

APPLIED



WJEC Level 3 Applied
Certificate and Diploma in

FOOD SCIENCE AND NUTRITION

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GUIDANCE FOR TEACHING

Teaching from 2015



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Introduction

The WJEC **Level 3 Food Science and Nutrition** specification has been developed for delivery from September 2015. (Centres may choose to deliver from 2016, to ensure any candidate who only completes the Certificate will gain certification in 2017). The first certification for the Certificate and Diploma will be available in summer 2017. The specification can be delivered and assessed in centres throughout the UK.

This guidance for teaching is one of a number of ways in which WJEC provides assistance to teachers delivering the new specification. Also essential to its introduction are the Model Assessments and keeping up to date with guidance produced for CPD.

Other provision which you will find useful is:

- Moderators' reports on each series (as they become available)
- Easy access to specification and other key documents on main website
- Regular CPD delivered by WJEC (see main website for details)
- Documentation related to QCF Level 3 Food Science and Nutrition especially exemplar materials on the secure website and the guidance for teaching on the open-website
- Easy access to both the Subject Officer and to administrative sections.

Contact Points for Level 3 Food Science and Nutrition are as follows:

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1. Rationale

Level 3 qualifications are broad based vocational qualifications designed to widen participation in vocationally related learning post-16.

This is achieved by ensuring that candidates develop the general skills, knowledge and understanding needed within the sector.

This specification

- Serves to provide a broad educational basis for further education or for moving into employment within the food industry, sports sector.
- Builds upon the broad educational framework supplied by the qualification and subject criteria.
- Provides a suitable route for progression for candidates completing GCSE Hospitality and Catering/Home Economics/Food and Nutrition/Physical Education. (Candidates beginning their formal education in the subject at post-16 level can also undertake the course of study.)

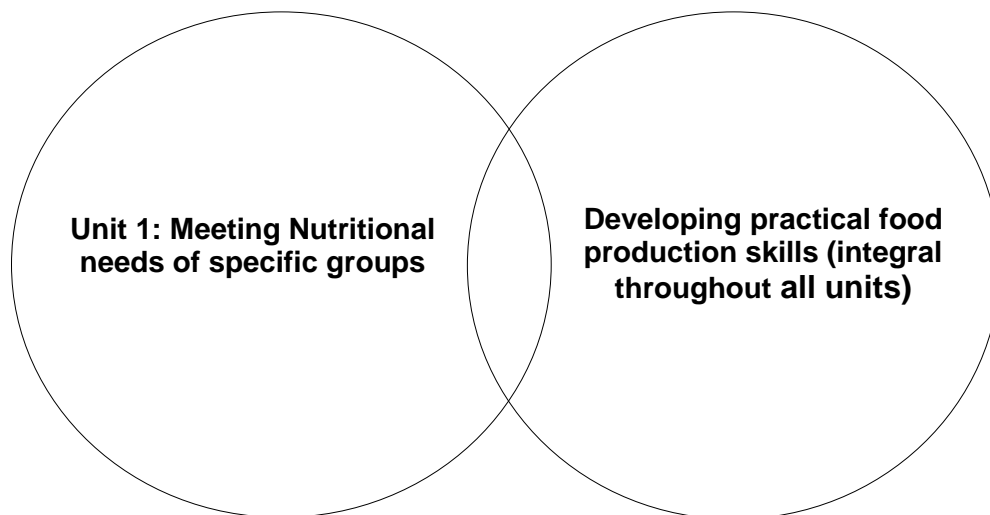
Level 3 Food Science and Nutrition

- Provides worthwhile courses for candidates of various ages and from diverse backgrounds in terms of general education and lifelong learning.
- Employs an investigative and problem solving approach to the study of the subject.
- Provides opportunities for candidates to develop key skills in the areas of Communication, Application of Number, Information Technology, Working with Others, Improving Own Learning and Performance and Problem Solving.

The information included within this document promotes a holistic approach to qualification/unit delivery rather than addressing individual learning outcomes or assessment criteria.

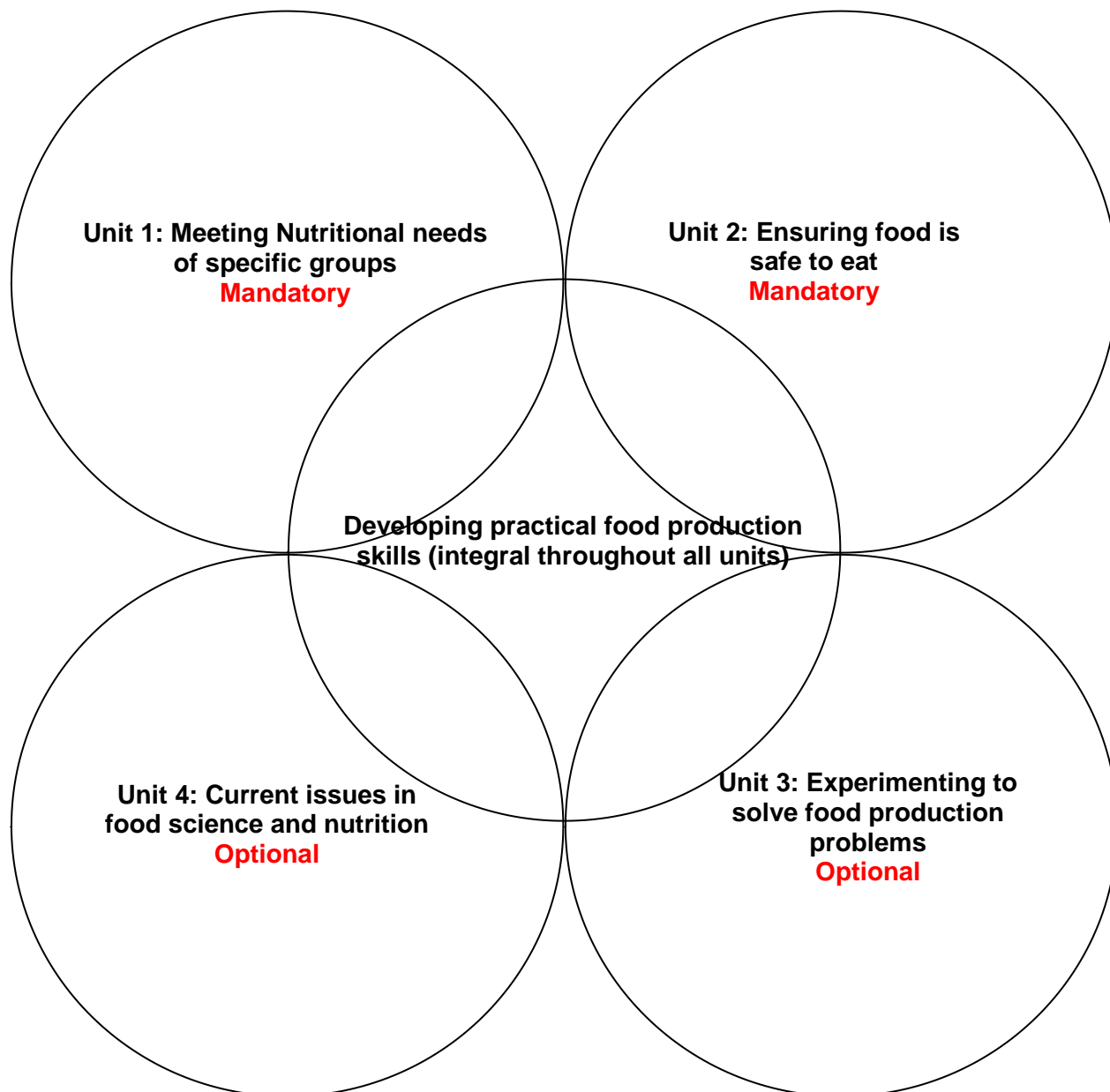
WJEC Level 3 Certificate in Food Science and Nutrition

(The content for Unit 1 combines Unit 1 and Unit 2 from the legacy QCF qualification).



WJEC Level 3 Diploma in Food Science and Nutrition

Centres may choose to deliver the units via a linear route, i.e. one complete unit at a time, but the **philosophy** of the course is that its delivery should meet the needs of the centre and its learners and have practical work at the core of its delivery.



You can use this resource to create a detailed scheme of work and produce learner resources to suit your centre, your learners and the local context.

Any sample assessments/activities suggested within the individual unit guidance do not attempt to cover all the learning required for the unit and teachers must refer to the unit to ensure all learning outcomes and assessment criteria have been covered before learners undertake the controlled assessment for this unit.

Where time frames are estimated for each set of sample assessments/activities, centres should always check that the time suggested for learners to complete activities is appropriate for the learners in their group.

However, time frames within the model assessments must be adhered to as they are a summative assessment and consistency has to be ensured across centres.

2. Delivering the specification

2.1 Mapping of this specification to QCF Level 3 specification

- An Award in Food Science and Nutrition is no longer available
- There are minor changes to the content
- External assessments are required for Unit 1 and Unit 2 (Unit 1 formal examination, Unit 2 **pre – release external assessment**)
- Levels of achievement are linked to a numerical point score
- Unit 1 has 2 assessments, 1 internal and 1 external
- Unit 1 content is a combination of Food Science and Nutrition (QCF) Unit 1 and Unit 2 with additional coverage to food safety and hygiene in practice. This is a mandatory unit
- Unit 2 is based on Unit 3 Food Science and Nutrition (QCF) and now has an external assessment and is a mandatory unit
- Unit 3 is based on Unit 4 Food Science and Nutrition (QCF)
- Unit 4 is based on Unit 5 Food Science and Nutrition (QCF).

2.2 Pathways through the specification

The suggested route throughout the course is dependent on a variety of factors, the main one being the qualification being offered.

WJEC Level 3 Certificate in Food Science and Nutrition		
Unit Number	Unit Title	GLH
1*	Meeting Nutritional Needs of specific groups	180

WJEC Level 3 Diploma in Food Science and Nutrition		
Unit Number	Unit Title	GLH
1*	Meeting Nutritional Needs of specific groups	180
2*	Ensuring food is safe to eat	90
3	Experimenting to solve food production problems	90
4	Current issues in Food Science and Nutrition	90

* Mandatory units

Learners need to complete 1 Unit 180 GLH for the certificate.

Learners need to complete 3 Units 360 GLH for the diploma.

Other factors will include:

- The timetable within the centre, e.g. one hour lessons will not be the best vehicle for adopting a practical approach to the delivery
- The timing of internal examinations and assessments
- Teaching expertise of the staff
- Resources within the school and the local area
- The ability range and needs of the cohort, e.g. centres who have learners who prefer to learn by being involved in practical activities could deliver a large percentage of the theory content for Units 1, 2, 3 and 4 through the delivery of the practical elements of Unit 1.

Please note:

Although the model (live) assignments will be available to centres from the onset of the course they should not be used as a vehicle for teaching the specification content, neither should they be given to the learners until the content has been taught and required knowledge for completion has been acquired.

2.3 Examples of Approaches

Use of Scenarios

When considering teaching activities for learners it would be useful to start by giving learners a scenario (and identifying the problems together) and then ensuring that teaching content covers the aspects necessary for the learners to meet the needs of the scenario.

Centres are advised to consider a selection of different scenarios throughout the academic year, each scenario should be carefully selected so that it picks off selected areas of the specification, for example, one could focus on nutritional needs of vegetarians and practical skills could include use of fruits and vegetables, pastry making and stock, soup and sauce making. Make each scenario different to the previous so that learners gain a range of skills and you cover a wide area in terms of the unit content and *practical skills*. This way, learners will be well prepared for their final controlled assessment. It will enable your learners to develop their problem solving skills as well as developing their practical skills, whilst meeting the teaching and learning requirements of the specification.

Work-related

Much of the learning can take place through the use of interesting and practical work-related experiences, e.g.

- Observation within a food industry/catering setting. (Provides relevant experience and opportunity for gathering useful information.)
- Visits to establishments such as restaurants, hotels, sports centres, nurseries, day centres, schools and residential settings.
- Outside speakers – professional or individuals with personal relevant experiences.
- Work placements
Scenarios and simulations may be used to develop practical knowledge and understanding where placements are not possible.
- Use of multi-media.

Due to the nature of the course it is advisable that learners are given the opportunity to:

- Take responsibility for their own learning.
- Collect information using a variety of research methods and present their findings in an appropriate manner.
- Communicate effectively with a wide range of individuals.
- Apply knowledge gained to specific work-related situations and internal and external assessments.

Further sources of support

The specification gives a list of useful websites and resources to support the delivery of each unit. A model assignment is also available for each unit.

Please remember the **model (live) assignment** is the **final** assessment the learners will complete unless it is changed by the centre (with WJEC approval).

Unit Specific Guidance For Teaching

Unit 1 Meeting nutritional needs of specific groups (Mandatory)

GLH: 180

UNIT AIM

The aim of this unit is to give learners understanding of nutrients, their functions in the body and how nutritional requirements vary in different situations. They will be able to use this understanding to critically assess diets of specific target groups and plan changes needed to ensure a nutritional balance is maintained. They need to acquire skills to enable the planning and cooking of nutritionally balanced/ complex dishes, whilst demonstrating an understanding of the importance of food safety.

NB. Any of the live tasks can be released to learners as their final assessment, as long as they have not been used as a practice task during content delivery or as a “mock” assessment.

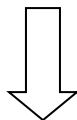
Learning outcomes

The learner will:

LO1 Understand the importance of food safety

LO2 Understand properties of nutrients

LO3 Understand the relationship between nutrients and the human body



LO4 Be able to plan nutritional requirements

LO5 Be able to plan the production of complex dishes

LO6 Be able to cook complex dishes

Planning a Scheme of Learning

When planning a scheme of work it would be important to consider a range of delivery types, such as:

- The importance of food safety and risks: through theory sessions and practical work supported by the use of outside agencies and visits to catering/ food production establishments and via scenarios.
- Dedicated theory sessions on Nutrition to develop and extend learners' knowledge at this level.
- Key terminology for Level 3 equivalent examinations, opportunity for candidates to practice the full range of questions that could be found on examination papers.
- Application of knowledge through dietary analysis. The use of scenarios would support the delivery of this part of the specification.
- Practical sessions to allow for the acquisition of complex practical skills. Through modelling practical assessment task, adapting recipes to meet specific dietary requirements of different target groups.
- Learners could be encouraged to take Level 2 or 3 Food Hygiene Certificate to support their understanding of food safety.

- Learners should be encouraged to identify food safety issues on all planning of practical work. For example when producing an order of work, a table like the example below could be used:

Time	Critical control points CCP (Food Safety)	Order of Work	Quality Control points QCP

- Application of knowledge can also be tested through the use of scenarios.

Resources for LO1, LO2 and LO3

WJEC Level 3 Food Science and Nutrition: Anita Tull/Jillian Bryant

Food and Nutrition: Anita Tull

The Science of Food: Gammon and Sherrington

GCE and GCSE Food and Nutrition text books as available in the centre.

GCE and GCSE past examination papers: Food related courses e.g. WJEC GCSE Home Economics Food and Nutrition.

Useful websites:

www.Sfe.co.uk/just4foodplus

www.foodfactoflife.org.uk

www.nutrition.org.uk

Scenarios to support delivery and to allow for preparation for section C in the external examination.

<p>Scenario 1</p> <p>GLH approx. 30 hours</p>	<p>You have recently been employed as a chef at a care home for the elderly and have been working alongside the chef Abdul, a Muslim man in his 50s.</p> <p>Abdul has informed you that he finds himself increasingly fatigued during his working day (8 a.m.- 6 p.m.).</p> <p>He tells you that he has at least 8 hours sleep per night so can't understand why he feels the way he does.</p> <p>You have offered to help Abdul and have assessed his current health parameters and nutritional intake (shown below). Abdul informs you that many of his colleagues are overweight due to 'picking' at the food they cook throughout the day, so Abdul is mindful of this with his current diet.</p> <table border="1" data-bbox="497 846 1278 1240"> <tr> <td>Height</td> <td>1.88m</td> </tr> <tr> <td>Weight</td> <td>66kg</td> </tr> <tr> <td>Typical Daily Diet</td> <td> 7. a.m.: Cup of tea, full-fat milk, no sugar. 1. p.m.: Tuna salad with a glass of water. 3. p.m.: Cup of tea, full-fat milk, no sugar. 7. p.m.: Chicken curry with rice. Cup of tea, full-fat milk, no sugar. </td> </tr> </table>	Height	1.88m	Weight	66kg	Typical Daily Diet	7. a.m.: Cup of tea, full-fat milk, no sugar. 1. p.m.: Tuna salad with a glass of water. 3. p.m.: Cup of tea, full-fat milk, no sugar. 7. p.m.: Chicken curry with rice. Cup of tea, full-fat milk, no sugar.
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<p>Questions for learners</p>	<p>Think about what might be causing Abdul to be fatigued and why.</p> <p>Is Abdul drinking enough fluid?</p> <p>Is Abdul eating at the correct times?</p> <p>Are the contents of Abdul's meals meeting recommended guidelines?</p> <p>What can be done to increase Abdul's energy?</p>						

Activities 2 hours	<ul style="list-style-type: none"> Here learners could investigate why the chef may be fatigued through researching the demands of a chef in relation to the environment through a visiting speaker.
10 hours	<ul style="list-style-type: none"> Learners could then be introduced to recommended nutrition guidelines (the Eatwell Guide, food pyramid, RDAs) and go on to explore the types of nutrients available, their functions and structures.
2 hours	<ul style="list-style-type: none"> Learners will need to pay particular attention to Carbohydrate (CHO) for this scenario, being able to identify different types of foods that Abdul could consume and the nutritional value and glycaemic index attributed to each.
2 hours	<ul style="list-style-type: none"> The importance of hydration and the effects of dehydration could be investigated through using case studies and/or research to initiate group discussions.
6 hours	<ul style="list-style-type: none"> Learners could have a group discussion to establish the deficiencies that the chef will have and both visible and non-visible signs that may be displayed as a result of this.
4 hours	<ul style="list-style-type: none"> Further to this, the eating patterns of the chef and how this affects the processing of nutrients (focus here will be on energy systems).
2 hours	<ul style="list-style-type: none"> Learners will need to know how to calculate BMR and use this to calculate Abdul's BMR. They could use this to plan a nutritional intervention to meet his needs.
Resources	<p>Chef – guest speaker or visit to a kitchen</p> <p>The Eatwell Guide, food pyramid, RDAs</p> <p>Chemical models</p> <p>ICT Access for research and to complete Nutritional analysis</p> <p>https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/</p>

