T-LEVELS | Institute for Apprenticeships & Technical Education

# T Level Technical Qualification in Science

Employer set project (ESP)

# Food Sciences

Project brief

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**T Level Technical Qualification in Science**
**Employer set project (ESP)**

# Food Sciences

**Project brief**

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# Guidance for students

## Student instructions

- read the project brief and the task guidance carefully before starting your work
- you **must** work independently and make your own decisions on how to approach the tasks within the employer set project – your work should:
  - be in an Arial font 12pt, within standard border sizes, however you may choose to handwrite your work – if you choose to handwrite your work, you should ensure it is clear and legible
  - clearly show where sources have been used to support your own ideas and opinions
  - clearly reference all sources used to support your own ideas and opinions
  - reference any quotations from websites
- you **must** clearly name and date all of the work that you produce during each supervised session

At the end of each supervised session, your tutor will collect all assessment materials before you leave the room. You **must not** take any assessment material outside of the room (such as via a physical memory device). You **must not** upload any work produced to any platform that will allow you to access materials outside of the supervised sessions (including email).

## Student information

This employer set project will assess your knowledge, understanding and skills from across the core content of the qualification.

In order to achieve a grade for the core component, you **must** attempt both of the external examinations and the employer set project. The combined marks from these assessments will be aggregated to form the overall core component grade (A* to E and U). If you do not attempt one of the assessments or fail to reach the minimum standard across all assessments, you will receive a U grade.

Your tutor will explain how the assessment time is broken down per task and will confirm with you if individual tasks need to be completed across multiple sessions.

You can fail to achieve marks if you do not fully meet the requirements of the task, or equally if you are not able to efficiently meet the requirements of the task.

## Plagiarism

Plagiarism may result in the external assessment task being awarded a U grade. For further guidance, refer to your student handbook.

## Presentation of work

- any work not produced electronically must be agreed with your tutor, and the evidence you produce should be scanned and submitted as an electronic piece of evidence, for example a digital photograph; your tutor will arrange for any digital photographs to be taken

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- all your work should be clearly labelled with the relevant task number and your student details and be legible (for example, front page and headers)
- electronic files should be given a clear file name for identification purposes (see tasks for any relevant naming conventions)
- all pages of your work should be numbered in the format page X of Y, where X is the page number and Y is the total number of pages
- you must complete and sign the external assessment cover sheet (EACS) – declaration of authenticity form and include it at the front of your assessment task evidence
- you must submit your evidence to the tutor at the end of each session

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# Scenario: review a fast food chain's menu and make recommendations to increase the amount of nutrient dense food on offer

## Introduction

Nutrient dense foods are foods which contribute to the maintenance of a healthy body and reduce the risk of many diseases and health problems. These foods generally contain a range of vitamins, minerals, fibre, protein, or essential fatty acids that the body needs. Different foods could contain the same number of calories, but some are classed as more nutrient dense if they contain more vitamins or minerals or, are lower in saturated fats and sugars. (Source: Eufic)

Almost two thirds of adults and one third of children in the UK are classed as overweight or obese. Obesity leads to shorter life expectancy and a heightened risk of developing many health conditions including a range of cancers, type 2 diabetes, and high blood pressure. Cheap and readily available out-of-home meals have been identified as a key contributing factor to rising levels of obesity. In 2014, Public Health England estimated there were over 50,000 fast food and takeaway outlets, fast food delivery services and fish and chip shops in England. More than one quarter of adults and one fifth of children eat food from out-of-home food outlets at least once a week. These meals tend to be associated with higher energy intake, higher levels of fat, saturated fats, sugar, and salt, and lower levels of micronutrients. (Source: UKGov)

There is growing pressure from the government to restrict and reduce the advertising of products high in fat, salt or sugar. This is putting pressure on manufacturers and fast food outlets to create more nutrient dense products for their ranges.

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# Brief

Totally Burgers, a fast food chain, is reviewing their current menu. The company is considering expanding its range and has developed some new products that they could add to their menu to provide their customers with more choice and more nutrient dense options. Using customer research and nutrient profiling, you and your team must determine which items they should add to the menu and if any existing products should be removed.

