VICTORYXR

VR EXPERIENCE

TEACHER SUPPORT GUIDE

Metabolic Molecules

(VR Experience)

TARGET GRADE
High School Biology, Anatomy & Physiology, or Health/Nutrition

TOPIC
(Human Metabolism, Cellular Respiration, Macronutrients & Human Performance)

1 Learning Objectives & Assessment Goals

What This Teaches:

- **Nutritional Energy & Metabolism:** How various macronutrients (carbohydrates, fats, proteins) convert into energy to support muscle performance across strength, speed, and endurance tasks.
- **Macro & Micronutrient Distribution:** How specific food choices deposit energy into muscular systems at varying rates and amounts.
- **Optimization & Data Analysis:** Applying trial-and-error strategy to determine optimal food selection and sequencing to maximize physical exertion within a timed environment.

What This Assesses:

- **Nutritional Strategy & Sequencing:** Ability to analyze nutritional profiles and strategically select and order three food items to achieve maximum weightlifting repetition output.
- **Real-Time System Balancing:** Monitoring muscle energy levels in real-time and feeding the subject continuously to maintain an optimal repetition rate without letting energy drop.
- **Data-Driven Inquiry:** Running iterative trials to collect data, analyze performance variables, and refine dietary choices for physical optimization.

2 How This Supports Students on Their Learning Journey

Tactile & Experiential Kinesthetics

Translates abstract bioenergetic concepts into a dynamic scenario where feeding choices directly drive physical exercise output (weightlifting reps).

Active Hypothesis Testing

Students formulate hypotheses about which three-item combinations yield the best balance of speed, strength, and stamina, receiving immediate visual feedback as Tomi begins lifting.

Safe Sandbox for Iteration

Encourages repeated trials to gather data, evaluate mistakes, and re-strategize without penalty.

Intuitive Controls

Simple interaction using controller triggers to choose items and feed the figure makes the lesson accessible and focused on content rather than complex VR controls.

3 Key Instructional & Gameplay Components

Phase / Action	Student Action & Task Execution	Outcomes & Educational Value
Menu Selection	Use hand controller front triggers to select **3 food items** from the interactive menu.	Encourages evaluation of nutritional profiles (e.g., fast-acting carbs vs. sustained energy fats/proteins).
Strategy & Meal Order	Plan the precise sequence in which to feed Tomi prior to starting the workout trial.	Prompts pre-planning based on metabolic conversion rates and energy timing.
Initiating the Trial	Feed Tomi the first item to deposit energy directly into his muscles, automatically starting the countdown timer and exercise reps.	Demonstrates the immediate relationship between food intake, muscle energy deposit, and physical output.
Real-Time Maintenance	Sequentially feed the remaining food selections to keep Tomi lifting at an optimized, steady repetition rate.	Assesses real-time tracking of energy depletion rates and metabolic timing.
Data Collection & Iteration	Repeat trials with different item combinations or timing to record output data.	Fosters scientific method application (variable isolation, data recording, performance analysis).

4 Curriculum Integration & Classroom Implementation

When to Use:

Best utilized as an **interactive application lab** during unit lessons on cellular respiration, biochemistry, or human health and physical fitness.

Suggested Session Format:

STEP 1
Warm-Up
5 mins

Discuss how different foods (e.g., simple sugars vs. complex carbs vs. proteins) provide short-burst vs. long-term energy.

STEP 2
VR Lab Station
15–20 mins

Students run 3–4 trials feeding Tomi, logging their food combinations, feed order, and total rep count on a data sheet.

STEP 3
Debrief & Data Synthesis
10 mins

Compare classroom results to identify the highest-performing dietary combinations and relate findings back to metabolic pathways.