<p>Scenario 2</p> <p>GLH approx.</p> <p>25 hours</p>	<p>Henry a 23 year old man has been referred to your new fitness programme 'waist watchers' by his GP.</p> <p>He has specifically asked to not only lose some body fat, but also increase his muscle mass.</p> <p>You have set him a moderate intensity cardiovascular and resistance training programme that he completes for 60 minutes on 5 occasions per week.</p> <p>When discussing a nutrition plan with Henry, he informed you that he is a vegetarian and that he is lactose intolerant.</p> <table border="1" data-bbox="497 622 1278 1496"> <tr> <td>Height</td> <td>1.75m</td> </tr> <tr> <td>Weight</td> <td>88kg</td> </tr> <tr> <td>Activity Levels</td> <td>45 minutes Moderate intensity cardiovascular and resistance training programme that he completes for 45 minutes on 5 occasions per week.</td> </tr> <tr> <td>Typical Daily Diet</td> <td>7 a.m.: Cornflakes and soya milk with two tablespoons of sugar. 10 a.m.: Can of cola, packet of salt and vinegar crisps. 12 p.m.: Can of cola, jacket potato with cheddar cheese and baked beans, bar of chocolate. 3 p.m.: Packet of salt and vinegar crisps and glass of fresh orange juice. 7 p.m.: Plate of French fries with tomato ketchup, cup of tea and half a packet of biscuits.</td> </tr> </table>	Height	1.75m	Weight	88kg	Activity Levels	45 minutes Moderate intensity cardiovascular and resistance training programme that he completes for 45 minutes on 5 occasions per week.	Typical Daily Diet	7 a.m.: Cornflakes and soya milk with two tablespoons of sugar. 10 a.m.: Can of cola, packet of salt and vinegar crisps. 12 p.m.: Can of cola, jacket potato with cheddar cheese and baked beans, bar of chocolate. 3 p.m.: Packet of salt and vinegar crisps and glass of fresh orange juice. 7 p.m.: Plate of French fries with tomato ketchup, cup of tea and half a packet of biscuits.
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<p>Questions for learners</p>	<p>Does Henry have the same needs as Abdul had?</p> <p>What can Henry eat to increase his muscle mass?</p> <p>What impact will being a vegetarian have on Henry's diet?</p> <p>What is lactose intolerant and how does this impact what Henry eats?</p>								

Activities 1 hour	<ul style="list-style-type: none"> Learners will need to review their work carried out as part of scenario 1 and consider whether Henry has the same needs. This could be done as part of small group discussions and then developed into a larger group discussion.
4 hours	<ul style="list-style-type: none"> Learners will need to assess Henry's current diet to determine where it does not meet recommended nutrition guidelines (the Eatwell Guide, food pyramid, RDAs). Here the learners could revisit nutrients available, their functions and structures. Some formative assessment could take place here to determine the level of knowledge/understanding acquired.
5 hours	<ul style="list-style-type: none"> Learners will need to focus on protein, its function and its chemical makeup – both essential and non-essential amino acids and the significant sources of each. This could be done as part of a group research task whereby learners determine the types of amino acids found in different foods. A visiting speaker from the local vegetarian/vegan society could provide information to learners as to the types of foods that could be consumed and the nutritional values of these. Learners could be provided with different foods and work in groups to determine the combinations of proteins that could be eaten to ensure the correct ratio of essential to non-essential amino acids are consumed.
1 hour	<ul style="list-style-type: none"> Learners could also look at methods of preservation, storage and cooking in order to maximise nutritional intake.
3 hours	<ul style="list-style-type: none"> Learners could research methods of increasing muscle mass through nutritional intake using health magazines and online articles and critically analyse these. A personal trainer could be a visiting speaker to provide information on increasing muscle mass and decreasing body fat from a 'performance' view point and/or 'general health'. This will focus on eating patterns, (particularly in relation to the increased physical activity). There is no need for dramatic weight loss. Weight needs to be weight maintenance as calorie deficit would not help with muscle mass increase.
4 hours	<ul style="list-style-type: none"> Learners could be taught the process of protein synthesis and then work together to produce a flow diagram which shows the process.
3 hours	<ul style="list-style-type: none"> Using the training programme provided, learners will need to investigate the individual nutritional needs of Henry and assess how the increase in physical activity will affect this, taking into account medical conditions. When calculating BMR, learners could now include physical activity factor and amend BMR accordingly.
3 hours	<ul style="list-style-type: none"> Learners should be introduced to SMART goal setting and determine short, medium and long term goals for Henry and debate the most appropriate. A personal trainer may be used to assess the targets given and feedback to the groups.
Resources	Guest Speaker – Personal Trainer Vegan Society The Eatwell Guide, food pyramid, RDAs https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/

<p>Scenario 3</p> <p>GLH approx.</p> <p>20 hours</p>	<p>Having been working as a volunteer alongside the school health advisor at a local primary school, you have been asked to work with Shannon, a child identified as at risk due to her dramatic weight increase since last year's annual measurements.</p> <p>Whilst investigating Shannon's current diet with her parents, her mother informs you that Shannon has recently been diagnosed with type 2 diabetes and also has a high level of cholesterol.</p> <p>They seem shocked as they choose foods that have the coloured labels and "never choose the red ones".</p> <table border="1" data-bbox="454 611 1337 1518"> <tr> <td>Height</td> <td>1.22m</td> </tr> <tr> <td>Weight</td> <td>56kg</td> </tr> <tr> <td>Physical Activity</td> <td>2 hours of moderate intensity physical activity (Physical Education classes).</td> </tr> <tr> <td>Diet</td> <td> <p>7.30 a.m.: Large bowl of Weetabix with two spoons of sugar and a spoon of jam, large glass of fresh orange juice.</p> <p>11a.m.: Packet of crisps, mini chocolate biscuit and small bottle of blackcurrant juice.</p> <p>12.30 p.m.: 3 sandwiches including processed cheese and ham slices, packet of crisps, mini chocolate biscuit and small bottle of blackcurrant juice.</p> <p>3.30 p.m.: Large bowl of Weetabix with two spoons of sugar and a spoon of jam, large glass of fresh orange juice.</p> <p>6.30 p.m.: French fries, 8 chicken nuggets, baked beans and tomato ketchup, bowl of ice cream with chocolate sauce.</p> <p>8 p.m.: Glass of warm milk and a biscuit.</p> </td> </tr> </table>	Height	1.22m	Weight	56kg	Physical Activity	2 hours of moderate intensity physical activity (Physical Education classes).	Diet	<p>7.30 a.m.: Large bowl of Weetabix with two spoons of sugar and a spoon of jam, large glass of fresh orange juice.</p> <p>11a.m.: Packet of crisps, mini chocolate biscuit and small bottle of blackcurrant juice.</p> <p>12.30 p.m.: 3 sandwiches including processed cheese and ham slices, packet of crisps, mini chocolate biscuit and small bottle of blackcurrant juice.</p> <p>3.30 p.m.: Large bowl of Weetabix with two spoons of sugar and a spoon of jam, large glass of fresh orange juice.</p> <p>6.30 p.m.: French fries, 8 chicken nuggets, baked beans and tomato ketchup, bowl of ice cream with chocolate sauce.</p> <p>8 p.m.: Glass of warm milk and a biscuit.</p>
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<p>Questions for learners</p>	<p>Does Shannon have the same needs as Abdul and Henry?</p> <p>What could be the cause of Shannon's sudden weight increase?</p> <p>What advice would you give to Shannon's parents?</p>								

Activities 1 hour	<ul style="list-style-type: none"> Learners will need to review their work carried out as part of scenario 1 and 2 and consider whether Shannon has the same needs. This could be carried out as part of small group discussions and then developed into a larger group discussion.
2 hours	<ul style="list-style-type: none"> Learners could visit a school health advisor and gain an insight into their role and the interventions they use when they come across children with different conditions.
5 hours	<ul style="list-style-type: none"> Learners will need to assess Shannon's current diet to determine where it does not meet recommended nutrition guidelines (the Eatwell Guide, food pyramid, RDAs). Here the learners could revisit nutrients available, their functions and structures. For this particular scenario, learners could focus on lipids – saturated, unsaturated, trans fat and vitamins and minerals.
1 hour	<ul style="list-style-type: none"> Take into account Shannon's medical conditions, (learners may be best taught this by an industry representative such as a nurse, or exercise referral specialist, who can provide information on the types of nutrients required, or those that should be avoided for different conditions).
3 hours	<ul style="list-style-type: none"> Learners should be given the opportunity to research relationships between nutrients in the body and then use this to discuss the links between sugar, fat and insulin.
1 hour	<ul style="list-style-type: none"> When calculating Shannon's BMR, learners must include physical activity factor and determine her needs, taking into account the required calorific deficit in order to safely lose weight.
4 hours	<ul style="list-style-type: none"> Learners should provide Shannon with short, medium and long term goals in relation to her nutritional needs. Following this, learners could suggest appropriate meals that Shannon's parents could produce through the creation of a leaflet including sample meals and nutritional information around cooking methods (i.e. grilling rather than frying).
Resources	<p>The Eatwell Guide, food pyramid, RDAs</p> <p>School Health Advisors</p> <p>Exercise Referral Specialist/Nurse</p> <p>www.foodfactoflife.org.uk</p> <p>https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/</p>

Model Assignment – Western Avenue Hotel

<https://www.wjec.co.uk/media/fk3dqf2/wjec-level-3-in-food-science-and-nutrition-unit-1-isam-nutritional-needs.pdf>. (Withdrawn as a live task from Summer 2019).

Suggested Scenarios to support **LO4, LO5 and LO6**, these may be individual or group activities.

(You are free to write your own scenarios that are specific to your learners – consider their ability, culture, socio-economic groups, and so on.)

- (i) Plan and Produce a 2/3 course meal for person/s with specific dietary requirements, (could include: lactose intolerance, coeliac, lacto ovo-vegetarian, vegan, religious beliefs, such as kosher, Hindu, Muslim, etc.).
- (ii) Plan and Produce dinner for 6 persons on a yacht (consider they are on a 2 week cruise around the Greek islands).
- (iii) Plan and Produce a range of dishes to suit a specific dietary requirement, e.g. weight reducing, low salt, low fat, low sugar etc.
- (iv) Plan and Produce dishes suitable for a buffet for 30 residents at local children's home or elderly care home.

Exemplar learner work (taken from submissions for QCF)

(See WJEC website and CPD resources for additional exemplars)

LO1 Understand the importance of food safety

This will be assessed within the examination but also needs to be evidenced within the planning for the internal assessment

Learners' evidence (from QCF submission unit 2)

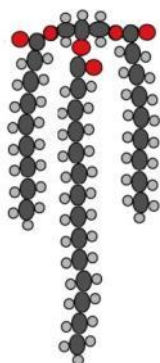
Time	Dish	Method	Food safety points
9:30	Stock (soup and pie)	<ul style="list-style-type: none"> De-bone the 2 chicken breasts and save the meat for the pie Put the chicken bones in a small saucepan and fill with cold water (just enough to cover the chicken) Bring to the boil, then tip out the water in a colander Clean out the saucepan and place the bones back in it Fill with 1.6 litres of water and cook for 1 hour Wash 2 carrots, 2 celery sticks and leek leaves (from the leeks in the pie) well. Cut into big rough 4cm chunks Wash a small bunch of each; thyme, parsley and coriander and use a thyme stalk to tie them together to make a bouquet garni Add the vegetables and herbs to the stock pot and cook on a low heat so it is just gently simmering, until needed, approx. 2 hours 	<ul style="list-style-type: none"> Make sure that you use a red board when you de-bone the chicken and store the meat in the fridge at 5c maximum, on the bottom self Make sure you wash the saucepan out thoroughly in hot water and with anti-bacterial washing up liquid Make sure you wash the vegetables really well as there is usually mud on them and I am not going to peel them so they need to be very clean- use a scrubber
11:05	Pie	<ul style="list-style-type: none"> Heat 1 tbsp. of oil in a frying pan Fry the prepared chicken cubes, leek and fennel seeds for 3-4 mins Add the flour and stir, cook for another minute Add the stock and cook until the sauce thickens stirring constantly to prevent lumps forming Add the lemon juice and the cream, season and stir well Allow to cool 	<ul style="list-style-type: none"> Stir regularly to cook evenly Check using a food probe that the chicken is 73 °C in the middle Stir quickly to prevent lumps of flour forming Use a medium heat to prevent the sauce from curdling

LO2 will be mostly assessed in the interview within the **internal assessment**.

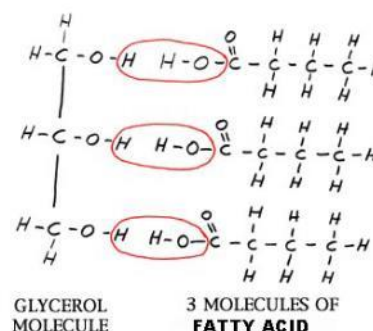
Learners may produce notes such as those below:

Sample notes on structure of nutrients

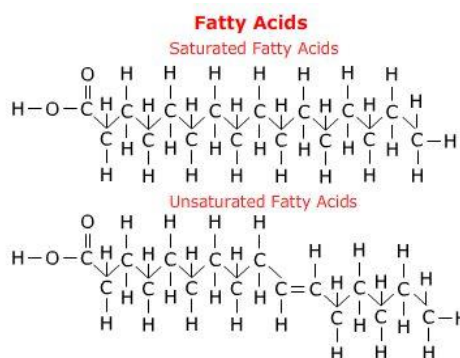
Fats are composed of the basic elements: carbon, hydrogen and oxygen. However, the smallest units of fats (called molecules of fat) are larger than molecules of carbohydrates and the relative proportions of carbon, hydrogen and oxygen to each other in fats is different from those in carbohydrates.



One molecule of fat is formed by one unit of a substance called glycerol, and three units of substances called fatty acids. There are a great many different types of fatty acids, but the dietary fats found in our foods and in our body fat are, for the most part, formed from only three kinds of fatty acids. Glycerol, sometimes called glycerin or glycerine, has three “arms.” Each of the three arms forms an ester bond, through condensation reaction, with one fatty acid to make a single molecule of fat. This explains why fats are referred to as tri-glycerides; these are the simplest and most common form of fats. The picture on the left is of the basic structure of a bonded glycerol molecule without all of the chemical structure. The groups bond to form a tri-armed molecule, hence why they are referred to as triglycerides.



There are however two main differences between different forms of fat molecules and they are Saturated and Unsaturated Fats. Saturated fats explain themselves exactly, all of the possible bonds are filled and this means that they cannot be broken down at all. It is molecules like these that are dangerous to the body and should be minimised as such as possible. Unsaturated fats have a double bond in their structure; this means that they can be broken down or turned into a saturated fat under the correct conditions. The main way to tell what a saturated fat is its consistency at room temperature; if it is solid (like butter) it is a saturated fat.



Fats are most commonly known to be used for energy and fat storing, this means that the fat can be stored in the body until it is needed, then it can be extracted and used as energy by removing the glycerol from the fat molecule and converting it to glycerine. This can then be used to provide energy in the body. Another very important function of fats is the transportation and use of vitamins A, D, E, K, and for other substances which are fat soluble. Without fat in the diet, those vitamins would not be able to function. This would result in severe problems with eyesight, skin, nail formation, blood clotting, kidney function, bone growth and repair, reproductive functions, and cellular energy.

LO3 and LO4

All past examination papers from summer 2017 plus the model assignment scenario from Unit 1 (QCF) can be used as a learning tool to help prepare candidates for Section C of the examination for this unit.

(This may be found via the secure website).

Learners' evidence

Ian's diet

Show 4

Show 8

Show All

Custom

Age range

Nutrition	Per day	Diet analysis (man)
Energy	12996 kJ	121% EAR
Energy	3087 kcal	121% EAR
Protein	77 g	145% RNI
Carbohydrate	461 g	145% RNI
Total Sugars	245 g	204% GDA
Fat	115 g	116% DRV
Saturated Fat*	38 g	123% DRV
Fibre*	13 g	53% GDA
Salt	8.1 g	134% GDA

* Data for some ingredients is not available

When you look at Ian's diet, he actually has a quite good, balanced diet. He eats a little too much of each but it is basically balanced, however he ruins the balanced diet with too many sugary, fatty and salty snacks. Due to Ian being vegetarian, he should really struggle to eat enough protein, however as shown above he actually eats half again as much protein as recommended. This could be from eating a whole packet of salted peanuts, vegetable proteins, cheese and milk on his cereal and in his coffee. This kind of consumption is not good for him as only 60g of protein is generally required per day for the average man and Ian is eating 17g more than that, 145% of the RDA for protein. It is particularly dangerous for Ian due to his high blood pressure because proteins tend to have high saturated fat levels which build up in the arteries and put pressure on the cardiovascular system, if Ian already has high blood pressure he must be very careful to cut down his protein and, in consequence, his saturated fat levels to improve his blood pressure and reduce his risk of CHD or blood clots.

The other main nutrient Ian consumes too much of is sugar. This is due to his morning snack of a jam doughnut, his lunchtime chocolate bar and his evening slice of chocolate cake. These are not only full of sugar and fat, but they are also full of simple carbohydrates. These are a poor source of energy as they do not take long to break down and store and you therefore get a 'crash' shortly after eating them which makes you want another, this results in snacking, as Ian does.

To reduce his sugar, fat and refined carbohydrate intake Ian must eat more foods with complex carbohydrates with limited sugar and fat content, this will improve his health and reduce his snacking as he will stay fuller for longer. Ian should also cut out his high coffee consumption, as this is full of caffeine which is not good for the body or the brain and also fat and sugar due to what he adds to it. Coffee is not a nutritional requirement for anybody, but if Ian does want to have coffee he should limit himself to 2 cups a day maximum as any more is not benefitting him in any way.

