**STEM in Food Science in Technology and Living**

General Principles for Writing Time Plan for Conducting Food Tests

* Should include the following:
* Name of dish
* Name of food test
* Principles/ theories involved
* Reasons for choice
* Order of work
* Time required
* Application of findings
* Prepare the ingredients and start the part which requires more preparation time such as chilling in refrigerator, long cooking / observation time
* Other tasks can be incorporated during the waiting time of the food test
* Include final washing and tidying time

**Example:**

Dish Chosen:

* **Turnip Cake**

Food Test:

* **Gelatinisation of starch**

Principles / theories involved:

Gelatinisation is a disruption of the orderliness of starch granules and the swelling of these granules. It occurs when large amounts of water move into the granules, separating and surrounding starch molecules, pushing them apart. Since water is trapped by gelatinised starch molecules, it cannot move freely. Likewise, the swollen starch granules cannot move freely, because they are pressed against each other. With nothing moving, the starch mixture is thickened. As heating continues, the granules continue to swell and starch molecules, especially smaller amylose molecules, leach out of the granules and into the hot liquid. The starch mixture is then set.

Reason for Choice:

* Turnip Cake is a Chinese New Year festive food. The major ingredients are turnip, starch, and water.
* Mixture of the major ingredients and traditional seasonal ingredients (e.g. Chinese sausage, Chinese mushroom, and dried shrimp) are steamed. The heat from steaming will cause gelatinisation of starch to take place.
* Under heat, different starches react with water in different ways. Students will be able to compare the differences by sensory evaluation in terms of colour, translucency, tactile texture, palate texture, and taste.

| **Time** | **Order of Work** |
| --- | --- |
| At least 3 hours prior to class | **Food Preparation (I)**  Dried shrimp, Chinese mushroom   * Clean and soak in water |
| 15 mins | **Food Preparation (II)**  Dried shrimp, Chinese mushroom   * Dice finely   Chinese Sausage   * Wash, steam (to soften), dry, dice   Turnip   * Peel, wash, grate |
|  | In-between washing up and tidying up |
| 10 mins | **Food Preparation (III)**  Turnip Cake   * Stir-fry all ingredients * Mix ingredients with flour and liquid |
|  | In-between washing up and tidying up |
| 30 mins | **Food Processing (This is the presentation of final product)**  Turnip Cake   * Steam * Let cool   Garnish   * Prepare garnish |
|  | Washing and tidyingup, discussion on related theory, peer evaluation can be conducted while product is being steamed. |
| 10 mins | **Food Testing and Discussion**  Turnip Cake   * Cut Turnip Cake into slices so that cross section can be examined * Conduct sensory evaluation * Application of findings |
| 5 mins | Final washing-up and tidying up |