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ETEC 526

Math Candyland

Task 1

1. Melissa Mathew and Barbara Johanson are working together.
2. Modification: We would like to modify a current game (Candy Land) and turn it into a math game for 1st or 3rd grade.

Task 2

Overview: Focus and Learning: This game is for 1st - 3rd grade students to help them recall math facts with automaticity.

Elementary (1st Grade) Apply properties of operations to add and subtract two or three numbers.

Elementary (3rd Grade) Recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts.

Task 3

Scenario/Plot

This game is for two to four player wherein each player races to the end. Players move their piece by drawing cards and moving their piece to the corresponding picture or color.

The purpose of this game is to help students master math facts. Each card has a colored square with an addition or subtraction fact for first and second grade students or a multiplication or division fact for third grade students. Some cards have a picture of a designated space on the board, and students must answer a question about math terms, symbols, strategy, etc.

Description/Gameplay:

1. Each player picks one of the four pieces to represent their place on the board.
2. The cards should be shuffled and placed face down within the reach of all players. Play rotates to the left.

3. At the beginning of each player's turn, they draw one candy card. That card may contain a single color block or a picture of a place on the board. The color blocks allow the player to move forward to that corresponding color once he or she has responded correctly to the math fact on the back of the card. Other players will check for the correct answer on the answer sheet. If a picture card is drawn, the player can move forward or stay where he or she is if the question about math terms, symbols, strategy, etc is

answered correctly. If the space is behind the player's game piece, he or she must move back if the question is not answered correctly.

4. To win a player must reach the math castle at the end of the path. The first player to reach the castle is declared the winner of Math Candyland.

Design Exercises:

Change the Rules: The rules of Candyland changed in our game modification because the students are now required to answer a math problem correctly before they can move to the colored spaces on their selected card.

A Shift in Scale: In our game modification of Candyland, we are shifting the scale from color recognition to basic math facts.

Task 4:

Game Design Document (GDD)

Overview of the game:

Subject: Math

Number of players: 2-4 players

Setting: Math Centers or Small Group with Teacher

Narrative: The objective of Math Candyland is to answer the math facts correctly in order to be the first player to reach the castle.

Description of the game world: Since this is a top-down game, the game world will be in a classroom setting, with low volume noise from other groups working in small groups. The students playing Math Candyland will be interacting with the game board.

Gameplay: Two to Four players will interact with the game. The rules are to answer the math fact correctly and then proceed to the matching color on the card. If the answer is incorrect, the player will stay on their current color. Obstacles in this game are the picture cards and whether or not the students answer the math question correctly. Students draw a math fact card and answer the math problem. After this card is drawn, the player

draws a color card and must move to that color square. If a picture card is drawn he or she must move forwards or backwards to the matching picture.

Characters: The players include the four colored pieces.

Objects: Candy Land board; game pieces; answer sheets for addition, subtraction, multiplication, and division facts with problems grouped by number (4+0, 4+1, 4+2, 8x0, 8x1, 8x2); colored game cards; decks of math fact flashcards; iPad (optional), timer (optional)

Perspective: top-down

Instruction Using an Existing Product

Outcomes/objectives: Students will practice basic math facts (addition/subtraction, multiplication/division) while playing Math Candyland.

Guidance or scaffolds: Teachers will ensure that students have a grasp on basic gaming rules such as: taking turns, following directions, sportsmanship, play moving in a clockwise direction...The students also need to understand how the game Candy Land is played. The teacher can model game play and then work with groups as needed to ensure that they understand how the game is played. The teacher will guide students through learning how to solve basic math facts prior to playing the game. The teacher will then assist students during the game by providing support and guidance as needed. Scaffolding ideas are Part-Part-Whole Mats, counters, and Dry-Erase boards. Players will work on one operation at a time: addition, subtraction, multiplication, or division. As students become more fluent with math facts, teacher can add a second operation to the game board, and students can play with two operations: addition and subtraction or multiplication and division.

Supplementary activities: Some supplementary activities that would assist this game could be other math fact activities. These include Math Races, Around the World, Math Facts FlashCards, Math Cards and Mental Math Cards both are free apps for iPad, etc.

Roles and/or Interactions: In this top down game, the role of the teacher during this game would be to supervise and assist when needed. The main interaction would be between the players of the game. The players would interact by checking the answers of the other players and discussing the movement of the pieces.

Task 5

Playtesting

After playtesting we updated our game description and rules.

Task 6

Instructional Design Document IDD

Purpose of the instruction: The purpose of the instruction is to review math facts in first, second, and third grades.

Description of the learner: Students need to have a basic understanding of how a traditional board game is played: taking turns, play moving in a clockwise motion, good sportsmanship, following rules of a game. If these skills are not present, teacher will need to instruct students; model game play; and depending on the age of the students, play with them to ensure students have a clear understanding on how to play games with a group.

Goals and objectives of the instruction – learning outcomes to be measured: The student's math fluency will be measured.

Plan for assessment of learning – methods for measuring attainment of learning outcomes: We will use timed tests before playing the game for a designated period of time and then retest students after playing Math Candyland several times. We will also use checkpoint (benchmark) data to determine effectiveness of game.

Scope and sequence of topics to be covered:

TEKS: 1.5G Apply properties of operations to add and subtract two or three numbers.

3.4F Recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts

Estimated time for learner to complete the instruction: 15-20 minutes (continue next day if needed)

Selection of specific instructional strategies or methods and rationale/theoretical foundation for

selection: Teacher will teach the basic instruction for adding, subtracting, multiplying, and dividing. Teacher will also teach other strategies for recalling math facts, such as Double Facts, Adding 1 or 2, Making a 10, Counting by 2's, 5's, 10's, Multiplying by 0 or 1.

Selection of specific media to be developed: math fact apps, such as Mental Math Cards, or Math Cards (both free apps)

Estimated time to complete the development process: two days

Resources required for development: flashcards, money to buy existing candy land games. laminating film in order to laminate the cards, extra game pieces

List of team members and primary responsibilities – ID, SME, Media Experts, Graphic Artists, Editors:

Plan for evaluation, maintenance, and update of the instructional materials: We will evaluate the products being used weekly during small group instruction. We will laminate the cards in order to maintain them longer. We will replace the cards as needed. Any missing game pieces will also be replaced as needed.

List of approvals to be acquired before development begins: We will get approval from Hasbro in order to modify the game. We will also get approval from the district curriculum writers in order to play the game in our classrooms.

Plan for testing and quality assurance: We will test the game and its quality by having a small group of first and another small group of third graders play the game.

Reference

Candy Land Rules: How to Play Candyland. (2015). Retrieved from

<http://howdoyouplayit.com/candy-land-rules-play-candy-land/>

Zimmerman, E., Salen, K. (2004). Rules of play: Game design fundamentals. Cambridge, Mass.: MIT Press.