Lesson Plan

How Nutrients Affect Your Body

Grade: 4 | Subject: Science & Technology | Duration: 30 Minutes



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Dairycraft Overview

Learning Objectives

This Minecraft world supports the following main achievement objectives:

- Teach students about the versatility of milk, as well as concepts such as states of matter and chemical/physical changes.
- Teach students about the nutritional benefits of milk.
- Teach students about life on a working farm, career options associated with dairy farming, and the layout and machinery used in modern farms.
- Teach students about waste management and renewable energy production on dairy farms.
- Teach students about how technology is transforming dairy farming.
- Teach students about the relationship between crop farming and milk production.

How to Use Dairycraft

Dairycraft is a fully automated Minecraft educational world, so there is no need for teacher input once students are in-game. Additional teacher input or guidance may be beneficial for students below the set lesson grades.

- Dairycraft has been designed as a single-player educational game. When completing most lessons, extensions, and sub-activities, each student should be in their own Minecraft world.
- Dairycraft can function on any device compatible with Minecraft: Education Edition.
- For collaborative play, students can be grouped into teams to complete the major extension task: building their own farm based on the knowledge they have learned.
- If you are new to Minecraft: Education Edition, the '[Support Center]' on the Education Edition website provides all the information you will need to get started.

Activities for Students

Dairycraft contains six main activities for students, each of which can be played independently of the others. It will benefit students to have completed Lesson 2 before proceeding with other lessons, in order to have a basic understanding of the farm's layout. Each lesson has an extension task, and after all six lessons are completed there is one major

extension activity in which students are encouraged to build their own farm using the information they have learned from the lessons.

At points in the game, students may be given external links to videos that explain certain processes or concepts in more detail. Everything else they need to learn and interact with is contained within the game.

Dairycraft Map Layout



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Lesson 1: Overview

This engaging Minecraft lesson integrates health, science, and exploration, offering a dynamic approach to learning about Ontario dairy farming and nutrition.

This lesson engages students in learning about the nutrients in milk and their benefits to the human body. Set on a virtual Ontario dairy farm, students interact with NPCs (non-playable characters) to gather information, complete quizzes, and tackle a physical challenge as part of an extension task.

Learning Objectives

Students will learn how to:

- Identify key nutrients found in milk and explain their roles in human health.
- Compare sources of nutrients from dairy and non-dairy foods.
- Apply problem-solving skills through a hands-on Minecraft extension task.
- Demonstrate understanding through note-taking, exploration, and knowledge tests.

Curriculum Alignment

Designed for Grade 4 in the Ontario curriculum:

- Identify important nutrients in food and drinks, like protein and vitamins.
- Explain how important nutrients help bodies to grow, stay healthy, learn, and be active.
- Grade 4: Health and Physical Education D1.1

Overall Expectations

Students will learn how to:

- Understand how different nutrients affect human health.
- Develop critical thinking skills through interactive learning and gameplay activities.
- Apply physical coordination in a virtual task requiring precision and problem solving.

Specific Expectations

Students will learn how to:

- Recognize and describe various nutrients in milk, including vitamins and minerals.

- Identify the impact of dairy farming on human nutrition.
- Describe key nutrients important for growth, mental and physical health, learning, and physical performance.

Student Expectations

Demonstrate an understanding of what contributes to healthy development, and identify the key nutrients provided by foods/beverages that are important for growth.

Activity and Extension Task Overview

During this lesson students will:

- Watch an introductory video on milk nutrients (optional).
- Interact with 15 non-player characters (NPCs) to gather information on the nutritional content derived from milk.
- Take notes as they learn, and complete a randomized knowledge test at the end of the lesson.
- Complete an extension task involving parkour.

Activity: Nutrient Exploration and Knowledge Test

Student spawns outside the main farmhouse, at the centre of the farm.

STEP 1 | Introduction

- NPC ‘Lily’ welcomes student and offers an optional video to watch.
- Student chooses to watch the video or proceed directly inside the farmhouse to talk to nutrient NPCs.

STEP 2 | Nutrient Learning

- Student visits 15 NPCs who explain different nutrients (e.g. protein, calcium, vitamin D).
- Student is encouraged to take notes for the knowledge test later.

STEP 3 | Knowledge Test

- Student takes a knowledge test based on the information they have just learned.
- Student needs to answer two randomized questions successfully in order to proceed. Incorrect answers prompt a review and retest.

STEP 4 | Reward and Feedback

- Upon successful completion of the test, the student is rewarded with a pail of night-vision-boosting milk and the choice to continue on to the extension task or return to the spawn room to choose the next lesson.
- If student decides not to continue with the extension, the exclamation point above the Lesson 1 NPC in the spawn room turns amber, indicating student has yet to complete the lesson's extension task.

Extension Task: Hay Bale Challenge

Student spawns at the base of the silos.

STEP 1 | Introduction

- Student is introduced to the activity challenge by NPC 'Guy'. They need to scale the silos using their parkour moves, because the ladder has broken and there is no alternative way up.

STEP 2 | Climbing the Silo

- Student uses Minecraft parkour techniques to climb the silo while carrying hay bales given to them by NPC 'Guy' in their inventory.
- If student proves unsuccessful at completing the parkour challenge, they can return to NPC 'Guy' to receive jump boosts to easily scale to the top of the silo.

STEP 3 | Hay Bale Placement

- After reaching the top, student interacts with NPC 'Joanne' who instructs them to carry the bales down the ladder and stack them at the base.
- If student finds it difficult to see, they can make use of the night-vision-boosting milk they were given at the end of the lesson.

STEP 4 | Completion and Reward

- NPC 'Joanne' congratulates student for completing the task and extension task, and gives them the lesson-specific trophy.

- Student places their trophy in the spawn room trophy display cabinet for teacher verification. (The trophy and display cabinet demonstrate that student has completed the lesson in full.)

Miscellaneous

If you are experiencing technical problems or bugs with this lesson, please report them directly through our website's bug report form: crackedcubes.co.uk/report-a-bug.

For general information about Minecraft: Education Edition, including additional information on how to play and set up lessons, please head to the dedicated Minecraft Education support center: edusupport.minecraft.net/hc/en-us.