Ian is quite good with fruit and vegetable consumption; however he should not have a banana as well as his breakfast. He should drink a cup of fruit juice with his breakfast to include one of his five a day, he could then swap his doughnut for a banana for a snack if he is hungry, add salad to his cheese roll to include some more nutrients and minerals to his lunch and possibly eat some fruit after lunch as well. He eats vegetables with dinner as he does not eat meat so he does not need to add any more vegetables to his dinner. However he could always change his pudding to a pot of strawberries and cream or banana and custard if he wants something sweet but healthier and full of good vitamins.

Vitamins are essential organic compounds that cannot be synthesised by the body. Vitamins all have individual function but on the most part they help metabolism and having a deficiency in vitamins does have a negative effect on the body functioning and can damage health greatly. It is not a requirement to have a lot of each every day, but you should aim to get as much as required every day.

There are two types of vitamins: the fat soluble ones (A, D, E and K) and water soluble ones (B-Complex and C). Fat soluble vitamins have to be absorbed into the body with fat, so they are absorbed in the intestine and, within fat, are stored in the liver until required. For this reason they do not have to be consumed every day.

In contrast, the water soluble vitamins do need to be consumed every day, this is due to the fact that water is not stored in the body and any excess is lost through urine, therefore there is no storage 'back up' if you do not consume that particular vitamin every day.

Ian consumes approximately 3000 calories per day on his current diet, and as he does not have a strenuous job he only burns 34 calories per hour so if he works an eight hour shift he would only burn around 272 calories from work. This is not enough with his calorie intake, and is not enough if he wishes to live a healthy lifestyle. He needs to improve his fitness and decrease his calorie intake to become a healthier person.

Two main nutrients that Ian needs to ensure he includes plenty of are Minerals and Water. Both of these are vital for bodily function and the body would not work without them. They are used in practically every process that goes on within the body.

Each mineral has a different requirement for the body, and all these minerals need to be eaten which is why it is vital to have a high variety and healthy diet. Ian will need to add some variety to his diet to be sure he is getting these minerals every day, it is also a good idea to take daily vitamins to boost mineral intake, although they are not a substitute for a healthy diet.

Ian is a very unhealthy weight for his height and age and his weight can have serious implications on his life and his body. Ian's BMI is classed as obese and obesity greatly increases the chances of serious health issues such as strokes and CHD. This is why it is very important that Ian changes his lifestyle immediately and returns to a healthy weight. The recommended weight for someone of Ian's height and age is between 61 and 77 kilos. This means that Ian needs to lose at least 20 kilos to be within the healthy limit and this will be very difficult to achieve, but with a good balanced diet and a challenging but comfortable exercise regime it can be done within a year. Ian has a BMR of 1894 calories per day; this must be taken into account when planning Ian's diet. To maximise Ian's chances of doing so he will need to follow the following guidelines:

- ✓ Cut down to a maximum of one coffee a day
- ✓ Increase water intake to a least 10 glasses per day
- ✓ Change full fat milk to semi-skimmed
- ✓ Increase fibre intake
- ✓ Remove empty calorie intake
- ✓ Snack healthily
- ✓ Eat between 2,023 – 2,365 calories a day
- ✓ Reduce BMI to a healthy weight.

Day one (working day and workout day)	Consumption
7 a.m.	Porridge with fresh banana and strawberries made with semi skimmed milk Orange Juice (unsweetened, not from concentrate, with pulp)
10 a.m.	Coffee with skimmed milk and one sugar
12 p.m.	A small jacket potato served with cream cheese, baked beans and a side of salad Water
5 p.m.	35g bag of mixed unsalted nuts Water
7 p.m.	Vegetarian hot pot (carrots, onion, mushrooms, courgette, peppers, chopped tomato, tomato puree and broccoli) served with a small serving of rice Water

It is very important that Ian remembers to drink a lot of water all day. This is easier if Ian keeps a bottle of water with him at all time as this will mean he can keep drinking without having to get up and get water. It will also be very important that Ian stays well hydrated before and during his workout.

7 a.m. – porridge oats contain lots of complex carbohydrates which will provide Ian with a good source of energy to last him until lunch time. Including some fresh fruit into his breakfast will be a natural sweetener as well as counting for two of his five a day. A glass of orange juice will provide Ian with vitamin C as well as another one of his five a day. This kind of breakfast will provide Ian with enough energy to last him until lunch as well as keeping him satisfyingly full.

10 a.m. – having this cup of coffee will provide Ian with a little more energy, as well as satisfying his love of coffee. Only using semi-skimmed milk and one sugar will reduce its sugar and fat content whilst keeping a similar taste and pleasure to it.

12 p.m. – a jacket potato with skin provides plenty of fibre and complex carbohydrates. The cream cheese provides calcium and flavour and baked beans provide iron and complex carbohydrates. Served with a side of salad, this will add one of Ian's five a day as well as providing nutrients such as iron. This is a very nutrient packed and high energy lunch that will provide enough energy for Ian to last him until dinner time. Ian should drink a glass of water with this meal to keep him well hydrated and maintain his metabolism.

5 p.m. – a small bag of unsalted nuts will provide Ian with natural protein, iron and lots of energy. It must be eaten an hour before his gym workout to ensure that the nutrients can be properly processed before his workout. This will ensure Ian has sufficient energy to complete his workout to his highest standard. It will also ensure that Ian gets natural proteins; which is very important for vegetarians. Ian should also have a glass of water with his nuts as this will ensure sufficient hydration for his workout.

7 p.m. – vegetarian hot pot is a great way for Ian to get plenty of natural salts and sugars as well as iron, fibre, complex carbohydrates, protein, water and lots of other beneficial nutrients. This meal will also provide Ian with at least 3 of his five a day meaning he will have had plenty of fruit and vegetables throughout his day. Another glass of water with his meal will provide him with plenty of hydration and maintain his metabolism.

LO5 Examples of how to plan production of complex dishes (from QCF)

Name of dish / practical lesson	Skills and techniques covered	Technical terms used	Commodities used	Specialist tools used	Presentation ideas	Nutritional aspects to be covered	Food hygiene points to be communicated Via the order of work
Chicken stock (white) <i>(Practical cookery p 45)</i>	Portioning whole chicken <i>(freeze breast, thighs for another lesson)</i> stock making, reducing freezing	Portioning Simmering Murmuring Skimming Reducing	Poultry Vegetables	Boning knife Stock pot Slotted spoon	n/a	Protein (HBV*) Nutrients in vegetables Vitamin C – damage by heat / water soluble	Salmonella Risk of cross contamination, discuss how to avoid Cooling hot food quickly Principle of only re-heating once
Leek and potato soup <i>(Practical cookery p 75)</i>	Trimming and preparing leeks Importance of washing vegetables bouquet garni sautéing peeling dicing simmering pureeing	Paysanne Sautéing Simmering Pureeing Seasoning	Vegetables Dairy	Stick blender	Chiffonade of leeks CROUTONS Cream swirl Potato crisps Chives snipped	Vitamins and minerals in vegetables Fibre Saturated fats versus unsaturated fats (butter versus oil for frying)	Washing of vegetables re soil contamination Colour coded chopping boards Rapid cooling, principles of rechauffe (reheating)

*HBV – high biological value

Minestrone Soup Croutons Bread Rolls Chicken and Mushroom Pie Asparagus and Carrots Dauphinoise Potatoes Spun Sugar Cheesecake

3 minutes	Remove from the heat and set aside with the chicken and mushrooms.		cooked before removing.
11.37- 11.40	Melt the butter in a saucepan, stir in the flour and cook for about three minutes until it has formed a thick smooth paste.		Don't add the flour until all the butter has melted.
3 minutes			
2 minutes 11.40-11.42	Mix the milk (150ml) and stock together (100ml) in a jug, add the nutmeg white pepper and salt.		Make sure it is all evenly mixed.
5 minutes 11.42-11.47	Pour the liquid slowly into the flour mixture, whisking all the time until smooth. Then put back on the heat for about 5 minutes until the sauce has thickened.	Take the saucepan off the heat and put on a pot stand before you add the liquid.	Add the liquid a little at a time.
2 minutes 11.47-11.49	Stir in the chopped parsley and pour the sauce over the chicken and mushroom mixture, mix well.		Make sure all the ingredients are completely mixed.
2 minutes 11.49-11.51	Tip the cream (125ml), milk (125ml) and garlic (1 clove) into a large saucepan and bring to a simmer.	Keep stirring with a wooden spoon so it doesn't burn on the bottom of the pan.	
3 minutes 11.51-11.54	Add the potatoes to the cream and simmer for 3 minutes until just cooked.		Gently stir the potato and stop it sinking and catching on the bottom of the pan.
2 minutes 11.54-11.56	Remove the potatoes from the pan with a slotted spoon and place in an ovenproof dish. Pour over the cream and scatter over the cheese.		Make sure the cheese is evenly spread over the top of the potatoes.
1 minute 11.56-11.57	Put in the oven for 20 minutes at 190 degrees until the potatoes are soft and browned.	Make sure that the oven is 190 degrees.	Be careful not to burn the potatoes.
4 minutes 11.57-12.01	Roll out the pastry, lay the bottom layer into the pie dish, fill the pie dish with filling then add a topping onto the pie, place pastry leaves on top of the pie and egg wash.	Put flour on the surface to stop it sticking.	Don't roll the pastry too thin. Don't over or under fill the pie.
1 minute 12.01-12.02	Put in the oven for 20 minutes at 190 degrees.	Make sure that the oven is the correct temperature 190 degrees.	
4 minutes 12.02-12.06	Fill the sink with cold water. Put the sugar (150g) and water (113g) in a heavy pan and heat gently without boiling until the sugar has melted.	Make sure not to burn yourself.	Tip and swirl the pan instead of stirring.
8 minutes 12.06-12.14	Bring the syrup to the boil, when it turns golden and reaches 160 degrees dip the pan in cold water so it stops cooking.	Immediately put in the sink to cool it down and be careful not to burn yourself as the pan is extremely hot.	Check that the sugar is the correct temperature on the sugar thermometer before cooling.
12.14-12.16	Dip a metal spoon in the pan and flick trails of caramel back and forward over a rolling pin to form thin strands.		Flick the spoon quickly to make thin strands of sugar.
2 minutes 12.16-12.17	Remove the potatoes from the oven.	Use oven gloves to stop yourself getting	

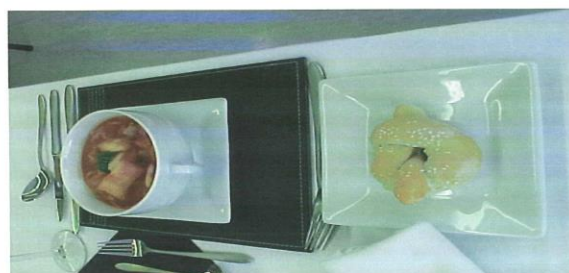
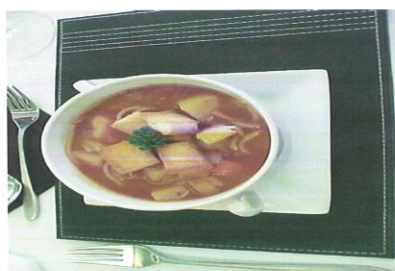
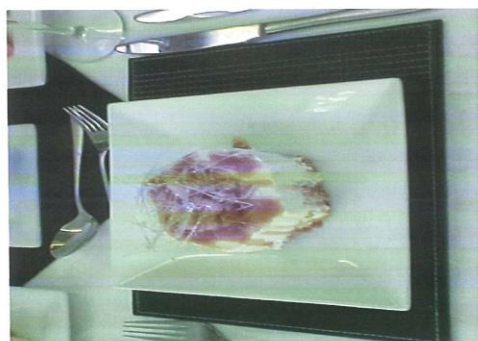
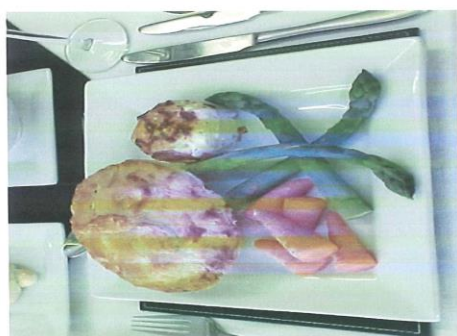
AS Food Science and Nutrition

Time Plan:

Time	Action	Special Points	Quality Control	HACCP
	Lay table with plates, serviettes etc.	Make sure everything looks symmetrical.	Ensure all implements and plates are the same.	Ensure plates and cutlery is clean.
	Wash hands with anti-bacterial hand wash, ensure hair is tied up and apron on.	Ensure hair is tied in a way in which hat will sit easily without danger of falling off.	Ensure hands are dried on clean tea-towel.	Ensure hot water is used.
	Preheat bottom oven to 200°C	Ensure oven is switched on at the wall and light comes on.		
	Joint chicken and put carcass in a large saucepan	Ensure some meat is left on the carcass.	Ensure both breasts are the same size.	Make sure chicken is correctly stored in fridge on the bottom shelf.
	Chop carrot, celery and onion and add to pot	Leave in large chunks.	Ensure vegetables are cleaned prior to chopping.	Make sure a white chopping board is used.
	Add bay leaf, cloves, whole peppercorns, tomato purée and water to carcass. Put on to boil.	Water must be cold and cover half of the carcass.	Keep tight fitting lid on saucepan to ensure flavour is kept.	Ensure all dried items are in date.
	Combine butter, flour and sugar with vanilla essence to make dough	Keep in the fridge, tightly wrapped in cling film.	Ensure all of the butter is rubbed in and no lumps are left.	Ensure dough is kept on the top shelf of the fridge and that fridge is at the correct temperature.
	Remove shortbread dough from fridge and press into baking tin.	Make sure it is pressed in firmly all the way around.	Ensure that shortbread is all the same thickness.	Ensure tin is clean and has been washed with hot soapy water.
	Bake shortbread, remove from oven and allow to cool.	Make sure shortbread is placed on a cooling rack.	Ensure golden colour is evenly distributed.	Ensure oven is at the correct temperature.
	Make bread dough.	Make sure water is warm enough.	Make sure dough is well kneaded so it stretches instead of tearing.	Ensure dough is kept in a warm room under oiled cling film.
	Crush shortbread	The mix should be	Ensure all biscuit	Ensure butter

LO6 Be able to cook complex dishes

Photographic evidence **MUST** accompany the written evidence and be submitted for moderation along with the observation record.



FOOD SCIENCE AND NUTRITION (QCF) (LEVEL 3)

OBSERVATION RECORD Date: 24.4.14

Unit 2: Developing practical food production skills

Learner's Name _____
<p>Context</p> <p>AC2.1 Use tools in preparation of commodities AC2.2 Use advanced techniques in preparation of commodities AC2.3 Ensure quality of materials to be used in food preparation AC3.1 Use advanced techniques in cooking of commodities AC3.2 Present cooked complex dishes using advanced presentation technique The learner participated in a 'skills test' as part of the application process for a Sous Chef position. Details are provided on the attached assignment.</p>
<p>Commentary of learner performance</p> <p>Tools used:</p> <p>in preparation Basic utensil's used very competently in all aspects of food preparation.</p> <p>Specialist knives used very competently boning knife, chef's knife, paring knife, peeler, thermometer for spun sugar</p> <p>in cooking Very competent use of tools when cooking, individual pie dishes/ cheesecake moulds, presentation rings in serving of potato.</p> <p>Skills and techniques demonstrated:</p> <p>in preparation Boning/jointing of chicken Knife skills (peeling/dicing/chopping of veg/bridge & claw technique) Recipes reduced for two covers (pastry cut back too much) Bread making kneading proving shaping Rubbing in /rolling short crust pastry. Assembling of pie. Roux sauce for pie filling Whipping cream Use of gelatine Spun sugar work this was carried out to an excellent standard fine stands achieved for use on cheesecake. Carried out with real precision.</p> <p>in cooking Sauté vegetables Roux sauce Baking croutons/pie Boiling/simmering soup Microwave Adjusting seasoning Caramelising apples</p> <p>in presentation Table correctly laid as in a restaurant. Menu Croutons even size golden colour/parsley on soup, individual soup bowls on plate. Bowl wiped clean, range of even sized veg in each portion. Knotted bread roll glazed with sesame seeds. Pie individual oval dish used to control portion size, pastry leaves added edges crimped, egg washed for golden colour. Presentation ring used to cut out dauphin potatoes. Asparagus and carrots arranged for effect. Individual mould used for cheesecake to control portion size. Place in centre of plate. Caramelised apple as topping. Spun sugar adding very high level decorative/skilled presentation.</p> <p>Timing</p> <p>Kept to time plan throughout production, Independent monitoring checking of plan, all dishes ready to be served in order.</p>

Quality checks

Regular progress checks on flavour. Good use of fridge to ensure quality maintained. Temperature checks/heat monitored ensuring all products well finished.

Health and safety considerations

in preparation

Excellent personal hygiene including hair net/hat
Anti-bacterial spray used
Chopping boards

in cooking

Initially clearing as went
Correct use of fridge/ chicken fridge after jointing
Temperature probe core temperature of pie

in presentation

Food served at correct temperature
Pie & Potatoes out whilst waiting for veg to finish cooking? But minor issue
Clean serving plates used

Quality of final outcomes/dishes

Bread rolls knots evenly sized, very neat portion size, well proved finished with egg wash/sesame seeds, pale golden
Soup rich tomato base flavour al dente veg, evenly cut. Smooth consistency. Croutons even colour evenly sized, well-placed with parsley garnish to give accomplished finish. Individual soup bowls used, edges cleaned before service.
Pie well shaped, lifted easily from pie dish. Top & base golden colour base cooked. Pastry leaves made used for finish/crimped edges/egg wash. Short textured pastry. Overcame problem of not having enough pastry by borrowing some from Alice F. Very well filled even cubes of tender chicken. Well flavoured sauce good coating consistency depth of chicken/veg flavour.
Dauphine's excellent well-cooked creamy texture. Neatly presented using presentation ring to cut out.
Carrots & Asparagus added colour to the plate but slightly disappointing element. Would have liked to have seen the carrots glazed. Asparagus spears very large. Did add another texture to the main course.
Cheesecake Excellent gelatine set, to a smooth light texture. Crunchy base Individual hexagon mould to add interest/portion control.
Caramelised apples added texture/sweetness /interest as flowed over edges. Spun sugar amazing light thin strands which added height/visual appeal to dish. Extremely well executed element.

Level of guidance provided

None given throughout main body/working. Some assistance given in plating of potatoes/ reassurance at the end.

