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Current Trends in Instructional Technology

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Game 1: Factor Pair Up

URL: http://www.mathplayground.com/factor_pair_up.html

Overview:

This game allows student to apply properties of operations as strategies to multiply, fluently multiply within 10, find all factor pairs for a whole number in the range 1-100, and recognize that a whole number is a multiple of each of its factors.

How to Play:

Learners begin the game with a variety of choices; versus computer or friend, level 1 (5x5 grid) or level 2 (6x6 grid), and whether to be able to "capture" your opponent's multiples, or not. One player is blue, the other is orange. Player one chooses a factor. Player 2 responds by choosing a second factor in which the corresponding multiple is highlighted on the grid. This continues until a player has 3-4 multiples highlighted on the grid. Essentially, the players are strategically combining factors to play tic-tac-toe by highlighting specific multiples and potentially blocking one another.

Target Audience:

3rd and 4th grade

Types and characteristics of the game design:

Factor Pair Up is goal-oriented and interactive for participants. The learners engage in a strategic process of combining factors with corresponding multiples. Factor Pair Up focuses on basic multiplication conceptualization and skill building which is a developing concept for 4th graders.

Strengths:

This game focuses on applying basic math concepts in an analytical way through strategizing against the opponents pairing of factors.

Limitations:

The game does not provide immediate feedback or higher-level knowledge of multiplication besides recall.

Game Principles:

1. Trigger the play phenomenon in the players- Yes
2. Active and goal oriented- Yes
3. Contextualized- Yes
 1. MAFS.4.OA.1.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
 2. MAFS.4.OA.2.4 Investigate factors and multiples. a. Find all factor pairs for a whole number in the range 1–100. b. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. c. Determine whether a given whole number in the range 1–100 is prime or composite.
4. Adaptive challenge and support- Each play the learners make, the more challenging the skills required become.
5. Provide opportunities for real-time, unobtrusive assessment leading to evidence-centered design- No
6. Providing timely and targeted feedback to players- No
7. Deliver new game tasks that are at the upper boundary of the student's skill level- No
8. Emphasize the ability to work creatively and collaboratively with others toward a common goal- Yes

Game 2: States of Matter

URL: http://www.abcya.com/states_of_matter.htm

Overview:

This game first teaches participants about the states of matter, providing visual examples in which the learners must categorize.

How to Play:

First the learner is to advance through the informative sections which define and elaborate on the meaning of matter and its various states. The participant then completes a graphic organizer to categorize solids, liquids, and gases.

Target Audience:

4th grade

Types and characteristics of the game design:

States of Matter is goal-oriented and interactive for participants. The learner is engaged in an interactive process of learning about the states of matter (solid, liquid, or gas). A stealth assessment is provided after the interactive compares the characteristics of matter.

Strengths:

This game focuses on applying basic scientific concepts of the similarities and differences of the states of matter.

Limitations:

The game does not progress past the stealth game assessment into a more challenging set of visual examples, or the name of the phases of change.

Game Principles:

1. Trigger the play phenomenon in the players- Yes
2. Active and goal oriented- Yes
3. Contextualized- Yes
4. Adaptive challenge and support- No
5. Provide opportunities for real-time, unobtrusive assessment leading to evidence-centered design- No
6. Providing timely and targeted feedback to players- Yes
7. Deliver new game tasks that are at the upper boundary of the student's skill level- No
8. Emphasize the ability to work creatively and collaboratively with others toward a common goal- No