You have been asked to plan a scientific investigation to provide primary data that will give further evidence on menu items Totally Burgers should launch.

The project involves research, analysing data, planning scientific investigations, collaborative working and presenting your findings.

Current and proposed menu items:

| Current Menu Items | Proposed Development Menu Items |
|---|---|
| Memphis BBQ burger | Cajun beef burger |
| Totally big burger | BLT burger |
| Pulled pork loaded burger | Vegan smash burger |
| Supreme chicken burger | Crispy chicken salad |
| Chicken tenders | Katsu chicken wrap |
| Salt & pepper chicken bites | Cheeseburger wrap |
| Large fries | Sweet potato wedges |
| Medium fries | Cheesy dippers |

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# Task 1: research a strategy

(22 marks)

You have been asked to supply evidence of which menu items Totally Burgers should add to their menu, and if any existing products should be removed. You need to research the potential opportunities and any risks that these may have. You need to investigate potential options and justify which items are most appropriate to include.

You will need to undertake a literature review using the provided literature sources.

Some of the information will be useful and will provide evidence to support your recommendations of which menu items Totally Burgers should use. The data will also help you to decide which scientific investigations you should plan to provide primary data, that would further support your recommendations.

## What you have to do

You will be provided with a database of literature sources from NCFE about nutrient dense foods and fast food chains.

You will need to:

- carry out a literature review of the sources
- justify why you have chosen specific sources and rejected others
- base your justification on:
  - how reliable you think the source is and why
  - how relevant you think the source is and why
- use an academic referencing technique when citing or referencing literature.

Add any notes about your work in your project diary. These notes will not be marked. They are to help you to complete task 6, which is a reflective evaluation.

## Resources

- employer set project brief and task 1 student guidance
- computer access
- literature database
- project diary.

## Assessment objectives

AO2: Apply core knowledge and skills to the development of a scientific project (18 marks)

AO4: Use English, mathematics, and digital skills as appropriate (4 marks)

## Core Skills

CS2: Researching

CS7: Reflective evaluation

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## The evidence I have to submit for this task

A literature review.

## How the evidence will be assessed

This will be externally marked by examiners.

## Time for completion of task 1

3 hours. Plus 30 minutes for completion of project diary.

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# Task 2: plan a project

(36 marks)

## What you have to do

Use the sources you selected in your literature review to complete a project plan.

The project plan should:

- include a scientific experiment to investigate which menu items Totally Burgers should add or remove from their menu
- be set out in logical order with enough detail to investigate the menu items, giving consideration to the timeframe and resources required
- include an appropriate risk assessment using the template provided
- identify the primary data you need to collect in order to conduct the investigation
- describe how you will collect the required data.

Add any notes about your work in your project diary. These notes will not be marked. They are to help you to complete task 6, which is a reflective evaluation.

## Resources

- ESP brief and task 2 student guidance
- literature review (from task 1)
- NCFE provided food database
- project diary
- risk assessment template
- risk matrix.

## Assessment objectives

AO1: Plan their approach to meeting the project brief (12 marks)

AO2: Apply core knowledge and skills to the development of a scientific project (12 marks)

AO4: Use English, mathematics, and digital skills as appropriate (4 marks)

AO5: Realise a project outcome and review how well the outcome meets the brief (8 marks)

## Core Skills

CS1: Project management

CS2: Researching

CS3: Working with others (risk assessment)

CS4: Creativity and innovation

CS6: Communication (written)

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## The evidence I have to submit for this task

Your project plan.

## How the evidence will be assessed

This will be externally marked by examiners.

## Time allowed for completion of task 2

3 hours. Plus 30 minutes for completion of project diary.

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# Task 3: analyse data

(34 marks)

## What you have to do

Due to the limitations of time and resources, you are not required to carry out the investigation you have planned.

You have been provided with a raw data pack, obtained from Totally Burgers, to explore the best menu items to choose for addition or removal from the menu. The raw data pack is in the form of a laboratory spreadsheet. It includes nutritional profile testing, and consumer feedback for the new and current menu items.