Assessment summary

Overall presentation and finish of meal excellent. Obviously had been thought about and well planned.
Worked in a very efficient organised purposeful manner throughout the skills test.
Did not manage to complete all the clearing up, compensated by the high level of skill /understanding of ingredients/finish.

Grade awarded: **DISTINCTION**

Assessor:

Signature:

Date:

May 2014

Resources for teaching and learning

Internal assessment

Have a comprehensive selection of recipes that the learners can select from, this could be an in-house selection of recipes on your school intranet or a cook book such as *Leith's Cookery Bible* by Prue Leith and Caroline Waldegrave, Bloomsbury Publishing PLC; or 3rd Revised edition or *Practical Cookery* (11th Ed) Foskett D, Campbell J (2008) Hodder Education (also has a CD with useful video clips).

You may find it useful to develop a Record Book (like a Portfolio) so that learners can keep a record of all their practical tasks – as the course develops this will be a useful reference document to remind them of the skills they have demonstrated plus photographic images of their final dishes. It could also be used in an interview situation to demonstrate the skills learners have acquired during the course.

In order for learners to be successful in the internal assessment task, it is essential that they are familiar with how to approach the task. Consider what experiences you have given them in class and as independent learning to ensure they know both how to plan the task effectively in the restricted time they have and also consider whether they have the practical skills and are able to adapt recipes confidently.

The best way to prepare your learners for this task would be to do a variety of “mock”/practice scenarios in a timed situation, so that they knew what will be expected of them and also they will understand how to manage their time most effectively – for example, how long will it take for them to write their time plan, do they know the level of detail required? How long will it take them to write their equipment and requisitions list and also how long and to what level of detail will it take for them to justify their choices? For learners to access the higher levels of awarding, it is imperative that they cover all aspects of the written work – are you confident that you have prepared your learners to be able to do all the tasks in the rigid time they are allowed? Remember, the internal task is a timed task, and you must ensure that your learners are prepared for this; if they do not complete their task in the time given they will have to **stop**, regardless of this. Build in preparation for the internal assessment into your Scheme of Learning.

Centres may choose to write scenarios to support application of knowledge as preparation for the internal and external assessment.

Example scenarios

- (i) Design and create a healthy three course meal that could be used to make up a set menu in a fine dining restaurant. The menu has to be produced on a budget to ensure profit. The budget is £20 and this is a big factor in what is able to be cooked.
- (ii) Celebratory event at local youth club

Party food is often unhealthy, traditional and unimaginative. As catering manager for an outside catering firm you have been given the task of planning a party menu that is both healthy and appealing to active teenagers. A new chef has been appointed and he is keen to use his skills to improve menu choices.

 - (i) Review the nutritional needs of the target group and make reference to the considerations that need to be paramount when planning the buffet.
 - (ii) Plan, prepare and cook the party foods.
 - (iii) Discuss whether your choices reflect current nutritional guidelines for the target group and suggest improvements or alternatives to your menu choices.
- (iii) You have a winter employment in a ski resort and are responsible for producing a weekly menu for 12 persons staying in a ski chalet (one week stay).
 - (i) Review the nutritional needs of the target group.
 - (ii) Plan a menu and produce a selection of dishes for the target group.
 - (iii) Discuss how your choices reflect current needs for the target group and suggest improvements or alternatives to your menu choices.

Books:

Foskett D., Campbell J. 3rd Revised edition of *Practical Cookery* (11th Ed) Hodder Education, 2008#

Leith P. and Waldergrave C., *Leiths Cookery Bible* Bloomsbury Publishing PLC 2003

Online resources:

<http://www.bbc.co.uk/food/recipes/search?keywords=chicken+pie>

http://www.cookuk.co.uk/soup_starter/winter-vegetable-soup.htm

School resources:

Recipes on shared drive

Selection of magazine recipes, including the following publications:

BBC Good Food, Olive, Delicious

UNIT SPECIFIC GUIDANCE FOR TEACHING

Unit 2 Ensuring food is safe to eat

GLH **90 External Assessments (Mandatory)**

UNIT AIM

The aim of this unit is to give learners an understanding of hazards and risks in relation to storage, preparation and cooking of food in different environments and the control measures needed to minimise these risks. They will be able to use this understanding to be able to produce guidance material to facilitate the training of new food handlers recommend control measures that need to be in place, in given environments, to ensure that food is safe to eat.

Learning outcomes

The learner will:

LO1 Understand how micro-organisms affect food safety

LO2 Understand how food can cause ill health

LO3 Understand how food safety is managed in different situations

Planning a scheme of learning

It is suggested that Unit 2 is delivered with theory and practical work. Some of which has been underpinned from practical elements from Unit 1. There is great value in learners sitting the L3 CIEH qualification (see below) – this integrates a large proportion of theory in a 'real world situation'. Guest speakers, e.g. EHO, local restaurants/hotels/school canteen can be a valuable resource to provide 'real life' experiences for the learners. Encourage the learners to keep an on-going diary of establishments they visit in their day to day life and think about safety factors, e.g. burger van, local hotel, fast food bar.

Suggested scheme of delivery: Unit 2

Unit 2	Content	Resources/Activities	Suggested Practicals	Additional Content
<p>Introduction to the Unit – including the ways in which food is contaminated and the sources of food poisoning bacteria</p> <p>You will investigate food handling and various ways in which the Government monitors and controls food standards in the UK</p> <p>Share assessment criteria</p>	<ul style="list-style-type: none"> • Food safety and hygiene in food handling • Types of bacteria • Factors affecting bacterial growth • Food risk categories 	<ul style="list-style-type: none"> • <i>The Science and Technology of Food</i> – R K Proudlove • <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder • Types of bacteria card sort and mind mapping • Assessment criteria to share with learners – cut up as a card sort – asking them to discuss and sort (final hard copy for them to add to their file) 	<ul style="list-style-type: none"> • Making yoghurt • Review of yoghurt and conditions 	<p>Learners will benefit from being entered for the L3 Food Hygiene and Safety in Catering Qualification at this point</p> <p>This course covers a significant amount of the specification and also allows the learners to achieve an additionally recognised qualification</p> <p>http://www.cieh.org/uploadedFiles/Core/Training/L3_aw_fs_syllabus_catering.pdf</p>
<p>Food spoilage</p> <p>Health, hygiene and safety of food</p>	<ul style="list-style-type: none"> • Yeasts, moulds, fungi, enzymes and bacteria • Purchase, storage, preparation and cooking • Temperature control in relation to food storage, cooking and reheating 	<ul style="list-style-type: none"> • Examples of foods that have decayed (planning to allow mould to grow etc.) and example products to aid student recognition e.g. egg/soil/chicken pieces/blue cheese etc. • Food probes • Water bath/hot holding (maybe visit to school kitchen/local restaurant) • Visit from local chef • <i>The Science and Technology of Food</i> – R K Proudlove • <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder 	<ul style="list-style-type: none"> • Experimental work see previous column • Examine a range of value – fruit and vegetables –v– own brand foods –v– luxury foods and establish criteria used and look at date marking 	<p>This needs to run alongside / be intergrated into the rest of the teaching</p> <p>NB you need to gain acrediation from CIEH to deliver the qualification – simple process online</p>

Unit 2	Content	Resources/Activities	Suggested Practicals	Additional Content
Food spoilage Health, hygiene and safety of food	<ul style="list-style-type: none"> Food Standards and Regulations Food Safety Act Food Hygiene Act Agencies that monitor food hygiene standards 	<ul style="list-style-type: none"> Guest speaker EHO via local council – has examples from local area and star ratings – maybe photographs from local industry/real examples <i>The Science and Technology of Food</i> – R K Proudlove <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder 		
Preservation methods	<ul style="list-style-type: none"> Chilling Freezing – plate/blast/cryogenic Freeze drying Other drying methods Salting Additives Pickling Smoking/Curing 	<ul style="list-style-type: none"> DVD 'Freezing methods' <i>The Science and Technology of Food</i> – R K Proudlove <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder 	<ul style="list-style-type: none"> Freeze fillets of white fish some correctly wrapped others open frozen to look at freezer burn and impact if correctly stored Making jam/chutney Making pickled onions/beetroot Leaving hung ham longer to cure Research into 'Hung Meat' –v–no hung – cook in same way and taste testing against criteria agreed by group Take a sample of mince beef and shape into a burger. Take temp, fast freeze – take temp and continue this often and plot freezing rate on a graph (it will be a slow process) 	

Unit 2	Content	Resources/Activities	Suggested Practicals	Additional Content
Food intolerances and food allergies	<ul style="list-style-type: none"> Genetics Food intolerances 	<ul style="list-style-type: none"> The Science and Technology of Food – R K Proudlove OCR Home Economics for AS – Alex Rickus and Bev Saunder 	<ul style="list-style-type: none"> Make gluten free bread and 'normal' bread Taste testing of other products e.g. lactose free –v–'normal' etc. <p>N.B. Do not forget to check for allergies</p>	
Food poisoning and comparing the symptoms of food induced ill-health	<ul style="list-style-type: none"> Physiological basis Food poisoning 	<ul style="list-style-type: none"> Card sort – Food poisoning Colour coded chopping boards CIEH PPT The Science and Technology of Food – R K Proudlove OCR Home Economics for AS – Alex Rickus and Bev Saunder 	<ul style="list-style-type: none"> Compare out of date (use by) products with 'in-date' e.g. soft cheese, meat, milk etc. Make a buffet lunch on a 'hot' day for fellow learners – what are 'critical issues' e.g. food purchase, storage, hygiene and personal hygiene 	

Unit 2	Content	Resources/Activities	Suggested Practicals	Additional Content
Describe food safety hazards	<ul style="list-style-type: none"> Describe the safety hazards in different environments 	<ul style="list-style-type: none"> Group work – split class up and give each group an area to research, produce a presentation and report back with ‘real life case studies’ <i>The Science and Technology of Food</i> – R K Proudlove <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder 		
Assessing risk to food safety in different environments / explain control measures used to minimise safety risks and present options for food safety controls in different environments	<ul style="list-style-type: none"> Risk Control measures Present – orally/multimedia Discuss +/- of measures 	<ul style="list-style-type: none"> Introduce sample model assignments/practice scenarios and split group up and each group research, assess and explain situation with pros and cons of each – maybe via a magazine article for <i>Food Manufacturer Magazine</i>. Or article has to cover all methods and argue for and against. Promote use of images and data to support articles, e.g. rise of E.coli since 1982 All presentations shared via VLE and teacher checks all content is covered <i>The Science and Technology of Food</i> – R K Proudlove <i>OCR Home Economics for AS</i> – Alex Rickus and Bev Saunder Key terms test Supervising Food Safety (Level 3) Highfield.co.uk Ltd Intermediate HACCP Highfield.co.uk Ltd Foundation HACCP Handbook Highfield.co.uk Ltd Collins GCSE Food Technology revision guide www.foodstandardagency.co.uk www.ifst.org (Institute of Food Science and Technology) 	<ul style="list-style-type: none"> Make up sample foods from internal assessment to aid practical skills 	

Unit 2	Content	Resources/Activities	Suggested Practicals	Additional Content
		www.foodafactoflife.org.uk (traceability) www.chilledfood.org Food hygiene a study guide - P.A. Alcock, Stanley Thorne		
Introduction of actual external assessment After 1 May Completion in three weeks	<ul style="list-style-type: none"> Recap assessment Recap control Recap % of final mark 	<ul style="list-style-type: none"> Live external assessment Assessment grid Break down into timeline for learners 		

Assessment

This unit is externally examined, via an external candidate assignment which is externally set and externally marked. It is suggested a series of examination type questions are included to test candidates' knowledge, recall and progression throughout the delivery of the unit, and to ensure the candidates have acquired the knowledge to prepare them for the external assessment. (These could be also used for interim data reporting.)

The best way to prepare your learners for the External Assessment would be to do a variety of "mock" / practice scenarios.

Suggested Scenarios for unit 2:

(You are free to write your own scenarios that are specific to your learners – consider their ability, culture, socio-economic groups, and so on).

1	You have been asked to design, and produce a buffet for a golden wedding anniversary party that is being held in a marquee. The majority of the 30 guests are over 65 years old (plus 3 x under 5s). You must focus ensuring food is safe to eat and comprises of both sweet and savoury finger foods.
2	A local vintage steam railway has approached you to manage the on-board catering for a Mothering Sunday lunch. You will be preparing the food on the train and serving it to the travellers. 60 tickets have been sold. The food needs to be in keeping with the vintage steam age theme.
3	The National Child Birth Trust (NCT) is having its bi-annual clothing and toy sale – you need to manage the BBQ for 150 pregnant women, fathers, young children and nursing mothers.

Remember you can also access past examination papers from Summer 2017.

Guidelines for the submission of the Externally Assessment

- The total time allowed is 8 hours – this will be supervised throughout, only class notes (produced prior to the assessment being released) can be used during this time. You cannot access the internet.
- There are two main tasks
 1. The production of a food safety training resource/discussion document
 2. A Food Safety Risk assessment HACCP for the event specified in the given scenario
- Work can be hand written or word processed, using ICT software.
- Do not include extra flaps, pockets of information or concertina style presentation – everything should be flat on the paper and clearly presented.
- Learners should try to be original in their interpretation of the tasks.
- The cover sheet for the assessment must be submitted with the evidence, plus the time-log
- The assessment will be released via the secure website on May 1st every year and the work must be submitted to WJEC for marking by June 1st every year.

Exemplar learner work for Unit 2 (QCF unit 3)

(See WJEC website and CPD resources for additional exemplars).

Hazard	Risk Level	Control measure	Monitoring	Corrective action
<p>The risk of the chicken and beef entering the danger zone of 5-63 degrees and being able to start the multiplication process.</p>	<p>high</p>	<p>to make sure that a delivery schedule is worked out between Easy Eats and the supplier so they know how long the food will be out of the correct storage facilities for. This will insure Easy Eats are able to tell the supplier the temperature the food needs to be transported at, the recommended 0-4 degrees, so the supplier is able to set the correct temperature in advance. This will keep the meats out of the danger zone of 5 to 63 degrees. Also by making sure the meats are then cooked and probed to make sure the core temperature is correct this should ensure no pathogenic bacteria are present on the foods and able to cause food poisoning in festival consumers.</p>	<p>on delivery it is important that the staff member checks the time to make sure the supplier is on time and this will ensure food is still out of the danger zone due to the controlled van conditions. It is also important that the staff member probe a sample of the meats and chilled seafood to make sure the temperature has been controlled correctly and the supplier is doing their deliveries safely.</p>	<p>if the supplier is unable to do this and control the temperature correctly then it is important that firstly Easy Eats rejects the order because the level of bacteria on food may make the food inedible and likely to cause food poisoning. In the future Easy Eats will also have to make sure they are able to get a local supplier that is able to use controlled vans but also due to a lower mileage count, food would be safe on arrival to Easy Eats due to it being out of the optimum conditions for as little time as possible.</p>

Sections from Sample risk assessment unit 2

<p>Smoked salmon and cream cheese</p>	<p>Both high risk foods as they're moist and high in protein.</p> <p>Cream cheese can be contaminated by listeria</p> <p>Salmon may also be contaminated by listeria</p>	<p>Preparation:</p> <ul style="list-style-type: none"> Accept deliveries from a reputable supplier at a temperature that will discourage the growth of harmful bacteria. Food collected must be transported in a way that will ensure that the temperature on arrival will comply with the specified rules of the business. Make sure that all food is within its 'use by' date. Monitor temperature of food on delivery Monitor temperature of food on arrival Visual checks on 'use by' dates. Keep raw and cooked/ready to eat foods separate Use safe handling practices Observe and supervise separation practices and handling practices Make sure that delivery/ collection vehicle is clean Make sure that food is protected and/or covered Observe cleanliness of delivery vehicle/visual checks and supervision of collection practices Observe that food is protected <p>Cooking:</p> <ul style="list-style-type: none"> Cook the food to a temperature that will destroy harmful bacteria, core temperature 75C or above will ensure that harmful bacteria are destroyed 60°C for a minimum of 45 minutes 65°C for a minimum of 10 minutes 70°C for a minimum of 2 minutes Check that the specified cooking temperature is reached Continue cooking until temperature is reached Service engineer to check/repair equipment Review staff training <p>Storing:</p> <ul style="list-style-type: none"> Store food at a temperature that will discourage the growth of harmful bacteria Make sure all food is within its appropriate 'use by' date Check refrigeration/ chill temperature Keep raw and cooked/ready to eat foods separate Use food safe handling practices Observe and supervise separation practices and safe handling practices Dispose of food which may be contaminated Review staff training Keep the refrigerator/ chill clean Make sure that the food is protected and/or covered Observe and supervise cleaning of refrigerator/chill <p>Observe and supervise protection of food</p>
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Hot serving on site HACCP plan

Hazard	Control
Presence and growth of harmful bacteria; Cooked/ready to eat foods	<ul style="list-style-type: none"> • Serve food immediately • Observe and supervise serving practices
Other contamination; From equipment	<ul style="list-style-type: none"> • Use good personal hygiene practices • Make sure equipment and utensils are clean • Make sure food is protected and covered

Cold serving on site HACCP plan

Hazard	Control
Presence and growth of harmful bacteria; Cooked/ready to eat foods	<ul style="list-style-type: none"> • Serve food immediately after preparation or serve food directly from the chilled storage • Observe and supervise serving practices
Other contamination; From equipment	<ul style="list-style-type: none"> • Use good personal hygiene • Make sure equipment and utensils are clean • Make sure that food is protected/covered • Observe and supervise personal hygiene practices • Observe cleaning • Observe protection of food

Mapping delivery across units: for centres who wish to deliver units alongside each other.

