire – (35 points, 36 with egg question)

For Research team:

Country:

Student Unique ID:

Before/After

#### Section S1 Foodborne Illnesses (10 points total)

1. What is foodborne illness? (Tick all that apply) (2 points)

- ☐ Any illness that arises from contaminated food (correct)
- ☐ Any illness that arises from contaminated food that may occur at any stage in the process from food production to consumption. (Correct)
- ☐ When you eat too much food or drink and are sick (incorrect)

2. Which of the following statements are true? (Tick all that apply) (1 point)

- ☐ All microbes found in food are harmful and cause foodborne illness (incorrect)
- ☐ There are useful, spoilage and harmful microbes in food and the latter can cause foodborne illness (correct)
- ☐ All foodborne illness is caused by *Salmonella* (incorrect)

3. What are the common symptoms of foodborne illness? (Tick all that apply) (4 points)

- ☐ Diarrhoea (correct)
- ☐ Vomiting (correct)
- ☐ Tooth ache (incorrect)
- ☐ Stomach cramps (correct)
- ☐ Dehydration (correct)

4. Which of the following statements are true? (Tick all that apply) (2 points)

- ☐ Foodborne illness is something everyone gets, and nothing can be done to avoid it (incorrect)
- ☐ Symptoms of foodborne illness usually pass within a week and can normally be treated at home (correct)
- ☐ Pregnant women, babies, elderly people and those who are immunocompromised, e.g. cancer patients undergoing chemotherapy, are more likely to get sick or have more serious symptoms of foodborne illness (correct)

5. True or False? It is always the food eaten just before symptoms appear that has caused the foodborne illness (Tick one) (1 point)

- ☐ True (incorrect)
- ☐ False (correct)

## Section S2: Food hygiene risks and solutions

### Shopping and transporting

1. Charlie is shopping for food, including raw chicken, fruit and vegetables. Charlie packs all of the food into one bag.

1a) What could go wrong? (2 points)

- Cross-contamination/contamination (2)
- or
- Any phrase that implies touching/mixing/transfer (1)

Not accepted:

- Key terms including bacteria, infection, illness without reference to touching/mixing/transferring

1b) What should Charlie do differently? (1 point)

- Any phrase that implies separating meat from other shopping (1)

2. Charlie also bought some frozen fish to eat later in the week. He plans to drop past a friend's house on the way home.

2a) What could go wrong? (4 points)

- Any reference to increase in temperature of the fish (1)
- Linking increasing temperature with microbial growth (2)
- Reference to causing foodborne illness (1)

2b) What should Charlie do differently? (1 point)

- Any reference to maintaining the cold chain e.g, going straight home, putting it in their friend's fridge etc (1)

### **Storage**

3. Charlie is back home from the supermarket, and about to unpack his shopping.

3a. Charlie should put all food items in the cupboard (1 point)

- ☐ True (incorrect)
- ☐ False (correct)

3b. Charlie notices that there are juices leaking from some of the raw meat. Charlie should put it in a sealed container in the fridge (1 point)

- ☐ True (correct)
- ☐ False (incorrect)

3c. Charlie's fridge should be set to 6°C (1 point)

- ☐ True (incorrect)
- ☐ False (correct)

3d. Charlie's found some meat in the fridge that goes out of date in a couple of days. Charlie could put it in the freezer to have at a later date. (1 point)

- ☐ True (correct)
- ☐ False (incorrect)

### **Food preparation**

4. Charlie has prepared some raw chicken and is now making a cheese sandwich for their sister.

4a) What could go wrong? (4 points)

- Cross-contamination (2)
- Reference to transfer of microbes/bacteria from chicken to cheese sandwich (1)
- Reference to microbial transfer via tools/hands/chopping board (1)

4 b) What should Charlie do to avoid causing foodborne illness? (3 points)

- Reference to washing hands (1)
- Reference to washing tools/chopping boards or replacing dirty items (1)
- Reference to use of soap and water (1)

Don't accept

- Making the cheese sandwich before preparing chicken

4 c) What else should Charlie do to avoid microbes spreading when preparing food?

