Research and development lesson suggestions & activities (Syngenta)

Learning outcomes

Students should...

- Understand the nature and importance of research and development (AO1)

- Know the stages in research and development (AO1) and give examples (AO2)

- Analyse the costs and benefits of research and development (AO3)

Starter activities

- **Make as many smaller words as you can out of.....**research and development. Letters can only be used once.

- **Syngenta** word search of the key terms

Delivery ideas

- Use the **research and development PowerPoint** to introduce the topic and apply theory in the context of a real organisation - Syngenta

- GCSE . using the **Syngenta case study** for guidance students develop a flow chart representing the stages in the R&D process for Syngenta. This can either be done individually or carried out on a larger scale on posters by pairs of students.

- ±Aqlevel . students carry out research and use their own knowledge to find examples of products that were developed for each of the reasons of new product development that are listed in **Syngenta case study** e.g. replacing declining products, adding to the current portfolio etc. To add an element of competition, student can carry out the activity in teams in a specified period of time. At the end of the time they are awarded one point for each product identified and an additional point if none of the other teams has it. The winning team is the one with the most points

- **Research and development worksheet** (resource attached)

Plenary activities

- Mini-plenary . **Q&A session** to check understanding. If a no-hands policy is being adopted students names can be written on lolly sticks and drawn at random out of a jar OR a random name picker (there are plenty of free ones available on the internet) can be projected on the board.

- **You say, we pay**. A volunteer from the group stands at the front of the class facing the students. Key terms related to research and development are then projected on the board so the volunteer canʠ see them but the rest of the class can. The students then describe the terms (without actually using the words) and the volunteer has to guess what terms are being described. The terms can either be displayed one at a time, with the next one being revealed only when the previous one has been guessed correctly. Alternatively a number can be displayed at once . this can be a little more chaotic.

  One way of playing the game is to try to complete all the key words in the time allowed; or it can be played as a team game with the class being divided into two or more teams and they compete against each other to correctly guess a given number of terms in the shortest time possible.

- **Learning pyramid** . students complete a learning pyramid showing what they have learned, what they now know better and what they need to find more about. This encourages reflective learning *(resource attached)*

- **Syngenta crossword**

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Research and development worksheet - Syngenta

What's in it for me?
I am learning...   • what research and development involves   • the importance of research and development   • the costs and benefits of research and development
I am developing my skills as...   • an *independent enquirer* by supporting conclusions and using reasoned arguments and evidence

Task 1

Read through the **Syngenta case study**. Use the glossaries to help you understand the terms and definitions.

Task 2

GCSE questions

1. Define Research and Development

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2. List the reasons for new product development

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3. During Syngenta scientistsqresearch active ingredients are sought that fulfil which four criteria?

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4. What are the four stages in development at Syngenta?

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5. Since Research and Development gives firms competitive advantage, explain why Syngenta exchanges technology with other research organisations.

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6. Analyse the benefits of research and development for Syngenta

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'A'-level questions

7. How important do you think Research and Development is to the future of the food industry? Justify your answer.

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8. To what extent should firms be more market orientated than product orientated?

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Learning Pyramid

One thing I need to find more about...

Two things I have learned today...

Three things I knew before but now know better...