Unit 1	Content from Unit 2 that could be integrated
<p>AC2.3</p> <p>Assess the impact of food production methods on nutritional value</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p>
<p>AC3.3/AC3.4</p> <p>Analyse nutritional needs of specific groups/assess how different situations affect nutritional needs</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain how micro-organisms affect food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.4 Justify proposals for control measures in different environments</p>
<p>AC5.2</p> <p>Plan production of menus</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain effects of micro-organisms on food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.3 Explain control measures used to minimise food safety risks</p> <p>AC3.4 Justify proposals for control measures in different environments</p>
<p>AC6.1</p> <p>Use tools in preparation of commodities</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain effects of micro-organisms on food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.3 Explain control measures used to minimise food safety risks</p> <p>AC3.4 Justify proposals for control measures in different environments</p>

Unit 1	Content from Unit 2 that could be integrated
<p>AC6.3</p> <p>Assure quality of materials to be used in food preparation</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain effects of micro-organisms on food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.3 Explain control measures used to minimise food safety risks</p> <p>AC3.4 Justify proposals for control measures in different environments</p>
<p>AC6.4</p> <p>Use advanced techniques in cooking of commodities</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain effects of micro-organisms on food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.3 Explain control measures used to minimise food safety risks</p>
<p>AC6.7</p> <p>Monitor food production</p>	<p>AC1.2 Assess how changing conditions affect growth of micro-organisms in different environments</p> <p>AC1.3 Explain effects of micro-organisms on food quality</p> <p>AC1.4 Assess how preservation methods prevent the growth of micro-organisms</p> <p>AC2.1 Explain the physiological basis of food intolerances</p> <p>AC2.2 Explain the physiological basis of food allergies</p> <p>AC2.4 Describe the symptoms of food induced ill health</p> <p>AC3.1 Describe food safety hazards in different environments</p> <p>AC3.2 Assess risk to food safety in different environments</p> <p>AC3.3 Explain control measures used to minimise food safety risks</p>

UNIT SPECIFIC GUIDANCE FOR TEACHING

Unit 3 Experimenting to solve food production problems (Optional)

GLH: 90

UNIT AIM

The aim of this unit is for learners to:

- Understand the properties of food.
- Plan and carry out experiments or practical work to demonstrate the properties of food.
- Use results of experiments or practical work to propose options to solve food production problems.

NB. Any of the live tasks can be released to learners as their final assessment, as long as they have not been used as a practice task during content delivery or as a “mock” assessment.

Planning a scheme of learning

It is suggested that Unit 3 is delivered with theory work integrated with experimental/practical work.

There are several ways of approaching this: from the foods, looking at each holistically – so the physical, chemical structure can be covered or by each group of nutrients.

Be aware, not all experimental work will result in making edible/practical dishes.

Visits to food production companies, R and D departments or inviting in speakers, e.g. Food Centre Wales/Zero2Five/National Centre for Food Manufacturing, can enhance delivery.

This unit could be delivered as a standalone but it would be advisable to build on previous practical skill/knowledge from Unit 1.

Before attempting the model assignment candidates need to have experienced an experimental approach to solving problems for other products.

They need to be familiar with adopting a scientific approach to research: “Aims. Variables – constructing a fair test, Controls, Suitability of investigative techniques, Recording observations –methods of data collection Organoleptic assessment –success criteria Analysis and evaluation – use of ICT for analysing data”

A good resource for Sensory testing/organoleptic qualities is

<http://www.foodfactoflife.org.uk/Sheet.aspx?siteId=20§ionId=85&contentId=329>

Although the total hours for the whole assessment (12hrs.) cannot be changed, centres may wish to consider the conducting of the planning and preparation for practical experiments outside of this time as in gathering of primary evidence for Unit 4 to meet the specific needs of the cohort.

Photographic evidence should be included to support experimental outcomes.

Sample/Suggested Scheme of work

The experimental work suggested below is not a definitive list; there are a wealth of experiments suggested on the web links below.

Topic Outline	Content	Teaching Activities
Introduction to the unit – food groups	<ul style="list-style-type: none"> • Proteins • Carbohydrates • Fats and oils <p>Classify foods into each group</p>	Reference Unit 1 classification of macronutrients function and sources.
Scientific approach	<p>Aims: Variables – constructing a fair test Controls Suitability of investigative techniques Recording observations – methods of data collection Organoleptic assessment – success criteria Analysis and evaluation – use of ICT for analysing data</p>	<p>Some simple experiments could be planned such as boiling eggs to identify variables, experiments on taste thresholds, experiments with random coloured/flavoured jellies</p> <p>Reference www.lovefoodlovescience.info 'how good a sensory tester are you?' sensory testing</p>
Scientific defined groups	Molecular structures – not a great amount of detail is required.	Reference Unit 1 classification of macronutrients function and sources
Chemical and physical structures	<p>Carbohydrates – basic structure – $C_x(H_2O)_y$ Sugars – monosaccharide – glucose, fructose Disaccharides – maltose, sucrose, lactose Non sugars – simple polysaccharides – starch cellulose glycogen $(C_6H_{12}O_6)_n$ where n can be thousands of units – Complex polysaccharides – pectin, gums</p>	

Topic Outline	Content	Teaching Activities
<p>Physical properties reactions with other agents (chemicals such as acids, alkali, and heat being the main ones)</p> <p>Chemical and physical structures</p> <p>Relation of structure to properties and foods reactions with other agents</p>	<p>Inversion of sugar Crystallisation Caramelisation</p> <p>Starch is the most important polysaccharide in food</p> <p>Enzymic breakdown of starch Gelatinisation of starch – ability to form both sols and gels</p> <p>Dextrinisation of starch Importance of hydrogen bonding Modification of starch – pre-gelatinised Cellulose – cooking and heating effects Complex carbohydrates – Pectin – Formation of gels Gums – seaweed – agar/carrageen – locust bean gum, use in food production as stabilisers – as a replacement for gelatine (see proteins)</p> <p>Proteins – largest molecule known Basic structure – large polymers made up of amino acids – need to know the basic chemical structure</p> $ \begin{array}{c} \text{COOH} \\ \\ \text{H}_2\text{N}-\text{C}-\text{H} \\ \\ \text{R} \end{array} $	<p>Relative sweetness Investigate properties of sugar solutions when heated Effect of temperature on heating sugars – mainly sucrose Crystalline and non-crystalline confectionary Making caramel – using lemon juice – honeycomb using bicarbonate of soda – making fondant – making toffee – making nougat – making fudge Spun sugar for decorations Brandy snap cases Identify the amount of starch in different flours – washing starch out and producing gluten balls Identify type of starch in different potatoes</p> <p>Flour experiments – changing the variables; mixing with hot liquid, the addition of acid, stirring/not stirring etc.</p> <p>Toast</p> <p>Instant gravies etc. – make own version</p> <p>Effect of heat/cold on the texture of celery</p> <p>Gels – experiments with various fruits Use of gums to form gels (might link with protein and alternatives to gelatine)</p> <p>Cooking of meat – grilling/frying and microwaving Marinades – using enzymic tenderisers, beating meat Simple experiments using eggs to see the process of coagulation due to heat – poaching Heating milk – formation of skin Making curd cheese</p>

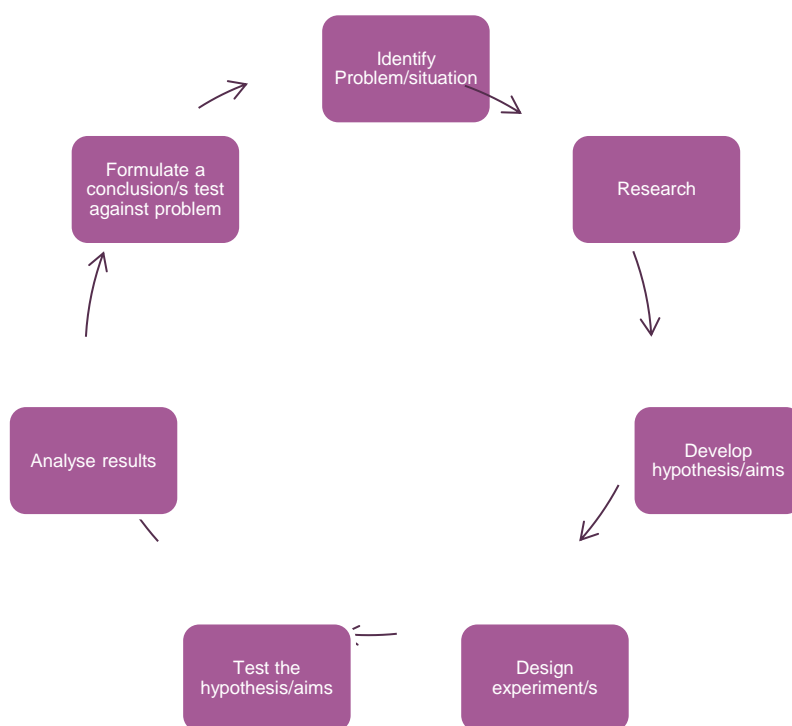
Topic Outline	Content	Teaching Activities
	<p>There is no need for knowledge of specific amino acids (i.e. the R group)</p> <p>Amphoteric nature – i.e. can act as alkalis or acids</p> <p>Primary, secondary and tertiary structures –</p> <p>primary – chain formation of amino acids</p> <p>secondary – helix formation caused by cross links</p> <p>tertiary – secondary structures folded over and held by cross links to form globular shapes</p> <p>Browning reactions – Maillard reaction</p> <p>Tenderising of meat – use of acids/physical</p> <p>Coagulation – heat, acid, enzymes(rennet)</p> <p>Sol (foam) and gel formation</p> <p>Action of physical incorporation of air</p> <p>Syneresis – shrinkage of a gel and loss of liquid</p> <p>Action of gelatine – formation of a sol (on heating) and a gel on cooling</p> <p>Denaturation – heat, physical, enzyme</p> <p>Action of gluten – insoluble protein in wheat is an elastic protein – use of properties and effect of heat</p> <p>Action as an emulsifier</p>	<p>Length of time whisking egg whites – stability of foam structures with added ingredients – making meringues</p> <p>Whipping cream – amount of time – effect of addition of heat, ideal storage conditions for whipped cream</p> <p>Standing jelly, overcooked scrambled eggs</p> <p>Formation of gels using a variety of fruit juices</p> <p>Overheating gelatine – effect of pineapple juice</p> <p>Production of gluten balls – effect of heat</p> <p>Properties and behaviour of egg white/yolks can be covered with its use in the production of dressings/mayonnaise</p> <p>Freezing/thawing of protein foods</p> <p>Lemon meringue pie</p> <p>Quiche</p>

Topic Outline	Content	Teaching Activities
<p>Chemical and physical structures</p> <p>Physical properties reactions with other agents</p>	<p>Fats and Oils (Lipids) True fats are a subset of lipids and the best source of energy in the diet. Some reference needs to be made to other lipids such as emulsifiers, vitamins pigments and antioxidants that occur in foods Naturally occurring lipids – cutin in apples, lipids in nuts Fats and oils – added to food for flavour/texture etc. – fats solid at room temperature – oils liquid at room temperature – this varies according to country</p> <p>Chemically – Esters – glycerol (alcohol) plus an organic acid to form a triglyceride. Mixed triglycerides occur in food Differences in fats are related to the different acid combinations. Most fatty acids have even number of carbon atoms Saturated – has an acid group COOH and only carbon and hydrogen – carbon atoms attached by single bonds to next atom</p> <p>Unsaturated fats have at least one double bond between carbon atoms</p> <p>Trans fats – occurs on hydrogenation of fat – when liquid fats are made solid by the addition of hydrogen atoms – increased shelf life, (link to unit 1 on nutrition and LDL and HDL and cholesterol)</p>	<p>Melting point of fat</p> <p>Use various fats and oils for shallow frying such as bread. Make observations on taste, texture and appearance of fried food Smoke point related to the different fats and oils Re-use of fat and taste</p> <p>Identify the different emulsions</p> <p>Use of different fats/different amounts of time beating/different beaters/vary the amount of fat</p> <p>Pastries Learners can investigate shortening by using a range of fats to see the different colour, texture and taste</p>

Topic Outline	Content	Teaching Activities
Functions of colloidal systems in food products	<p>Gels – a liquid in a solid network optimum conditions for making jams/jellies various amounts of sugar acid</p> <p>Emulsification – butter is a water in oil emulsion – salad dressing oil in water emulsion. Ice cream – emulsion of fat in a complicated solution</p> <p>Foams – bubbles of gas trapped in liquid</p> <p>Sols</p>	<p>Jams or jellies</p> <p>Salad dressing mayonnaise ice cream</p> <p>whipped cream mousse meringues cake bread</p> <p>roux sauce gelatinisation viscosity</p>
Food production	<p>Ability to transfer heat</p> <p>Rancidity – hydrolytic and oxidative Oxidative is the most common – slow take up of oxygen over time – unsaturated fats are more susceptible</p> <p>Hydrolytic – occurs in emulsions – butter, cheese, cream, margarine and some biscuits and nuts. Needs water and enzymes. Used positively in the production of blue cheeses</p> <p>Aeration – creaming butter – the physical action of beating a fat and a sugar – creates air bubbles by the sugar cutting into the fat. These air bubbles act as gas nuclei for gases produced by raising agents etc. This action ensures even distribution</p> <p>Shortening – acts as a tenderiser – separates the starch and protein in flour and depending on the way it is added can produce different textures, e.g. flakiness, plasticity</p>	<p>Dehydrating banana or other fruits/foods – in relation to carrying products for journeys/storage/preservation Ability to rehydrate Development of high energy snacks Effect of sugar on texture in making other baked products, e.g. biscuits use of sugar substitutes Bread and cake making using different flours added ingredients changing quantities Dishes with lentils, nuts, cottage cheese, tofu, nut butters Optimum conditions for making jams/jellies – various amounts of sugar, acids</p>

Topic Outline	Content	Teaching Activities
	<p>Food processing problems – food processing – taking raw materials and forming them into marketable products</p> <p>Creative and non- creative problem solving</p> <p>Need for lightweight/easily packaged/portable foods –innovative ideas</p> <p>Customer needs – low fat, lower sugar, high protein, high energy, longer storage</p> <p>Consistency of product – ensuring a satisfactory outcome</p> <p>Innovative ideas for desserts/breads/cakes/entrées</p> <p>Alternation – can be excellent – switch context for dishes to destabilise the mind set in producing food</p> <p>Combining one or two products together – products that don't necessarily sit well together</p>	

Suggested procedure for experimental work



Scenarios that could be used as part of delivery

1. Martin's meringues are part of a range of sweet products that he sells regularly at local food festivals. He sells chocolate, coffee and vanilla meringues and pavlova cases. He finds that they are inconsistent and, therefore, he often doesn't have enough for sale. Sometimes they are dry and shatter, other times they collapse and don't hold their shape when sugar is added. Identify the problems in the making of the meringues and develop a fool proof recipe and method for each flavour.
2. Innovative chefs often have a signature dish. Using the knowledge you have gained on how foods react to different conditions, explore different combinations of techniques and ingredients to create a signature dish of your own.
3. The company you work for has identified the need for good sweet and savoury jellies as part of an existing range. The current range tends to emphasise sweet dishes and is most popular at Christmas. As product designer you have been charged with developing a savoury jelly to launch the range for the summer. Texture, taste and stability are important elements which you have been asked to address. The results of a taste panel will, therefore, be important to the directors when making their final choice. Presentation will also be important. You may wish to present a selection to the directors for their approval.
4. As part of your role within a design team for a local food chain, you have been charged with the task of developing some innovative food products for consumers who require high energy, easy to pack carry snacks for taking on outdoor pursuit activities. The products should appeal to all ages and have a long shelf-life. Develop at least two products to present to the head of the development team.

Exemplar learners work for Unit 3 (QCF unit 4)

(See WJEC website and CPD resources for additional exemplars).

N.B. all evidence should be applied to the brief/ scenario being followed)

LO1 understand the scientific properties of foods

AC1.1 Explain how food properties can be changed

Gelatinisation

Starch gelatinisation is a process that breaks down the intermolecular bonds of starch molecules in the presence of water and heat, which allows the hydrogen bonding sites (hydroxyl hydrogen and oxygen) to engage more water. Penetration of water increases randomness in the general structure and decreases the number size of crystalline regions. Crystalline regions don't allow entry for water. Heat causes these regions to be diffused so that the chains begin to separate into an amorphous form. This process is used to make roux sauce in cooking, also pastry, custard and popcorn.

Gelatinisation is also known as the thickening of a liquid. The starch grains/flour granules absorb the liquid. When heated the grains/granules swell and then burst, which released starch into the liquid. The granules/grains swell to 5 times their original size.

AC1.2 Explain variables that affect physical properties of food temperature

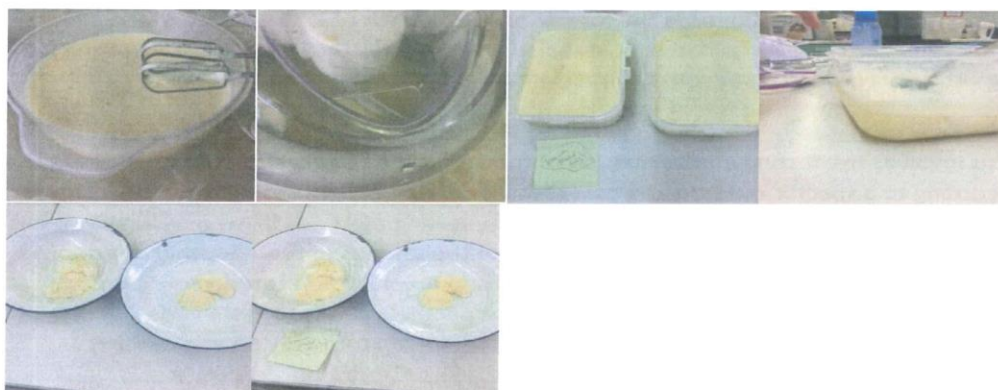
When foods are subjected to different temperatures the physical properties change. This makes the food have a different texture, flavour, colour and smell. For example, if a chicken breast is put into a freezer at -18°C then it will gradually start to freeze and harden almost like a block of ice. It will begin to form small ice crystals on the surface.

AC2.1 Set success criteria for scientific investigations

AC2.2 Obtain outcomes from scientific investigations

AC2.3 Record outcomes of investigative work

AC2.4 Process data



Aim: The aim of this investigation is to investigate why ice crystals form in ice cream, because on the online blog customers complained that the texture of the ice cream was gritty, this could be because the ice crystals are too large.

Methodology: 2 batches of the St Clements ice cream will be made, both with the same ingredients and exactly the same method until the freezing stage. When it gets to the freezing stage, 1 of the batches of ice cream will be put in a box straight into the freezer. The other batch will be put in the ice cream maker first until it freezes, then it will also be put into a box and go into the freezer.