(Tick all that apply) (2 points)

- ☐ Always wash vegetables to get rid of dirt and microbes (correct)
- ☐ Always rinse chicken or other meat to get rid of harmful microbes (incorrect)
- ☐ Use a cloth to regularly wipe hands while handling meat (incorrect)
- ☐ Use different cloths for drying hands and for wiping surfaces (correct)

### **Cooking**

5. Charlie is frying chicken pieces for lunch

5 a) How can Charlie check if the chicken is done? (Tick all that apply) (1 point)

- ☐ Cook the chicken for exactly 10 minutes (incorrect)
- ☐ Cook the chicken until it is crispy on the outside but pink in the middle (incorrect)
- ☐ Cook the chicken until it feels firm to the touch (incorrect)
- ☐ Cut the chicken at its thickest part, and check that all the meat is white (no pink bits) and juices are clear. (Correct)

5b) Charlie is frying an egg for his sister who does not like chicken. What should Charlie do to cook the egg safely? (Tick all that apply) (1 point)

- ☐ Cook the egg for exactly 10 minutes (incorrect)
- ☐ Cook the egg until the whites are crispy (incorrect)
- ☐ Cook the egg until the yolk is firm (correct)

5 c) True or false? It is safe to cook for others even if you are ill yourself, as long as you wash your hands before cooking (Tick all that apply) (1 point)

- ☐ True (incorrect)
- ☐ False (correct)

### **Storing leftovers**

6. Charlie is storing leftovers from dinner

6a) What should Charlie do to safely handle the leftovers? (Tick all that apply) (2 points)

- ☐ Charlie can leave the leftovers in the fridge for up to one week (incorrect)
- ☐ Charlie is planning to eat the leftovers tomorrow, so decided that there's no need to freeze them (correct)
- ☐ Charlie is planning to eat the leftovers tomorrow, so decided that there's no need to put them in the fridge (incorrect)
- ☐ Charlie must store their leftovers in the freezer as this will kill any bacteria (incorrect)
- ☐ Charlie should heat their leftovers until they are piping hot throughout (correct)

### Social Background Questionnaire (not scored)

- A. How old are you? \_\_\_\_\_ yrs old
- B. How would you describe your gender?
- ☐ Female
  - ☐ Male
  - ☐ Prefer not to say
  - ☐ Prefer to self describe as (please specify)...
- C. What are your parent(s)/guardian(s)' profession/job(s)?
1. \_\_\_\_\_
2. \_\_\_\_\_
- D. What are your parent(s)/guardian(s)' **highest** completed education level?

	Parent/Guardia n 1	Parent/Guardia n 2
Don't know	<input type="checkbox"/>	<input type="checkbox"/>
ISCED 2 or less (left education at 16 yrs old)	<input type="checkbox"/>	<input type="checkbox"/>
ISCED 3 (left education at 18 yrs old)	<input type="checkbox"/>	<input type="checkbox"/>
ISCED 5+ (went to university)	<input type="checkbox"/>	<input type="checkbox"/>
PhD or equivalent	<input type="checkbox"/>	<input type="checkbox"/>

- E. What is your parent(s)/guardian(s)' nationality?

1. \_\_\_\_\_

2. \_\_\_\_\_

# 1 Supplementary SB: User Journey Lesson Fidelity Template

Features	Adherence (yes/no)	Exposure		Quality (1-3) *1 (low quality) to 3 (high quality)	Responsiveness (1-3) *1 (low engagement) to 3 (high engagement)	Comments
		Planned time	Actual time			
Teacher leads discussion on what foodborne illness is		10 mins				
Teacher leads discussion on symptoms of foodborne illness						
Teacher leads discussion on how quickly symptoms appear and last for						
Teacher leads discussion on who is most at risk from foodborne illness						
Teacher shows the SafeConsume animation		10 mins				
Teacher introduces the concept of cross contamination						
Teacher introduces the concepts of good food hygiene						

Teacher introduces the concept of the Food Journey to students		30 mins				
Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>planning and shopping</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>planning and shopping</b>						
Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>packing and transporting</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>packing and transporting</b>						
Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>storing</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>storing</b>						
Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>food preparation</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>preparation</b>						
Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>cooking food</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>cooking food</b>						



Teacher facilitates discussion about what food safety <b>risks</b> might occur during <b>storing leftovers</b>						
Teacher facilitates discussion about <b>solutions</b> to food safety risks for <b>storing leftovers</b>						
Students complete worksheet related to user journey risks and solutions - in pairs, small groups, or as part of a class discussion						
One student to act out cooking a roast chicken meal - speaking loudly about how you would safely prepare and cook the meal		15 mins				
3 – 4 students attempt to distract the student from cooking safely						
Teacher and/or remaining students make a note of what steps the student manages to do and what they miss while being distracted						
Teacher facilitates discussion about risks and solutions to distractions in the kitchen						
Teacher summarises what has been covered in the lesson, including the main learning outcomes		5 mins				

2

3

4

5

## Supplementary SC: Teacher Interview Schedule

### Teacher's Interview Schedule

#### Method

A qualitative individual interview study, recorded via telephone, transcribed verbatim.

