

Pizza Box

Assessment Type

Reflecting on the Impacts of Science

MYP Criterion Level

MYP 1

MYP Assessment Criteria

Criterion D: Reflecting on the impacts of science

MYP Command Terms Used

summarize, describe, apply, document

MYP Global Context

Personal and Cultural Expression: Products

MYP Key Concept(s)

Relationships

MYP Related Concept(s)

Function, Energy

MYP Branch of Science

Chemistry, Physics

MYP Topics and Skills

- Particle and kinetic theory of matter
- Research and communication skills
- Documenting sources

Prior Knowledge Needed

- Behaviour of matter in terms of convention, conduction, and radiation
- Insulators and conductors

Assessment Description

In this assessment, students will design a pizza box to keep a delivery pizza hotter for longer. Using the provided research sources linked in the task, they will create a design-brief poster that summarises their design choice and describes and summarises the benefits and limitations of their design choices linked to different factors.

Materials Needed

Laptop, provided research resources, design brief template (optional materials available to make a design).


Task-specific instructions / Recommendations

- Students can use the answers to the scaffolded research questions to then produce their final design of their pizza box.
- There are links available for students to use, but also encourage students to do their own research as well. It may be worth reminding students of the citation expectations in your school (for example MLA9).

Inquiry Statement

The **function** of **products** can be improved by understanding the **relationship** between matter and **energy**.

ATL Skill(s):	Critical Thinking
Key Concept(s):	Relationships
Related Concept(s):	Function, Energy
Global Context and Exploration:	Personal and cultural expression: Products

(G)goal	The goal is to use scientific knowledge of convection, conduction, radiation and insulation to design and summarise the benefits and limitations of a new product.
(R)ole	You are a product engineer and consultant.
(A)udience	Your audience is Ms. Peppa Roni, the lead chef of a Pizza Restaurant, "A Slice of Life". 
(S)ituation	Recently, Ms. Peppa Roni has been getting lots of complaints about her delivery pizzas arriving to customers cold. She has hired you as a consultant to design a new style of pizza box that will keep her pizza hotter for longer. The old-fashioned cardboard box is just not doing a good enough job so you will create a design brief poster of your new pizza box design.
(P)roduct	Your design brief poster must include: <ul style="list-style-type: none"> ● Summarise the problem you are trying to solve. ● A labelled diagram of your pizza box design. ● Summarise how each part of your chosen design or chosen material solves the problem. ● Describe the benefits and limitations of your design choices, linked to factors. ● Communicate scientific language but using your own words. ● Document research sources.
(S)tandards	Your poster needs to meet all strands of the MYP 1 criterion D.

Research sources to get you started:

- | | |
|---|---|
| <ul style="list-style-type: none"> • Wool • Cork • Styrofoam • Glass • Plastic | <ul style="list-style-type: none"> • Wood • Ceramic • Aluminium • Cardboard |
|---|---|

Factors

Cultural	Patterns of knowledge, behaviour, beliefs, shared attitudes, values, goals, and practices that characterise groups of people.
Economical	Production, distribution, and use of income, wealth, and commodities.
Environmental	The circumstances, objects, or conditions by which one is surrounded.
Ethical	The process of rational inquiry to decide on issues as right or wrong, as applied to the people and their actions.
Moral	Principles of right or wrong behaviour derived from a particular society.
Political	Relate to government or the public affairs of country.
Social	Interactions between groups of people involving issues such as welfare, safety, rights, justice or class.

Scaffolded Research Questions

Source

1. What is the problem we are trying to solve? What is the science behind the problem?	
2. What design materials are you going to use to make your pizza box?	
3. Draft sketch of your design	
4. Summarise your choice of design and material(s) in how it solves the identified problem.	
5. What is a benefit(s) of your material and design choices?	
6. What factor is that benefit(s) linked to?	
7. What is a limitation(s) of your material and design choices?	
8. What limitation is that benefit(s) linked to?	

Assessment Criterion D: Reflecting on the impacts of science

	Achievement Level Descriptor (MYP1)	Task Specific Descriptor
0	The student does not reach a standard described by any of the descriptors below.	
1-2	<p>The student is able to, with limited success:</p> <ol style="list-style-type: none"> i. state the ways in which science is used to address a specific problem or issue ii. state the implications of using science to solve a specific problem or issue, interacting with a factor iii. apply scientific language to communicate understanding iv. document sources. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. state a way in which your materials and/or design choices are used to keep a pizza hot for longer and state the scientific reason for delivery pizza getting cold over time ii. state the benefits and limitations of your materials and/or design choices and link it to a factor iii. sometimes apply scientific language of conduction, convection and radiation to communicate understanding iv. attempt to document at least 1 source.
3-4	<p>The student is able to:</p> <ol style="list-style-type: none"> i. state the ways in which science is used to address a specific problem or issue ii. state the implications of using science to solve a specific problem or issue, interacting with a factor iii. sometimes apply scientific language to communicate understanding iv. sometimes document sources correctly. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. state a way in which your materials and/or design choices are used to keep a pizza hot for longer and state the scientific reason for delivery pizza getting cold over time ii. state the benefits and limitations of your materials and/or design choices and link it to a factor iii. sometimes apply scientific language of conduction, convection and radiation to communicate understanding iv. document at least 1 source completely or 2 with minor errors or omissions.
5-6	<p>The student is able to:</p> <ol style="list-style-type: none"> i. outline the ways in which science is used to address a specific problem or issue ii. outline the implications of using science to solve a specific problem or issue, interacting with a factor iii. usually apply scientific language to communicate understanding clearly and precisely iv. usually document sources correctly. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. outline a way in which your materials and design choices are used to keep a pizza hot for longer and outline the scientific reason for delivery pizza getting cold over time ii. outline the benefits and limitations of your materials and design choices and link it to a factor iii. usually apply scientific language of conduction, convection and radiation to communicate understanding iv. document at least 2 sources completely or 3 with minor errors or omissions.
7-8	<p>The student is able to:</p> <ol style="list-style-type: none"> i. summarize the ways in which science is applied and used to address a specific problem or issue ii. describe and summarize the implications of using science and its application to solve a specific problem or issue, interacting with a factor iii. consistently apply scientific language to communicate understanding clearly and precisely iv. document sources completely. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. summarise a way in which your materials and design choices are used to keep a pizza hot for longer and summarise the scientific reason for delivery pizza getting cold over time. ii. describe and summarise the benefits and limitations of your materials and design choices and link it to a factor iii. consistently apply scientific language of conduction, convection and radiation to communicate understanding iv. document at least 3 sources completely in a works cited list