You must:

- analyse the data provided to compare the different menu items
- produce a report of your analysis, to include:
  - presentation of data to enable peer review
  - selection of appropriate statistical techniques
  - application of appropriate statistical techniques
  - justification for your conclusions.

Add any notes about your work in your project diary. These notes will not be marked. They are to help you to complete task 6, which is a reflective evaluation.

## Resources

- ESP brief and task 3 student guidance
- computer access
- NCFE provided data spreadsheet
- project diary.

## Assessment objectives

AO2: Apply core knowledge and skills to the development of a scientific project (16 marks)

AO3: Select relevant techniques and resources to meet the brief (6 marks)

AO4: Use English, mathematics, and digital skills as appropriate (6 marks)

AO5: Realise a project outcome and review how well the outcome meets the brief (6 marks)

## Core Skills

CS4: Creativity and innovation

CS5: Problem solving

CS6: Communication (written)

CS7: Reflective evaluation

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## The evidence I have to submit for this task

Your analysis report, including any charts and graphs.

## How the evidence will be assessed

This will be externally marked by examiners.

## Time allowed for completion of task 3

3 hours. Plus 30 minutes for completion of project diary.

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# Task 4: present outcomes and conclusions

(28 marks)

## What you have to do

**4(a)** Use your report from task 3 to produce an A2 scientific poster.

Your poster must show:

- the subject being addressed/investigated
- the results of your analysis, including any relevant graphs and charts
- your conclusion.

**4(b)** Your tutor will make observations on your presentation and ask questions if further detail is needed. The presentation will be recorded by video.

Add any notes about your work in your project diary. These notes will **not** be marked. They are to help you to complete task 6, which is a reflective evaluation.

## Resources

- ESP brief and task 4 student guidance
- computer and printer access
- access to NCFE provided data spreadsheet
- your analysis report
- A2 paper, various coloured markers, scissors and glue and/or IT software/applications to create poster (or parts of) for printing, and printing facilities
- project diary.

## Assessment objectives

AO2: Apply core knowledge and skills to the development of a scientific project (12 marks)

AO3: Select relevant techniques and resources to meet the brief (6 marks)

AO4: Use English, mathematics, and digital skills as appropriate (4 marks)

AO5: Realise a project outcome and review how well the outcome meets the brief (6 marks)

## Core Skills

CS4: Creativity and innovation

CS6: Communication (written and verbal)

CS7: Reflective evaluation

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## The evidence I have to submit for this task

Your A2 scientific poster.

Video recording of the presentation.

## How the evidence will be assessed

This will be externally marked by examiners using the video recording and tutor commentary.

## Time allowed for completion of task 4

4(a) 3 hours.

4(b) 1 hour. Plus 30 minutes for completion of project diary.

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# Task 5: group discussion

(9 marks)

## What you have to do

Higher management at Totally Burgers is uneasy about the new menu items. They have emailed the development team raising concerns about lower profits due to the higher production costs of the new items.

In your research team, discuss the issues raised regarding costs to the business and the best way to respond. You will need to refer back to your research notes to contribute effectively to the discussion. It is suggested 10 minutes are given to this at the start of the discussion.

Each group member will then take it in turns to make suggestions and to agree an approach. It is suggested that groups consist of 5 or 6 individuals to allow sufficient time for discussion in 40 minutes; this will allow ample time for individuals to give their opinion and respond to others. Your group discussion will be recorded as a video. Take notes of the points and suggestions made during the discussion.

Following the discussion, you will need to (individually) draft a response to the email addressing the query and concerns raised. This response can be handwritten or produced in suitable word processing software – it does not need to be written in an email client. Usual exam conditions apply during this part of the task (max 10 minutes).

There is an overall time limit of 1 hour for this task. In this time, you will:

- read the email from higher management in your group
- be given 10 minutes to familiarise yourself with your literature review, your plan, your data analysis, and your scientific poster
- discuss your suggestions for responding to higher management
- draft an email to higher management to respond to the concerns raised.

