**STAGE 2 NUTRITION**

**AT1: Investigation Folio – Practical Investigation**

**INDIVIDUAL NUTRITION INVESTIGATION;**

* **Sensory analysis practical investigation of food recipe adjusted to accommodate for Type 2 Diabetes and excess weight.**
* **Students will be required to undertake food production of a supplied recipe and their modified version to accommodate nutritional needs of individuals and to design a sensory test to determine food preference.**

**Introduction and Description:**

Food choices depend on many factors, some are physiological, such health and/or developmental needs, while others are related to their social environment including culture, financial and/or food availability, to name a few. However, the sensory characteristics and appeal of a food is also vital, particularly in families, where food wastage, refusal to eat a food and/or preparation of separate foods can be financially costly, time intensive and potentially nutritionally detrimental to some family members.

With the ever-increasing popularity of cooking/food related programs on many forms of media, the recipes that are prepared are appealing and some are also promoted as cost effective, however, not all are not nutritionally appropriate for some/all family members.

**Purpose:**

To investigate, through analysis of data, the adaptation of a recipe to increase its nutritional status to be suitable for a family where the adults have diagnosed Type 2 Diabetes and both the 17-year-old twins have been medically diagnosed as being overweight for their age.

The 17-year twins have decided to prepare a supplied recipe but are intending to adapt this recipe to make it more nutritionally suitable for their family, while ensuring it has an appealing taste. You are to identify and make relevant changes to both the ingredients and method of the recipe provided on pages 3-5.

You will also be required to prepare both the original and your adapted recipe and then undertake sensory evaluation of both, to ensure your adapted recipe will not only be nutritionally more appropriate but also appealing, therefore encouraging the consumption of this ‘healthier’ option.

**Description of the Task:**

The task is comprised of three (3) components:

**Part 1: Nutrition Investigation Design**

1. **Introduce** this task.State the **Aim.**
2. State the **hypothesis** for the investigation that you plan to test.
3. Identify the **Independent Variables**
4. State the **Dependent Variable**
5. Identify **4** **Constant Factors** in the investigation and **explain their relevance.**
6. Include **both recipes** and, **in bold, highlight the ingredient(s) and method(s) you intend to adapt,** by stating the **original** and **adapted** recipes and **replacement ingredients**. Label both recipes.
7. Indicate the method/ **procedures you will follow** to:
8. acquire the raw data, including all nutritional analysis of the ingredients
9. standardise equipment and products
10. meet food safety and hygiene requirements
11. sensory factors being considered and how the results will be displayed – e.g. as tables and/or graphs
12. acknowledge information in a Reference List and in text referencing

8. Create a tool to assess the **overall preference** of original or adapted recipe, using your peers as your tasters

Submit a copy of the **Nutrition Investigation Design**, (Steps 1-9) to your teacher prior to preparing both recipes on: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 2: Practical Application:**

Once your Nutritional Investigation Design has been approved, it can then be implemented.

Food order due to teacher by \_\_\_\_\_\_\_\_\_\_\_\_\_

Preparation of both original and adapted recipes on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Identifying the overall preference of original or adapted recipe, using your peers as your tasters

Collect and collate the overall preference data, as outlined in your Nutrition Investigation Design (step 8).

**Part 3: Individual Report:**

**Introduction:**

* Explain the **Aim** of this investigation
* Explain **Type 2 Diabetes** and **excess weight/overweight**
* Identify and explain the relevance of substituting ingredients and ensuring sensory appeal of a food product

**Re- state** the Hypothesis you tested

**Analysis of results**

Present a summary of the results using labelled diagrams, photographs, tables and or graphs to illustrate;

* nutrient changes that occurred as a result of the adaptations and explain their relevance to the nutritional needs of this family
* sensory factor results and which recipe was preferred by this group of tasters

**Evaluation of procedures**

* Identify strengths and weaknesses for both the data investigation and the practicum
* Evaluate reliability, accuracy and validity of results by discussing factors of sample size, random errors and systematic errors.
* Part of this discussion will include improvements for the weaknesses.

**Conclusion and justification**

* State if this investigation successfully met the purpose/aim and justify this decision using evidence and scientific understanding
* State whether the hypothesis was supported or refuted referring to the results of the data analysis
* State if there are limitations to forming a definite conclusion
* Suggest other possible solutions to promote better health for this family