Thematic analysis.

#### Teacher Training Sessions

Session 1: Teaching food hygiene – An introduction

Session 2: Microbiological aspects (recommended for user journey evaluation)

Session 3: Food labels

Session 4: Infection transmission (recommended for user journey evaluation)

#### Lessons/Activities

- User Journey animation and lesson plan (11-14 years, but can be adapted to 15-18 years) – **evaluated in this study**
- Other resources (for information)
  - Useful and harmful microbes lesson plan including case study (11-14 years, but can be adapted to 15-18 years)
  - Food safety versus food quality lesson plan (11-14 years, but can be adapted to 15-18 years)
  - Food safety facts lesson plan based on scenarios (15-18 years, but can be adapted to 11-14 years)
  - Outbreak investigation (15-18 years, but can be adapted to 11-14 years)
  - Food safety debate kit (11-14 years, but can be adapted to 15-18 years)
  - Student recipe e-book with food safety messages (11-18 years)
  - Food safety pledge (All ages)

## Introduction (please read to the interviewee before the interview takes place)

My name is xxx and I am interviewing you on behalf of xxx as part of a study to develop and evaluate educational food hygiene resources for secondary school aged children. This is part of the SafeConsume project: an EU Horizon 2020 funded project aiming to reduce the health burden from foodborne illnesses across Europe.

Thank you for participating in this evaluation. This interview aims to:

- Explore your experiences and opinions regarding the tools developed for students and teachers as well as suggestions for improvement
- Collect your ideas and advice to improve the involvement of teachers in this kind of learning and to inform them of the availability of the tools.

If you don't mind, the interview will be audio recorded and I will take a few notes. The notes and recording will be anonymized before we type it up, meaning we will not use your name or any other information that can be used to identify you. We will send you a transcript if you wish, in order to comment on the interview at a later stage, and you are free to opt out at any stage.

Can I check that you have signed the consent form?

## Researcher Record:

- ☐ Verbal consent recorded
- ☐ Written consent received

## Characteristics

Age \_\_\_\_\_

Gender \_\_\_\_\_

Subject taught (science, biology, cooking) \_\_\_\_\_

Education background (scientific area, degree) \_\_\_\_\_

Number of years of teaching experience \_\_\_\_\_

Age group of students \_\_\_\_\_

Any COVID-19 precautions eg. Taught remotely etc \_\_\_\_\_

## Item 1: The teacher training sessions

- Introduction (has already been explored in needs assessment, son only as a short introduction): What are your thoughts about the relevance/appropriateness of teaching about food hygiene/safety in schools?
- How would you describe your knowledge about food hygiene and safety and confidence to teach these items before completing the teacher training session(s)?
- Which teacher training session(s) did you use? (Probe: which session(s), how much of the session(s) completed. Completed the self-assessment questionnaire before and after?)
- Can you tell us about your experience of these sessions? (Probes: Quality of session(s), usefulness/relevance for teaching lesson)
- Do you have suggestions to improve the session(s)?
- How would you describe your knowledge about food hygiene and safety and confidence to teach these items after completing the teacher training session(s)?
- Do you plan on completing the other SafeConsume teacher training sessions available (4 in all – see researcher notes)? (Probe: explore why/explain the reasons)
- Would you recommend these training sessions to your colleagues? (Probe: explore why/explain the reasons)

## Item 2 : The students' resources

- Can you describe your experience of using the User journey activity with your students? (Probes: how did it go? Did they use teacher notes, slide deck presentation, animation, student worksheets? Modify lesson plan/activity at all? Did the lesson cover the learning objectives stated?)
- How did students react/respond to this lesson? (probes: interest, motivation, relevant to everyday life?)
- Any comments about or suggestions to improve the different resources:
  - Teacher notes?
  - PowerPoint presentation?
  - Animation?
  - Students work sheet?
- What are your thoughts about any parts of the intervention which are essential, without which the intervention would not have its intended effect? (Probe: discuss teacher training, teacher notes, powerpoint, animation, student worksheets. Is there anything not provided which would have been helpful, or anything that wasn't necessary?)
- Do you plan on using any of the other SafeConsume student resources available (7 in all – see researcher notes)? (Probe: explore why/explain the reasons)

- Would you recommend these lesson plans and activities to your colleagues? (Probe: explore why/explain the reasons)

### Item 3 : Promotion of resources

- What advice do you have about ways to improve teachers' involvement in teaching food hygiene and safety?
- How would you suggest informing teachers about the availability of the SafeConsume teacher training sessions and students' resources?
- Any other comment?