Results: The results of this investigation were that the batch that got put straight into the freezer had bigger ice crystals than the batch that went into the ice cream maker first. Also the batch that got put in the freezer was separated into different layers when taken out of the freezer, but the batch that had been in the ice cream maker was thoroughly mixed together. When you freeze a liquid slowly there is more time, so bigger ice crystals form than if you freeze it quickly. A method of freezing the ice cream quickly is putting it in the ice cream maker; this is why this batch was smoother. The orange lemon zest in the ice cream also makes the texture slightly gritty.

Conclusion: Bigger ice crystals form when the ice cream is put straight into the freezer and isn't put into an ice cream maker first. Ice cream also isn't mixed together and separates in the freezer if it hasn't been in an ice cream maker first. The orange and lemon zest makes the ice cream gritty so could be removed.

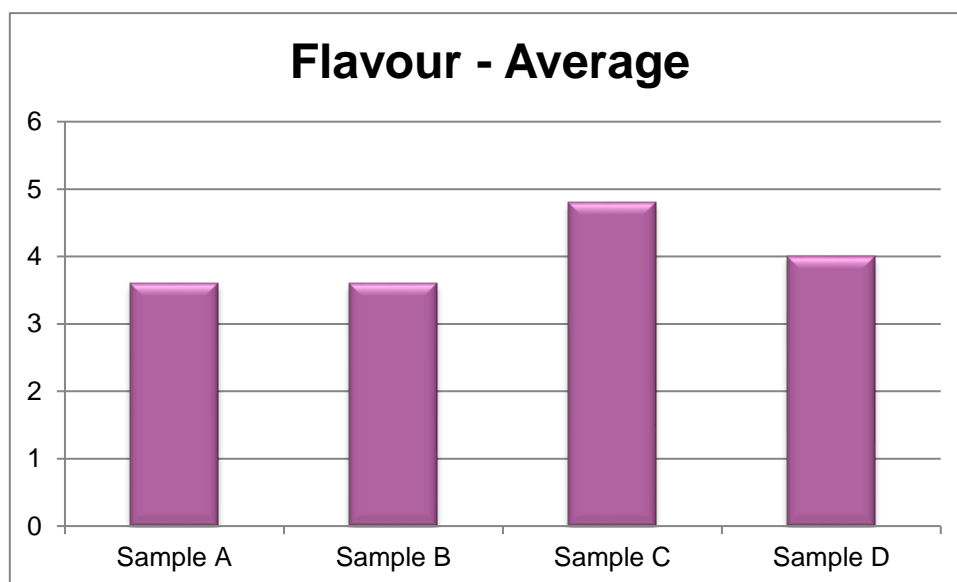
Recommendations: The ice cream should be frozen as quickly as possible to avoid large ice crystals forming. The orange and lemon zest should be removed from the ice cream recipe, the orange and lemon flavour should come from something else instead of zest, this will improve the texture.

4th experiment – in this experiment I substituted the double cream for clotted cream to thicken the mixture making it creamier. Also to concentrate on the texture of the ice-cream in this experiment I used juice again instead of zest. I liked the improvement of adding the teaspoon of vanilla essence as it added more flavour to the ice-cream so I used this again and I also left the mixture to cool before churning to reduce the grittiness giving a better texture to the ice-cream.

Thoughts:

I think the flavour was very good in this test and I can definitely tell that the ice-cream tasted slightly creamier however the ice-cream wasn't as soft as the previous test. This may be due to having only clotted cream in the mixture. Maybe it would have been better to use half clotted and half double cream. I am still pleased with the result of this experiment even though it didn't turn out exactly the way I wanted it to.

My results could have been more valid by getting different people to taste test the ice-cream with a better knowledge of how to properly taste food; e.g. people who work in a kitchen or restaurant as they would have to taste food regularly and would have more experience in that department. It would make it more reliable if I had a lot more people to taste the ice-cream too as I would get a wider range of results.



AC2.5 Review suitability of investigative methods

Ice-cream churning machine

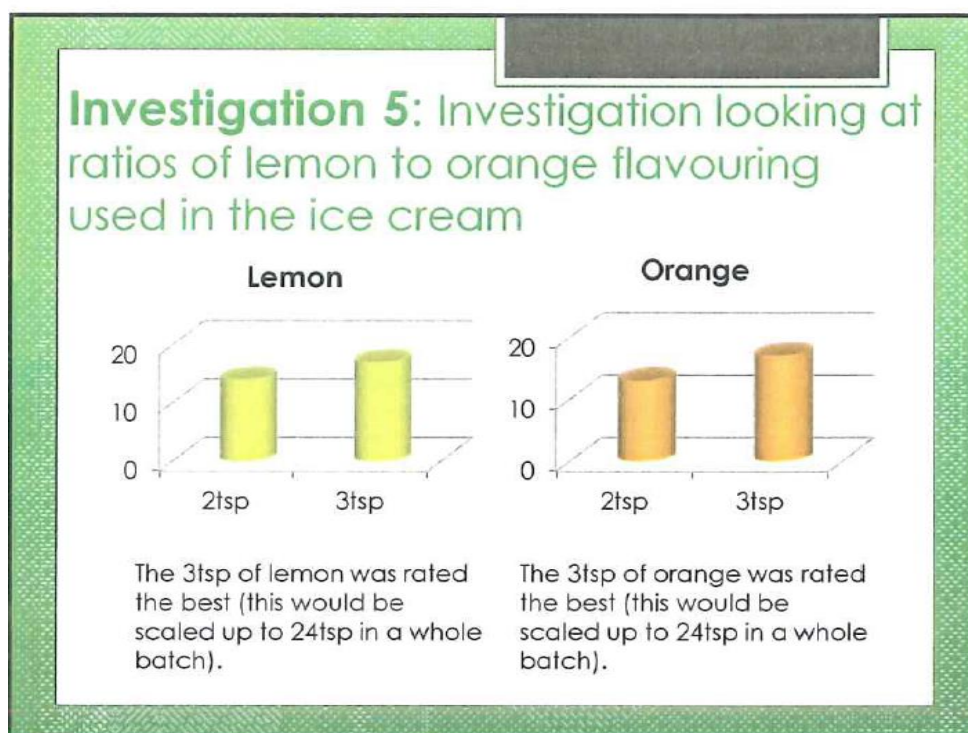
I had quite a few problems with the school's ice-cream churning machine. Sometimes the safety click mechanism wouldn't work so it wouldn't turn on. It would have been better if I could have used a more advanced churning machine as I would have had fewer problems with it and the ice-cream would probably set quicker too. If I was to do this whole experiment in a lab or proper catering environment then I'd be able to use much more expensive and specialised equipment.

AC3.1 Analyse food production situations

From carrying out this investigation and doing multiple different experiments I have found out that the ice-cream could be improved very well by using data from experiment that I did.

AC3.2 Propose practical options to solve food production problems

One technique that is good for ice-cream is to use liquid nitrogen. Because the freezing process is almost instant. The liquid nitrogen causes the fat and water particles to stay very small which is what gives liquid nitrogen ice-cream its creamy consistency. The smaller the tiny ice crystals form, the smoother the texture of the ice-cream will be rather than it being a grainy, course ice-cream. The main point of using liquid nitrogen in ice-cream is to avoid any ice crystals as much as possible.



Results: The tasters said that they liked the 2tsp of lemon and orange juice but it wasn't strong enough, they said that they liked the 3tsp of lemon and orange juice very much as you could taste both the lemon and orange. The final results are shown in a graph on the powerpoint.

Conclusion: 2tsp of both orange and lemon weren't very strong; however 3 tsp of orange and lemon juice was strong enough.

Recommendations: For the ice cream, 3 tsp of orange and lemon juice will be used (in a full batch this will be scaled up to 24 tsp of each).

Resources

Centres should use a range of text books such as:

OCR Home Economics A2. Rickus & Saunders. Hodder Education ISBN: 978 0 340 97366 0

The Science and Technology of Foods, 5th Edition. R.K. Proudlove. Forbes ISBN: 978-1-899527-08-3

Cooking Explained. Barbara Hammond. Longman ISBN: 0 58233300 8

Experimental Cooking. Brown and Cameron. Edward Arnold ISBN: 0 71310058 3

The Science of Bakery Products. Edwards. RSC Publishing ISBN: 978-0-85404-486-3

Food, Science, Nutrition and Health. M.E.J. Lean. Hodder Arnold ISBN: 978 0 340 80948 8

The Science of Food. Gaman, Sherrington. Routledge ISBN: 978-0-7506-2373-5

Web-sites

www.cfs.purdue.edu/class

www.exploratorium.edu/cooking

<http://foodscience.psu.edu/youth/classroom>

www.stevespanglerscience.com/experiments/food-science

www.ift.org/.../K12-Outreach/Food-Science-Experiments.aspx

http://chemistry.about.com/od/foodcookingchemistry/Food_Cooking_Chemistry.htm

<http://meatandeducation.com>

www.nutrition.org.uk

www.foodafactoflife.org.uk

Collins GCSE Revision Guide Food Technology

Unit 4: Current Issues in Food Science and Nutrition (Optional)

GLH: 90

UNIT AIM

The unit requires learners to develop skills to plan, carry out and present a research project on a current issue related to consumer food choice.

Exemplification

The unit aims to provide learners with the opportunity to develop knowledge and understanding of an issue that is currently affecting or recently affected the consumer food choice within the food industry. This may be something they have developed an interest in through their earlier studies or something they are introduced to through this unit. The issue will be current in that it has arisen in the last five years or is on-going.

The food industry is dynamic and continually responding to demands and changes in consumer choice, government policy and the environment. Many of these demands and changes are issues that can be studied in depth to be the focus of a research project. Throughout the unit, learners will have the opportunity to reflect on the knowledge that they have gained in other units of the qualification to appreciate the connections between different aspects of their learning of food science and nutrition.

Learning outcomes

The learner will:

LO1 Be able to plan research into a current issue in food science and nutrition

LO2 Be able to manage a project

LO3 Be able to investigate current issues in food science and nutrition

LO4 Understand current issues in food science and nutrition

Planning a scheme of learning

Topic	Suggested delivery plan	Resources	Approx. learning hours
Introduction to unit	<ul style="list-style-type: none"> Learners are given a copy of the unit specification. Teacher outlines the content and learning outcomes as presented and relates to proposed scheme of work, planned activities and approaches to teaching and learning. Learners are presented with a copy of the assessment for the unit with an explanation of the requirements for the different mark bands and deadline dates for submission of work. 	<p>Copy of unit specification.</p> <p>Copy of unit assessment grids.</p>	4 hours
Propose research into a current issue in food science and nutrition	<ul style="list-style-type: none"> Learners to define what they understand as an issue. Learners discuss ideas on what they feel are issues. Learners presented with ideas of topics for research to turn into a title. Teacher presentation on factors to consider when selecting an issue. Consideration of parameters of an issue – teacher presentation of a spider diagram or concept map. Following presentation, learners are each allocated a topic/issue to complete an initial review to produce their own spider diagrams. 	Activity 5.1a 5.1b 5.1c	10 hours
Initial research and setting research requirements	<ul style="list-style-type: none"> Determining research requirements of an issue. Learners review their spider diagrams and identify potential sources of information. This should lead to a discussion of typical sources of information and other sources that may be suitable. Secondary and primary. How to determine potential research requirements. 	Activity 5.2a 5.2b	5 hours
Evaluate quality of information	<ul style="list-style-type: none"> Evaluating evidence for objectivity. Carry out a review of news items in the media. Present findings to the class. 	Activity 5.2c	5 hours
Using secondary research	<ul style="list-style-type: none"> Using search engines. Learners are given topics and will need to find ways of narrowing the number of websites identified through a search engine by being more specific in the search box. Use information gathered to describe the facts of the issue in detail. Learners produce a research diary. 	Activity 5.2d Activity 5.2e Activity 5.2f	10 hours

Topic	Suggested delivery plan	Resources	Approx. learning hours
Analyse data	<ul style="list-style-type: none"> Interpreting statistics. 	Activity 5.2g Info sheet 5.1h	3 hours
Design primary research tools	<ul style="list-style-type: none"> Learners to compare a range of primary research tools. Learners prepare their own primary research tools and design ways of recording documentation. Learners collect primary information and present data diagrammatically. 	Activity 5.2h Info sheets 5.2h(i) 5.2h(ii)	10 hours
Analyse current issues in food science and nutrition	<ul style="list-style-type: none"> A guest speaker invited to discuss how an issue has affected their organisation, the sector, the industry, them individually or their job role. Learners could be involved in a series of discussions as a class or in small groups, selecting one of the topics from Activity 5.1a and considering its effect on the food industry. Alternatively, they could produce an article for one of the issues or a storyboard or script describing how the industry has been affected. 		3 hours 5 hours
Planning research project	<ul style="list-style-type: none"> Learners are introduced to the concepts in AC1.2 to consider ways of producing a plan to meet the assessment criteria. Learners given opportunity to produce sample plans. Learners provided with a list of possible sources of information. 	Activity 5.3a Activity 5.3b	4 hours
Monitoring research project	<ul style="list-style-type: none"> Learners consider issues that may prevent them completing the research project on time and to discuss contingencies to overcome these issues. Learners consider target dates and identify ways to record their completion. 		2 hours
Presenting research project	<ul style="list-style-type: none"> Learners provided with information on different methods of presenting project. Learner discussion on advantages and disadvantages of the different methods. Learners given opportunity to prepare both a small oral presentation and/or report on a given issue. Discussion of the importance of referencing. 	Activity 5.3c Info sheet 5.3c Activity 5.3d Info sheet 5.3d	10 hours
Evaluation	<ul style="list-style-type: none"> Discussion on evaluation criteria and standards. 	Activity 5.3e	2 hours
Carry out assessment task	<ul style="list-style-type: none"> Using skills gained, learners carry out model assessment activity. 	Model Assessment Unit 5	17 hours

Guidelines for submission of the Internal Assessment

Before commencing the research task learners should be given the opportunity to gain knowledge of effective research techniques.

They should be able to:

1. Evaluate strengths and weaknesses of questionnaires and interview schedules.
2. Distinguish between primary and secondary data and quantitative and qualitative data.
3. Identify and explain sampling techniques.
4. Produce a flow chart for a research project.
5. Design an effective questionnaire.
6. Understand difficulties that may be encountered when using questionnaires and carrying out research.
7. Interview individuals in an appropriate manner – obtaining consent, maintaining confidentiality.
8. Record findings appropriately.

Model assessment tasks

1. Plan research into a current issue in food science and nutrition
2. Investigate a current food science and nutrition issue.

NB: As learners can select their own focus for this internal assessment, there is only one version of the assessment for unit 4.

Presentation of work

Work that is clearly planned, structured and well organised will attract higher marks.

Achievement of the highest level of marks is dependent on the candidate producing accurate, detailed work that is coherent and not only meets the assessment criteria but shows clear evidence of research and wider reading around the subject – sources of information should be identified within the work.

Where appropriate, terminology and specialist vocabulary should be used with clear explanations of such.

Learners should be encouraged to take pride in their work producing high quality, neatly and attractively presented assignments at every level of achievement.

Attention to spelling and grammar should not be overlooked.

Resources for teaching and learning

Activity 4.1a

Selecting an issue

Below is a list of topics currently affecting food science and nutrition.

Create a question for each topic to form the basis of an issue that could be researched in more depth. The first three have been completed for you.

- Healthy eating — is it too expensive to eat healthy meals?
- Mass produced economy ready meals — do these meet the needs of individuals?
- Fair Trade – how important is sustainability to consumers?
- Government initiatives: Healthy Schools, Health Challenge Wales, Change for Life, 5-a-day
- Government regulations: food safety, labelling
- Cooking skills
- Food packaging
- Organic farming
- The media
- Television cookery programmes
- Celebrity chefs
- Fast food
- Healthy eating guidelines
- Obesity statistics
- School dinners
- Foreign travel
- Advertising
- Health scares
- Food processing/production
- Food pricing
- Food availability
- Health needs
- Cultural needs

For each of the questions you have asked above, consider whether you need to set parameters to make them more specific.

Rewrite those that need to be more specific.

You do not have to use these suggestions for your final assignment you can choose a topic of your own.

Remember:

Your chosen topic must reflect one or more of the following current issues:

- Significance to consumers
- Sustainability
- Economic
- Media related
- Social
- Ethical

OHT 4.1b

Selecting an issue

- Is it relevant to food science and nutrition?
- Does it interest you?
- Does it offer opportunity for discussion, debate and analysis?
- Is there information and data available that can be accessed and used?
- Is it specific?

Activity 4.1c

Food availability as an issue – consideration of parameters



Activity 4.2a

Initial research requirements

The aim of this activity is for learners to identify initial research requirements and additional information needed and to consider potential sources of additional information.

To begin the activity, the teacher could give a brief presentation on different types of evidence they may need to obtain, such as,

- facts
- data
- opinions
- models/theories/concepts.

Working individually, learners should carry out initial research on a given topic/issue.

Learners should set specific information requirements. The starting point might be to set a series of questions to determine the type of information required. At this stage, they may be able to identify potential sources that could give appropriate information. Alternatively, they may need to seek appropriate sources of information.

Having identified their evidence requirements and potential sources, learners should undertake an initial review. They should consider where information is available and where information is lacking.

The introduction of a research diary may be useful here as learners should keep a record of their sources of information and the information they have obtained, i.e.

- URL addresses
- authors, titles and page numbers of books
- leaflets
- records of visits
- correspondence.

Findings could be presented orally to the other learners or in writing, perhaps as a newsletter or a short report.

Activity 4.2b

Following completion of the previous activity (5.1d), learners should consider whether some topics/issues are more difficult to obtain information on than others. They should discuss whether this is:

- A result of parameters set being too specific/too wide.
- Lack of appropriate information sources available.
- Whether the topic/issue is not appropriate for further study.

Activity 4.2c

Evaluating information from different sources for objectivity and relevance

Working in groups of three or four.

Each group should be provided with a news item related to a food issue, e.g. fair trade products; food hygiene; food contamination outbreak; healthy eating issues.