## Student resources required

- your literature review (task 1)
- your project plan (task 2)
- your data analysis and report (task 3)
- your A2 scientific poster and its presentation (task 4).

## Tutor resources required

- assessment sheet for tutor commentary
- audio visual recording equipment.

## Assessment objectives

AO2: Apply core knowledge and skills to the development of a scientific project (4 marks)

AO3: Select relevant techniques and resources to meet the brief (2 marks)

AO5: Realise a project outcome and review how well the outcome meets the brief (3 marks)

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## Core Skills

CS3: Working with others

CS5: Problem solving

CS6: Communication (verbal)

## The evidence I have to submit for this task

Your recorded discussion.

A copy of your email.

## How the evidence will be assessed

This will be externally marked by examiners.

## Time allowed for completion of task 5

1 hour.

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# Task 6: reflective evaluation

(18 marks)

## What you have to do

Write a reflective evaluation of your work. This should be based on:

- your literature review (task 1)
- the experience of developing your project plan (task 2)
- your data analysis and report (task 3)
- your A2 scientific poster and its presentation (task 4)
- your project diary
- the reflective evaluation template.

Your reflections should include:

- an evaluation of your approach to each task, including your chosen tool for analysis
- any changes you would make to your approach to each task.

## Resources

- your project diary
- your literature review
- your project plan
- your analysis report
- your A2 scientific poster
- reflective evaluation template
- access to the NCFE provided data spreadsheet.

## Assessment objectives

AO2: Apply core knowledge and skills to the development of a scientific project (7 marks)

AO3: Select relevant techniques and resources to meet the brief (2 marks)

AO4: Use English, mathematics, and digital skills as appropriate (4 marks)

AO5: Realise a project outcome and review how well the outcome meets the brief (5 marks)

## Core Skills

CS6: Communication (written)

CS7: Reflective evaluation

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## The evidence I have to submit for this task

Your written reflective evaluation.

## How the evidence will be assessed

This will be externally marked by examiners.

## Time allowed for completion of task 6

2 hours.

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# Appendix 1: literature list

https://www.eufic.org/en/understanding-science/article/what-is-nutrient-density

https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2

https://ukhsa.blog.gov.uk/2018/06/29/putting-healthier-food-environments-at-the-heart-of-planning/

https://97zokonline.com/mcdonalds-asked-a-controversial-question-and-illinois-mcds-lovers-are-fighting-about-it/

https://twistedfood.co.uk/articles/these-are-the-best-selling-fast-food-menu-items-of-all-time

https://www.statista.com/statistics/950444/most-popular-restaurant-brands-in-the-united-kingdom-uk/

https://www.researchgate.net/publication/311357234_Healthier_fast-food_options_-_Are_consumers_happy_with_the_price_they_pay_and_the_value_that_they_receive

https://www.forbes.com/sites/forbesleadershipforum/2013/06/05/fast-food-chains-had-better-move-past-value-meals-and-embrace-health/

https://www.rand.org/content/dam/rand/pubs/research_reports/RR4300/RR4379/RAND_RR4379.pdf

https://www.womenshealthmag.com/food/g29800308/mcdonalds-menu-nutrition/

https://www.forbes.com/sites/nancygagliardi/2015/02/18/consumers-want-healthy-foods-and-will-pay-more-for-them/

https://bmjopen.bmj.com/content/11/12/e054804

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# Appendix 2: email from higher management

Dear development team,

As a senior management team, we understand that our menu needs to offer more nutrient dense foods. However, the proposed new menu items have much lower profit than the current approved items. The average profit percentage of the new items has reduced from 89% to 52%. As a business, this is not a move we should be making as it is a risk to our overall profit.

Can you justify this menu change and explain to us how the changes will benefit the company?

Kind Regards

*T. Burgerton*

CEO Totally Burgers

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Owner: Head of Assessment Design

## Change History Record

| Version | Description of change | Approval | Date of Issue |
|---|---|---|---|
| **v1.0** | Additional sample materials | | September 2022 |
| **v1.1** | Sample added as a watermark | November 2023 | 20 November 2023 |

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