### Conclusion

Thank you for your valuable participation in this project.

Are you interested in receiving the conclusions of this study?

Yes/No

## Supplementary SD: Student Focus Group/Class Discussion Schedule

### SafeConsume WP 6.6

#### Focus group/open discussion schedule

##### Introduction

[Explain the objectives of this activity]

Now we would like to have a discussion to collect your opinions regarding the tools developed and collect your ideas and advice to improve them. There are no right or wrong answers. We are asking these questions because we want to make the materials more informative and engaging for students like you. We encourage you to talk about what you didn't like and we're hoping to hear your suggestions to improve the materials.

If you don't mind, the interview will be audio recorded. The recording will be anonymized before we type it up, meaning we will not use your name or any other information that can be used to identify you. You are free to opt out at any stage.

##### Item 1: General questions

**[Focus group: Start by going over each student and asking for a brief impression]**

**[Open discussion: ask the first question ask for a couple students to start the discussion]**

- What did you think about the food safety lesson according to the level of information, usefulness and enjoyment/entertainment? Let's start with the information... how would you rate the level of information supplied (1 to 10), and regarding the usefulness (1 to 10)? And entertainment? (1 to 10). Can you please justify why?
- How do you think this information about food safety will impact at home? In terms of your food handling behaviour? [Do you think what you learned during the lesson will change your behaviour at home?] Can you give one example where you think this information will be useful at home? And do you think it will be useful for your family? Do they do things differently at home? What do they do differently?

**[Move towards a more open talk/discussion, while covering the following questions]**

- Did you find the activities appropriate for your age?
- Would you like to participate in similar activities in the classroom in the future?

##### Item 2: Food Safety Animation

- What do you think about the level of clarity of the message/information in the video?
- Can you highlight a section of the video you liked the most? And one that you liked the least?

- Do you have any suggestion to make the video more entertaining and informative?

### **Item 3: Food journey activities**

- How easy/intuitive were these activities to understand what was required from you?
- What did you like the most about the activity? And what did you like the least?
- Do you have any suggestions to make the activity more engaging?

### **General facilitation guidelines**

- Maintain a neutral position but show interest in the student's opinions. Assure them all their answers are valid and that we are interested both in their positive and negative opinions so we can improve the materials.
- The objective is to get the students' opinions and suggestions on the materials. Aim to let students speak without interruption while not letting them go off-topic. For a focus group (8-10 students), students will only have about 2-3 min each. For an open discussion, time will be limited so ask students to be brief and direct.
- Ask probing questions (please explain, why do you think that?) to help/motivate students to express their insights on the materials.
- Ensure everyone has an opportunity to speak. Some students might be prone to dominate the conversation (more interested, extroverted, etc). In an open discussion, it'll be impossible for every student to speak. Ensure that you have a balance of male and female students and that students from minority backgrounds are represented.

## Supplementary SE: Student Satisfaction Questionnaire

### Satisfaction Questionnaire

How would you describe this lesson? (circle all that apply)

Interesting



Keeps you thinking



Difficult



Boring



What difficulties did you have during the activity?

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Do you feel the activities were appropriate for your age? If not, why?

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What did you like the most?

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What did you like the least?

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What would you like to be different?

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What is/are the main point(s) you learned in this lesson?

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How do you think this lesson could be improved?

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Which message(s) do you intend to use at home when you help with food handling?



**Supplementary SF, Table S1: Pre- and post- intervention knowledge  
questionnaires: adjusted training effects and 95% CI**

Analysis	Phase and country, latter where appropriate	Adjusted (based on age and gender)		
		p-value	Estimate	95% CI
1	France, pre	0.002 <sup>x</sup>	0.00	
	France, post		4.58	3.59, 5.57
	Hungary, pre		-8.47	-11.2, -5.78
	Hungary, post		-4.97	-7.66, -2.28
	Portugal, pre		-2.53	-5.23, 0.18
	Portugal, post		-0.35	-3.05, 2.35
	England, pre		n.e.	n.e.
	England, post		1.34	-0.33, 3.01

<sup>x</sup>For interaction + For phase main effect n.e. = not estimable