Each learner should:

1. Write notes summarising their own knowledge of the news item.
2. Discuss any differences they may have.
3. Consider whether those differences are factual or opinion.
4. Discuss why those differences might have occurred, e.g. where did each person in the group obtain their knowledge and understanding of the news item?
5. Look through two different types of newspaper to review the information presented on the item, e.g. the *Sun*, *Star* or *Mirror* compared to the *Times*, *Telegraph* or *Guardian*. Discuss any differences there might be (possible bias).
6. Discuss whether these differences are in terms of fact or opinion.
7. Identify any gaps in information presented. Are there questions that arise as the text is read that are not answered? There should be no factual differences although some facts may be omitted in some evidence (limitations).
8. Consider why certain facts have been omitted where applicable.
9. Consider the opinions. Discuss why the opinions presented may differ. To what extent do they relate to the target market for the publication? How do differences relate to the purpose of the publication?
10. Discuss the validity, reliability, currency and accuracy of the sources of information.

Activity 4.2d

Using search engines effectively

This aim of the activity is to reinforce the best approach to the use of search engines such as Google, Ask, Yahoo, AOL, MSN etc. or to introduce the need to be more specific in setting search requests.

1. Learners should discuss the issues they have encountered in using search engines, specifying situations, when they have been useful and when they have not been useful, and identify reasons for this. When identifying reasons, they can then discuss strategies to adopt to overcome any issue they have come across.
2. Learners could be set short research projects. Each group or individual should use a different search engine. Some could be set very vague titles and outcomes and others more specific titles. They should take note of the number and relevance of the websites that are proposed from their chosen search engine.

Topics could be:

- healthy eating
- the milk industry
- food hygiene
- eggs
- E.coli
- global warming

or they could use titles from earlier activities where parameters for study may have been set.

This activity can also link with 5.2f where learners learn to keep a research diary.

Activity 4.2e

Synthesising information and presenting a summary of findings.

Learners could conduct a review of restaurant users' feedback. There are a number of websites that can be used to obtain this information, e.g. www.wheresgoodtoeat.com/, www.tripadvisor.co.uk/Restaurants , www.bigcardiff.co.uk/cardiff-restaurant-guide.php. Information should be collected from at least 10 different customers of a specific restaurant and learners attempt to synthesise information by presenting their findings in a summary.

Activity 4.2f

Describing in detail

1. Each learner should start with a description of an object, such as piece of equipment, without stating what the object is so that others in the class can identify the object from the description.
2. The next stage could be a description of their most recent experience at a food outlet.

With each activity, the learner should aim to give a more detailed description. They should aim to 'paint a picture in words' without giving any opinions. Other learners could assist with questions requiring more detail.

Once they have appreciated how more detail can be provided they should then describe an issue in detail. This can be the basis of the first part of the assessment but it could relate to an issue they have considered earlier in the unit.

Activity 4.2g

Analysing data

Learners should be presented with a range of secondary statistical data and asked to discuss their meaning. A range of statistics can be found at:

<http://www.defra.gov.uk/statistics/foodfarm/food/>

Activity 4.2h

Obtaining and presenting primary research

Learners should be introduced to ways of collecting primary research. Guidance should be given on preparation of documentation for recording information, i.e. designing effective interview schedules and preparation of questionnaires.

Learners could each be given a topic to gather primary information using each of the suggested methods and present the data diagrammatically.

Information sheet 4.2h (i)

Interviews

There are three different ways to conduct interviews:

1. **Face-to-face interviews** can be conducted by having question and answer sessions with one or more people. Asking people on the streets/in the classroom, going door-to-door to gather information, or making an appointment with an expert.
2. **Web-based interviews** make use of the internet to gather information. This method is less costly and convenient to use, for example www.surveymonkey.com/
3. **Telephone interviews** are similar to face-to-face interviews, but they are usually shorter and more structured. You may also have to send a letter to inform the interviewee in advance so they would expect your call.

Surveys and Questionnaires

These are popular means of gathering data and can reach a large number of people, but they need to be designed and reedited repeatedly to make them acceptable to people. You will need to test these to ensure that you get the responses you need. Closed questions are easier to calculate results to give quantitative data, whereas open questions will give more qualitative data. You can either print out copies to hand them out to people or send them to your respondents through email. Although this method is relatively cheap to conduct, surveys and questionnaires have the risk of low response rates and some may turn out to be incomplete.

Focus group interviews

Gather a group of people, specifically from your issue's target group, to ask their opinions on the topic.

Observation

Observation is one of the simplest methods for primary data research. All you have to do is simply take note of the behaviour of people related to your chosen issue, e.g. observing the number of people in the canteen who choose fruit as part of their meal.

Information sheet 4.2h (ii)

Presentation of data

Data is one type of information you may collect when researching an issue. Ways to present the data visually include tables, bar charts, graphs and pie charts.

Tables

Tables are good for storing, presenting and summarising numerical data. Tables are seen regularly but there are a number of principles to be considered when producing them.

1. Give the table a clear heading or title
2. Make sure each column or row is labelled clearly
3. Make sure numerical values are clear
4. Show aggregate totals
5. State the source of the data

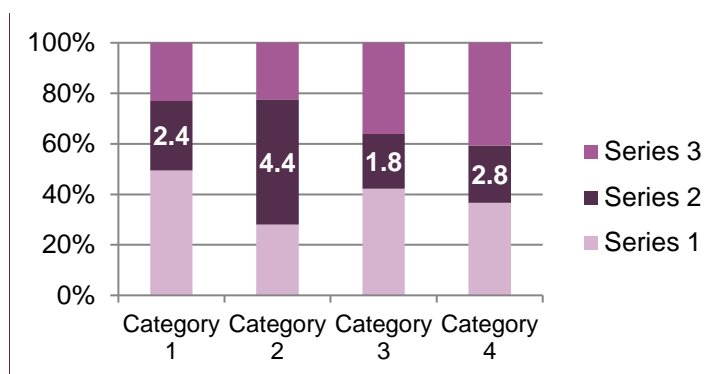
	Year 7	Year 8	Difference
Cedar High School	110	103	+7
Elm High School	223	214	+9
Maple High	197	120	+77
Pine Comprehensive	134	121	+13
Oak Middle School	202	210	-8
Sycamore School	24	20	+4
Larch Comprehensive	43	53	-10
Willow High School	3	11	-8
Birch High School	9	4	+5
Poplar Comprehensive	53	52	+1
Total	998	908	90

Source: Fictitious data, for illustration purposes only

Bar charts

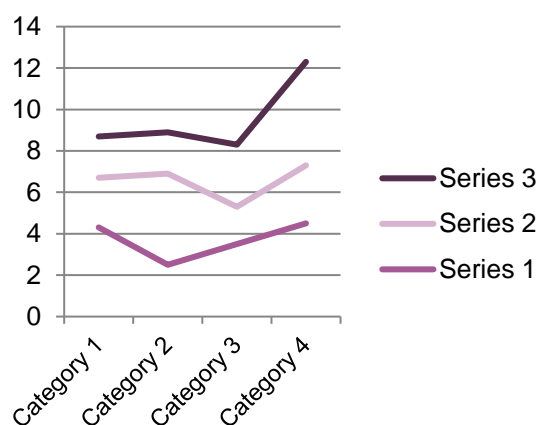
Bar charts are a common way of presenting numerical data. They are particularly useful for showing comparison between extremes. An example of a bar chart is shown below.

The lines are called axes. The line going up is the vertical axis and the line along the bottom is the horizontal axes. They are also known as the 'x' and 'y' axes. On the two axes, measurements are shown and must be to scale. Bars are always drawn of equal width. The length of the bar is proportional to the amount or quantity it represents. As with tables, there should be a clear heading, the axes should be labelled and the source stated.



Graphs

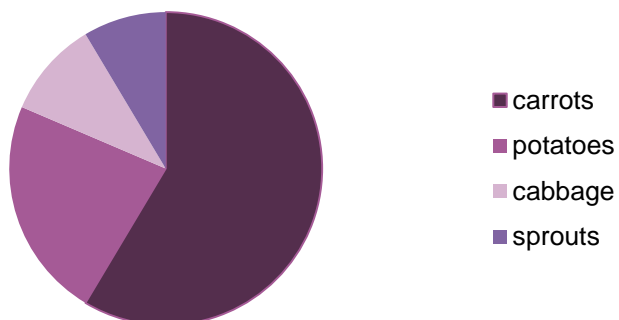
Graphs are a useful way to show changes in a particular variable over a period of years or the relationship between two or more variables. A general trend can be identified more readily from a graph, as can deviations from a trend. Time is shown on the horizontal axis and the vertical axis is used to convey the other variable such as profits, sales, visitor numbers. As with other forms, there should be a clear heading, axes should be labelled and the source should be stated. There should be a clear indication of the value of the data.



Pie charts

This is a form of visual presentation that breaks down the total figure into its component parts. The pie chart is not used to show a series of figures. Each segment should be labelled and given a key.

Vegetables



Activity 4.3a

Planning

Learners should be given suggestions of ways to present evidence of the planning stage of the assessment, e.g. action plan, flow chart.

Learners should consider:

An initial plan for the project to identify total time needed. This should be broken down into manageable chunks, i.e.

- identifying parameters
- initial research
- identifying gaps and potential sources
- putting together a research proposal
- undertaking research
- reviewing findings and identifying further research requirements
- reviewing and analysing findings
- presenting findings
- conducting a review of process.

Completing a review of own activities. Identify all time available for completion of project.

Reviewing times allocated. Are they appropriate?

Any potential problems in meeting deadlines and putting together contingencies for each. As a guideline, a hand-in date earlier than the assessment is due should be planned for, so that if things do go wrong, there will be time to rectify the situation without being penalised for late work.

Activity 4.3b

Learners could be presented with a list of possible sources of information.

Teachers should take care with the amount of information presented. Where detailed sources are provided these would be considered as directed and would limit the learners' potential to achieve higher marks.

It is preferable that only outline information is presented and this would allow learners to consider a range of information sources and to seek those specifically related to the issue they are pursuing.

If an issue has been used by staff throughout the learning process, that learners are not allowed to use for assessment, then the range of sources used for this could be presented as a bibliography. This will help learners with their own referencing.

Activity 4.3c

Presenting work in the form of an oral presentation and a report

Learners should be given information on the different ways of presenting their final assessment and given opportunity/information to present a short presentation and/or report on a given issue.

Learners should then discuss the advantages and disadvantages of each method taking into account their own strengths and weaknesses.

Information sheet 4.3c

Presenting work in the form of an oral presentation and a report

Oral presentations

You will need to consider:

1. **Your audience:**
 - Who your target group is. Who are they?
 - What is their experience and knowledge of your issue?
 - How many will there be?
2. **Subject of presentation** – is the issue you have chosen suitable for an oral presentation?
3. **Time available/length of presentation** – Is there a set time limit given for the presentation?
4. **Venue** – where will you give the presentation? You will need to think about
 - The size and shape of the room
 - Layout of the area – seating, arrangement of tables etc.
 - Lighting, heating and ventilation
 - Outside interference
 - Other facilities, e.g. location of cloakrooms, equipment available, PowerPoints for audio visual equipment.
5. **Use of audio visual materials** - PowerPoint/images/recordings.
These can:
 - Add variety and interest
 - Clarify understanding,
 - Reinforce the spoken word
 - Save time
 - Act as a prompt
 - Help audience to remember your message.
6. **Presentation Objectives**
What do you aim to achieve? What is the end result?
How do you measure success?
7. **Presentation Structure**
Introduction 5% to 10%
Main Body 70% to 75%
Ending and Summary 15% to 25%
You should never overestimate or underestimate your audience's knowledge.
8. **Preparation of materials** – taking into account
 - Type of language
 - Level of participation of your audience
 - Achieving impact and attention
 - Logical progression
 - The desired impression at the end.

9. Opening and closing the Presentation

Opening

- Take a few deep breaths
- Pause for the audience to take in the scene
- Welcome your audience
- Introduce yourself, the subject and objectives
- Describe the format

Closing

- Summarise key points
- Make a link back to your objectives
- Indicate the end is approaching
- Invite questions (if appropriate)
- Leave your audience with a key message
- Thank them for their time and attention

10. Performance rehearsal. Preparation leads to success. Practice carrying out your presentation several times. This important to

- Edit your material
- Check the flow
- Evaluate the message
- Measure your timings
- Test the equipment
- Check the visual aids
- Increase your self-confidence - experience reduces nerves.

11. Performance delivery. It is important that you consider the following to keep the attention of your audience; to keep them interested.

- Appearance
- Movements and gestures
- Voice and Speech
- Eye Contact

Effective speakers are

- Relaxed
- Well prepared
- Dressed appropriately
- Confident
- Enthusiastic
- Audible and clear
- Able to use humour effectively
- Able to control the pace

Do not forget that if you decide to do an oral presentation you will still need to show evidence of:

- Planning and monitoring your work
- The presentation – copies of PowerPoint presentations, photographic evidence, and witness statements.
- Bibliography

Writing a report

What is a report?

A report is a way of presenting precise written information.

Producing a report

There are four stages in the process that should be followed:

- A preparation
- B planning
- C writing
- D pre-submission editing.

A Preparation

Careful preparation is vital. It allows you to make the best use of time available. During this time you should decide **what** you are writing and **why**, before deciding **how** to write your report.

Establish the broad focus of your report first, with reference to the assessment criteria. Carry out some background reading using the suggested sources of information. Use a search engine to look for more possibilities. This will allow you to **define the subject and your aims more precisely**. If you are going to do some primary data collection it is best to make your appointments with people you need to see, and do an initial survey at this stage. Make sure you review the key issues and research methods that you could use within your report. Make a note of them.

B Planning

Planning is essential, it saves time and promotes clarity in collecting the information you require for organising the material and for writing the report.

It will be easier if you break the whole process down into a number of distinct tasks:

1. Data collection and analysis can be broken down either according to the source or the subsection of the report
2. Writing of text into subsections,
3. Presentation into graphs and tables.

You will also have to decide:

1. What evidence is needed to meet the overall objective of the report?
2. Where is that evidence?
3. How much evidence should be collected?
4. How should the evidence be analysed?
5. How should the evidence and the analysis be ordered for writing the report?

Good organisation is the key to success

Using the following sequence may help you to plan and to determine the method for writing your report:

- (a) Identify the sources of evidence (data and/or literature) and look for a range of views on the issue
- (b) Decide what is the most appropriate and relevant evidence to collect. **Be precise in this, understand the evidence**
- (c) Decide how you will present your findings, including the order in which they will be used to create a structure to the report — **the plan**
- (d) Identify likely figures — maps, tables, diagrams and think how you can use them
- (e) Decide on the order of priority of each of the tasks
- (f) Draw up a realistic timetable for the completion of each task, including writing the draft of the report.

C The writing process

There are three main factors to consider to give your report a clear style and attractive appearance:

1. structure
2. language
3. presentation.

1. Structure

A basic structure helps the reader understand the report. It will also help to write and organise the material logically.

The structure should follow the assessment criteria, but your report should have the following:

- report cover sheet, title page and contents
- summary (on front cover)
- introduction and definition of the question or issue
- sources of research information used, methods of collection and analysis and their limitations
- analysis and interpretation
- evaluation and conclusion
- bibliography and appendices.

The body of the report should be written first. This is the introduction, the findings, and the conclusion.

The main body

(a) Analysis and interpretation

This is the section in which you present your findings. When you are writing this section all of your material should have been sorted, selected and arranged in note form.

This section includes:

- (i) the results of your analysis
- (ii) your interpretation of those results.

This section forms the basis for your conclusions.

(b) Methods

In this section you should discuss

- (i) the sources of evidence you have used and then possible bias
- (ii) how you have collected and analysed the evidence
- (iii) the limitations of the sources and methods of collection and analysis.

(c) Conclusions

This section is a summary of all the major findings made at stages throughout the report.

No new evidence should appear here. The conclusion considers the evidence presented in the main body, draws out the implications and brings it to one overall conclusion or an ordered series of final conclusions.

- (d) Introduction**
After having written your findings and conclusions you now know clearly what you want to introduce. The introduction is where you acquaint the reader with the purpose of the report and guide them through the structure of your report.
- (e) Appendices**
This section is set aside for supplementary evidence not essential to the main findings, but which provides useful back-up support for your main arguments.
- (f) Contents**
All the sections of the report should be listed in sequence with page reference.
- (g) Bibliography**
This section covers the books and other sources which have been used in your research. It must include every reference mentioned in the text and be presented correctly.
- (h) Title page**
This should include the title, which indicates the central theme of the report. It should also include the learner's name and the date of completion of the report.
- (i) Summary or abstract**
This is a very important part of the report. It should be the last thing you write. You need to read through your report and develop a list of headlines. The summary outlines the key issues of the report.

2. Language

Sentences must be grammatically correct and well punctuated. Words must be spelt accurately.

Poor writing regularly indicates muddled ideas; it implies that you do not really know what you are saying. You are writing to communicate, not to impress. Avoid jargon and ensure that you are using the correct words. Focus on the specific purpose of the report. Every part of the report should relate to the issue and this will help keep the report concise and coherent. Accuracy is vital.

Important things to remember:

- Keep sentences short and simple. Long, complex sentences confuse and impede understanding.
- Poor spelling will detract from your work. Use a dictionary as well as the spell checker on the computer. Be careful as the spellchecker, may well have American spellings and its dictionary may not include all the specialist words you use in the report.

3. Presentation

The report must look good.

Use headings and numbering to make it easier to follow. Bullet points can be used to present arguments.

The presentation of statistics is often more interesting when shown visually, for example, by using tables or pie charts.

Layout is important. This is how you use the space on the pages to present your work. This applies whether it is hand-written or word-processed. A crowded page with dense blocks of writing and little space looks unattractive and is off-putting.

Always make sure that there are:

- adequate margins
- either double or 1.5 spaced lines
- headings that stand out clearly from the page.

D Pre-submission editing

It is important to read through the work from start to finish before handing in to edit and refine the report. This is much easier when the work is word-processed.

As you read, mark the pages which will need altering. You will need to get a feel of the overall structure and effect of the report first so the read through must be continuous. Be critical of what you have written; make sure the work 'flows'.

This is known as proof reading and is vital. Regardless of the time and effort put into writing the report, the required result will not be achieved without sufficient care devoted to proof reading. A poorly typed report, full of errors and inconsistencies in layout, has a damaging effect regardless of the quality of the content.