**Reference List:**

**Appendix:**

Performance Standards for Stage 2 Nutrition

|  | Knowledge and Application | Investigation, Analysis and Evaluation |
| --- | --- | --- |
| A | Deep and broad knowledge and understanding of a range of nutrition concepts.  Highly effective application of nutrition concepts in familiar and unfamiliar contexts  Critically explores and understands the relationship between nutrition science and society.  Coherent and clear communication of nutrition concepts and nutrition literacy and numeracy. | Critically designs and conducts investigations using appropriate methodologies.  Obtain, record and display findings of investigations, using appropriate conventions and formats accurately and highly effectively.  Systematically analyse and interpret data and /or information to justify logical conclusions.  Critically and logically evaluates methodologies and/ or research processes and the effect on data. |
| B | Some depth and breadth of knowledge and understanding to a range of nutrition concepts.  Mostly effective application of nutrition concepts in familiar and unfamiliar contexts.  Logically explores and understands the relationship between nutrition science and society.  Mostly coherent and clear communication of nutrition concepts and nutrition literacy and numeracy. | Logically designs and conducts investigations using well considered methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats mostly accurately and effectively.  Analyse and interpret of data and /or information to justify reasonable conclusions.  Logically evaluates methodologies and/ or research processes and the effect on data. |
| C | Knowledge and understanding of a general range of nutrition concepts.  Generally effective application of nutrition concepts in familiar and unfamiliar contexts  Explores and understands aspects of the relationship between nutrition science and society.  Generally coherent and clear communication of nutrition concepts and nutrition literacy and numeracy. | Design and conducts investigations using appropriate clear methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats, with some errors but generally accurately and effectively.  Interpret data and /or information to justify generally appropriate conclusions.  Evaluates methodologies and/ or research processes and some of the effect on data. |
| D | Some basic knowledge and partial understanding of nutrition concepts.  Application of some nutrition concepts in familiar contexts.  Partially explores and recognises aspects of the relationship between nutrition science and society.  Some clear communication of nutrition concepts and nutrition literacy and numeracy. | Prepare and conducts investigations using some appropriate methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats inconsistently, with occasional accuracy and effectiveness.  Describe data and /or information to formulate basic conclusions  Attempts to evaluate methodologies and/ or research processes and suggest an effect on data. |
| E | Limited recognition and awareness of nutrition concepts.  Attempted application of nutrition concepts in contexts.  Attempts to explore and identify an aspect of the relationship between nutrition science.  Attempted communication of nutrition concepts and nutrition literacy and numeracy. | Attempts to prepare and conducts investigations using simple methodologies.  Attempts to record and represent some data, with limited accuracy or effectiveness.  Attempts to describe data and /or information and formulates a simple conclusions.  Acknowledges that methodologies and/ or research processes effect data. |

**Recipe options:**

**ORIGINAL APPLE CRUMBLE RECIPE Serves 4**

Ingredients:

* 4 medium Granny Smith apples, peeled and sliced
* 1/4 cup caster sugar
* 1/4 cup rolled oats
* 1/2 cup plain flour
* 1/4 cup brown sugar
* 1/ 2 Tbsp. honey
* 60 gm. butter for rubbing into the flour (step 3)
* 20 gm. ‘extra butter’ for greasing the baking dish (step 1)
* 1/2 tsp. mixed spice

Method:

1. Grease ovenproof dish with the ‘extra butter’
2. Place the apple into the base of the ovenproof dish and add the caster sugar
3. In a separate bowl, rub 60 gm butter into the flour until it resembles fine breadcrumbs
4. Stir the brown sugar and oats into this flour/butter mixture
5. Place this mixture over the apples
6. Drizzle the honey, then the mixed spice, over the mixture
7. Bake in a moderate oven (180 C) for 20-25 minutes
8. Serve hot with cream or ice cream

**Bacon, Egg & Feta Tarts**

**Prep:** 30mins **Cook:** 20mins **Makes:** 4

**Ingredients:**

* 4 frozen puff pastry sheets, thawed
* 1 tbsp. olive oil
* 150g chopped bacon
* 100g feta, drained, crumbled
* 4 eggs
* Salt & pepper to taste
* 2 tbsp. grated parmesan
* Wild rocket, to serve

**Method:**

1. Preheat the oven to 200°C and line a tray with baking paper
2. Using a saucer as a guide, cut circles about 13cm diameter from each pastry sheet. Transfer the tray, then score a 2cm border around each circle, without cutting right through. Prick area inside border with a fork. Chill for 10 minutes.
3. Heat oil in a frypan over medium heat. Add the bacon and cook, stirring, for 5 minutes or until it starts to crisp. Remove and drain on paper towel.
4. Fill each tart base with feta and top with bacon, staying within the border. Bake for 8 minutes or until the sides have risen. Gently push down the pastry in the centre using the back of a spoon, then break an egg into each. Season with salt & pepper, sprinkle parmesan, then return to the oven for a further 5-7 minutes until the eggs are set and the pastry is golden. Serve with rocket.

**Chewy Chocolate Chip Cookies**

**Prep:** 15mins **Cook:** 12mins **Makes:** 10

**Ingredients:**

* 125g butter
* 1 cup brown sugar
* ¼ cup caster or white sugar
* 1 egg
* 1 tsp. vanilla essence
* 1 cup self-raising flour
* ¾ cup plain flour
* 1 tsp. baking powder
* 1 cup milk chocolate chips

**Method:**

1. Preheat the oven to 160°C
2. Melt butter in a saucepan over medium heat (or in the microwave) and set aside to cool slightly.
3. Pour butter into a large bowl and stir in brown sugar and caster sugar until smooth and sugar is mostly dissolved.
4. Lightly beat the egg with a whisk or fork and stir into the sugar mixture along with the vanilla.
5. Sift flours and baking powder together into a small bowl and then gradually mix into sugar mixture until combined.
6. Stir through chocolate chips.
7. Drop rounded tablespoons of the cookie mixture onto lined baking trays.
8. Bake for 12 minutes or until golden then remove from oven and allow to cool on trays for 3 minutes before transferring to a wire rack to cool completely.