- (a) The report must be checked in great detail, for grammar and spelling errors.
- (b) Ask yourself whether you could have expressed yourself in a better way. If so, change the sentence or the paragraph.
- (c) Check whether the structure of the main body of work is really the most suitable way to present your material, ideas and arguments.
- (d) Is each paragraph structured well? Make sure that every idea or piece of information has a separate paragraph.
- (e) Are all the references in the text included in the bibliography with full formal details?
- (f) Does the report fulfil the stated aims and assessment objectives?
- (g) Is your argument watertight and easy to follow?
- (h) Does your conclusion make your argument all the more convincing?
- (i) Finally assess the layout and general appearance of the document.

Activity 4.3d

Referencing sources of information and evidence

Learners should be given guidance on the importance of referencing work and the ways in which this should be done, e.g. Harvard referencing.

Information sheet 5.3d

Referencing sources of information and evidence

It is essential that in the work you produce, you make reference to sources you have used. This applies for both oral and written presentation of work. This is to ensure that you can't be accused of plagiarism.

Plagiarism is effectively cheating and is considered as:

- copying the work of others without their knowledge or agreement. This could be another learner but it could also be an author of a book or article in a journal.
- downloading pages from the internet and presenting the findings as your own.

Plagiarism is classed as cheating, it could mean that no marks at all are awarded for work that you submit if it is considered to have been plagiarised. As a minimum, all sections of work that are plagiarised will be disregarded. All work taken directly from other sources should be referenced.

A bibliography

It is essential that your work should include a bibliography. A bibliography is effectively a list of the sources of information used to compile your work. A bibliography will be shown at the end of any report, whether presented orally or in writing. This may include sources that were considered but where evidence was not used.

Activity 4.3e

Evaluation

Learners should work in groups to determine the criteria that could be used to evaluate their research project. Once they have determined criteria they should then set standards they would use for evaluation.

They may use ways of obtaining feedback to evaluate key holder responses such as questionnaires, witness statements, etc. but these are not essential.

Activity 4.3e

Research Project

Working individually, learners carry out final assessment project, showing clear evidence of:

Planning: proposal of issue; aims; plan of research; justification of plan.

Research: methodology, primary research tools, data analysis, secondary research. Gathering of primary data may be completed between timetabled sessions.

Analysis

Evaluation

Appendix 1

Glossary: Required Terminology

Aims: To state clearly what you intend to do, i.e. what you intend to find out and how you intend to do it.

Appendices: This is additional information (if applicable) added at the end of your work. It may include information that is too voluminous or cumbersome to include in the main part of the report. Information in the appendix could be reports, articles, charts, tables or graphs which are referenced within the main body of the work. But you could also put extra information which could be useful as additional information but not exactly critical to the paper.

Bibliography: A bibliography is a list of all the sources of information you use when researching and presenting your assignment. The bibliography will appear at the end of your work. The main purpose of a bibliography is to give credit to other authors whose work you have used in your research. Another purpose of a bibliography is to make it easy for others to find the source you have used.

Economic: This refers to financial factors. Show consideration of factors relating to finance or cost regarding your issue, e.g. the recession.

Ethical: Ethical issues are those dealing with morality, right and wrong, as defined by the society we live. Considerations you may need to make during your work may be issues regarding confidentiality, the effect of your report on others.

Focus group: This is a form of qualitative research in which a specific group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. Questions are asked in an interactive group setting where participants are free to discuss with other group members. The group may consist of a particular age group, people with similar interests or may be from a range of backgrounds depending on the aim of your investigation.

Hypothesis: This is a specific statement of prediction. It describes what you expect will happen in your study. Your research issue will be given as a statement which can be supported or disproved by your research results.

Justify: To demonstrate or prove to be just, right, or valid.

Media Related: The media refers to the main means of mass communication to the general public, i.e. television, radio, newspapers. In your work you should include reference to any positive or adverse reports of the issue in recent newspaper/magazine articles TV news items or documentaries.

Methodology: This is a description of the different methods you intend to use to carry out your research project.

Milestones: Important stages of the research.

Parameters: The term is used to identify characteristics, features, measurable factors that can help in defining the extent of your research. You will need to decide what exactly you intend to include within your issue to make sure you do not make the project too wide. The scope and range of your research.

Primary research: This is research which collects original primary data. It is often carried out after the researcher has gained some insight into the issue by collecting secondary data. Primary research can be through questionnaires, direct observation and telephone interviews amongst other methods. There are advantages and disadvantages to primary research.

Advantages:

- Addresses specific research issues as the researcher controls the search design to fit their needs.
- Great control; primary research enables the researcher to focus on specific subjects, and enables the researcher to have a higher control over how the information is collected. The researcher can decide on such requirements as the size of project, timeframe and goal.

Disadvantages:

- Compared to secondary research, primary data may be very expensive. Costs can be incurred in producing the paper for questionnaires or the equipment for an experiment.
- To be done properly, primary data collection requires the development of a research plan.
- It takes longer to undertake primary research than to acquire secondary data.
- Some research projects, while potentially offering information that could prove quite valuable, may not be within the reach of a researcher.
- By the time the research is complete it may be out of date.
- Low response rate has to be expected.

Rationale: An explanation of the basis or fundamental reasons for something. The justification or reasons for choice of the chosen issue. You will need to give reasons why you consider the chosen issue to be important – why it is useful for you to carry out this research, who will it effect – consider stakeholders.

Secondary research: (Also known as desk research) involves the summary, collation and/or synthesis of existing evidence where data is collected from research subjects or experiments. Sometimes secondary research is required in the early stages of research to find out what is known already and what new data is required. An essential part of secondary research is the full listing of original sources, usually in the form of a bibliography or annotated listing in the text. Secondary sources could include previous research reports, textbooks, newspaper, magazine and journal content, and government statistics.

Significance to consumers: You will need to explain who will be affected by the research findings, e.g. age groups, employers, suppliers, etc.

Stakeholders: A stakeholder is anyone who has an interest in an issue. They may be actively involved in the issue, or whose interests may be affected as a result of an issue. Examples of project stakeholders include food manufacturers, food processing organisations, hospitality and catering organisations, consumers, voluntary groups, retailers, government departments, media.

Sustainability: At the moment, there is no legal definition of 'sustainable food,' although some aspects, such as the terms 'organic' or 'Fairtrade', are clearly defined. You will need to show if your chosen issue is relevant in any way to Fairtrade products, global issues, food production, food shortages.

Timescales: You will be given time allocations for each section of the work. You will need to set yourself targets to divide this time to complete each section within the stated time.

Exemplar learners work for Unit 4 (QCF unit 5)

(See WJEC website and CPD resources for additional exemplars).

L01 AC1.1

Propose research into current issues in consumer food choice

Introduction

My initial idea for my study task was going to be to provide a breakfast club in King's School however this has already been trialled. The outcome for the breakfast club was that only 1% attended which is an average of 5-6 students attending. This led to the breakfast club being discontinued. Feedback suggested a mid-morning snack option may be more successful with students. Therefore as a whole my study will be based on finding out from research I carry out if students want a mid-morning snack option to be introduced.

Proposal; For my Unit 5 study task into current issues in consumer food, I will be carrying it out based on an opportunity I have been given to introduce a breakfast club/mid-morning snacks in King's School. I will carry out my study task within King's School. I plan to use a range of primary research methods such as questionnaires aimed towards the students of King's School to find out whether a mid-morning snack option is wanted. Once I have carried out my primary research my aim is to present my findings to the head teacher of King's School, proposing the idea of mid-morning snacks if the majority of students support the idea.

*clear on aims
and main
stakeholder for the
project.*

Scope and range of research; For my study task there is a wide range of scope which opens up an array of research methods I can include into my study. This was the reason I chose this study so that I have the opportunity to access as many research methods. Some examples of the primary research I will carry out for my study are: questionnaires which I will target towards students with the aim of finding out if students would like a mid-morning snack option. I will carry out interviews and focus groups with students based on breakfast. The secondary research methods I will be using are newspaper articles, magazines, books, internet and media. For my final presentation I am going to present to the head teacher of King's School pitching my idea for breakfast club and sharing my research.

Significance to consumers; My study meets this current issue, because the government guidelines for school meals are meant for consumers, and are specifically created to be targeted towards consumers. Therefore my study task is open to a large range of consumers. The significance to consumers is that not every child gets breakfast before school, therefore offering breakfast club/mid-morning snacks helps to ensure students receive breakfast. The main consumers are children because they're the ones who receive the school meals. However parents are also a key stakeholder consumer as they pay for the meals especially in the environment I am in which is a military environment where parents are billed for students school meals. It is also significant for the government as they're the ones paying for projects such as free school meals and breakfast clubs to be provided within schools. Another consumer significant is the catering staff within school that provides all the meals to students.

Discusses context and consumer/stakeholder in detail

Sustainability; My study task links into sustainability because the newly introduced school meal guidelines help promote issues that are linked to sustainability. Using food products that promote Fairtrade, farm assured, locally sourced, free range, GM free products, organic and seasonal produce promote sustainability. The previous methods of producing food promote sustainability because the methods aim to preserve the world's natural resources for future generations.

well explained + related to new school food guidelines

AC1.2 & AC2.1

Action Plan

Plan research into current issue in consumer food & Monitor project progress

Date	Activity: assessment criteria	Evaluation	Timescales	Completed
2 nd December (Start study task)	<p>LO1 AC1.1: Propose research into a current issue in consumer food choice Introduction and proposal</p> <ul style="list-style-type: none"> • Scope and range of research • Rationale for research • Setting hypothesis • Setting project aims <p>LO2 AC2.1: Monitor project progress from start date of study task</p> <ul style="list-style-type: none"> • Achievement of milestones • Proposal • Outcomes • Outputs • Timescales • Documenting activities 	<p>During this lesson I completed half of the task I set out to do I will continue next lesson on the 4th December when I will complete the task.</p> <p>I completed the introduction to my study task explaining what I am basing my study task on and went on to explain my aim for what I want to find out from my study task.</p> <p>For the monitoring of my project progress I am going to include this within my action plan by stating when I have completed certain task so that it is a working document.</p>	40 minute lesson	Complete by 4 th December
4 th	<p>LO1 AC1.1: Propose research into a current issue in consumer food choice Introduction and proposal</p> <ul style="list-style-type: none"> • Scope and range of research • Rationale for research • Setting hypothesis • Setting project aims 	<p>I fully completed the task I set out which I planned to complete in the lesson. The task went well as I finished what I had set out to complete. I am pleased with how my introduction is because it is clear what my research project is as I ensured I went into a large amount of detail.</p>	40 minute lesson	Completed 4 th December

AC1.3 Justify plan for research

My action plan which I highlighted above demonstrates how I will carry out my study task on a day to day basis noting what activities I will be carrying out during my lessons. My plan includes timescales, sequencing of activities, methodology, presentation, milestones, outputs, outcomes and presentation. I will follow my plan each lesson ensuring that I complete my study task on time. I will record at the end of each lesson what I have achieved that lesson and record whether I have completed what I set out to complete each lesson by recording it on my action plan.

Full explanation of aims.

My plan secures my outputs because it is clear on my action plan what I want to achieve each lesson and how I will achieve it. I refer to the assessment criteria for the study task to ensure I include the criteria in my work to achieve the highest possible grade on my work.

good idea

My plan for research secures my outcomes because I have included my outcomes into my plan. My action plan as a whole document is important as it helps me with keeping organised and knowing where I am up to with my study task therefore I have ensured there is a large amount of detail on my action plan.

AC3.1 Describe research methodology

AC2.2 Evaluate research project

Primary research

The primary research I will be using for my study task is **questionnaires**; This type of research will be used to ask students in King's School a range of questions based around breakfast. The main aim for my questionnaire is to find out if students want mid-morning snacks. My questionnaire will be aimed at all aged students in King's School ranging from year 7 to 6th form students. By having a range of age groups it means my questionnaire will prove to be more reliable as it represents different age groups. This is a major advantage for me as my research will represent the whole school. *well explained reasoning; structure is objective and valid*

The questions I will include in my questionnaire are as follows:

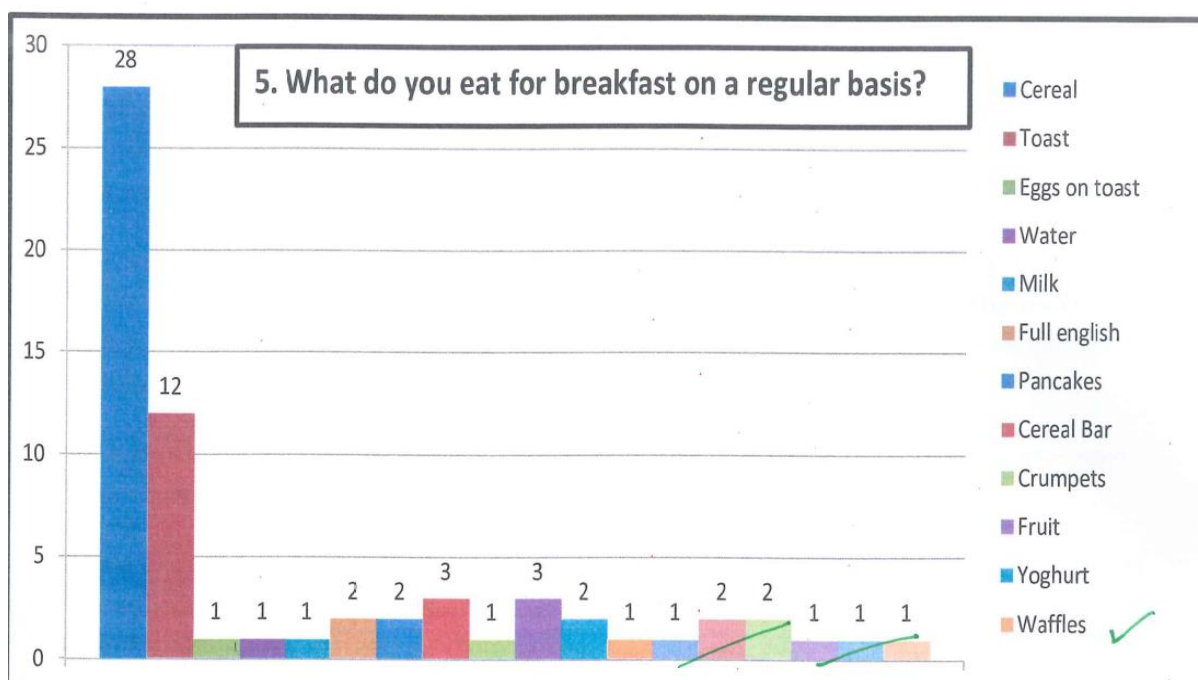
- When do you usually have breakfast?
- If not eating breakfast why?
- Would you be interested in mid-morning snacks in school?
- What snacks would you want to be on offer?
- When would be the best time for snacks to be served?
- What do you eat for breakfast on a regular basis?
- What time do you usually get hungry in the school day? ✓

lists questions she uses in questionnaire

AC3.3 Analyse data

I received my questionnaires back after giving the participants a week to complete them and to hand back to me. I handed out a total of 30 questionnaires and received them all back. This means I have a large amount of data I can analyse. The data therefore represents a large group of people which makes the data more valid. I will now analyse the data I received by collating the data, displaying and presenting the data in graphs, identifying trends, patterns and casual relationships and connecting ideas with the use of ICT software.

My overall questionnaire was based on breakfast with the aim of finding out if students in King's School would be interested in having a breakfast club.



AC3.4 Evaluate quality of information

Evaluation

I will now evaluate my questionnaire. My questionnaire was important for finding out a range of things such as: when students usually eat breakfast, whether students would like a breakfast club, what they usually eat for breakfast, what they would like to be offered at breakfast club and what time they usually get hungry. From asking the previous question I received all the information I then needed to carry out my study based on whether students want a breakfast club.

The results are valid for my study task because I can take forward my findings to the head teacher of King's School to inform him. Also, this is an important statistic to support the need for breakfast club in King's School so therefore I can back up my study with my findings for the introduction of breakfast club. My findings from my questionnaire are usable for the King's School who are one of my main stakeholders for my study task because my research can be used to introduce a breakfast club.

explains significance of findings to stakeholder.

L04

A pity there wasn't a more practical element (taste-testing?) to the project - this would have given further depth to the project & allowed a breadth of research. But, this is acknowledged here, showing evidence of student's learning.

AC4.1 Analyse current issues in consumer food

Evaluation

From carrying out my study task the extent of my issue to consumers is clear that students in King's School would like a breakfast club/mid-morning snack option to be offered in King's School I can back this up with my data from my questionnaires which proved that 47 students answered yes to wanting breakfast club while 37 students said no they wouldn't like one. Therefore drawing conclusions from my data it is clear that students in King's School would like this to be offered which should be taken on board by the school. I was hoping to find out this data as my study task was based on secondary research carried out by King's School which proved that a mid-morning snack option may be more successful. This is down to the fact that breakfast club was already trialled in King's School but proved unsuccessful so therefore was discontinued. Feedback they received like I just mentioned suggestions students would want the mid-morning snack option therefore my research and my data shows that this is true. My data proves that yes students in King's School would like mid-morning snacks to be offered. This was the main basis of my study task focusing on whether students would like mid-morning snacks therefore my study task has been successful with finding this information out.

good point

Explains own expectations & hopes - that research would prove b.c. was 'wanted' by students.

AC4.2 Evaluate how key stakeholders respond to current issues in consumer food choice

The key stakeholders for my study task are as follows:

- King's School students ✓

The reason I chose King's School students as a stakeholder was because my study was aimed at students. The aim of my study task was to find out if students in King's School would be interested in a breakfast club therefore students were the key stakeholders for my study task. I was hoping to find out if the students want a breakfast club to be introduced into King's School. *agreed!*

- Parents (Teachers of King's School) ✓

The reason parents were a stakeholder for my study task was because having parent's opinions of students in King's School is important for finding out if breakfast club is necessary and if parents think it is a good idea. I was hoping to find out from parents whether they feel their children would like a breakfast club and their personal views on it for example if it would benefit their child.

Additionally - parents would pay for the B.C meal.

- Catering teachers ✓

Catering staff in King's School were a stakeholder for my study task the reason for this is because a catering teacher proposed the idea of researching into breakfast club for my study task. I was hoping to find out from catering staff a range of information regarding breakfast club and having their professional view on the idea. *Well explained*