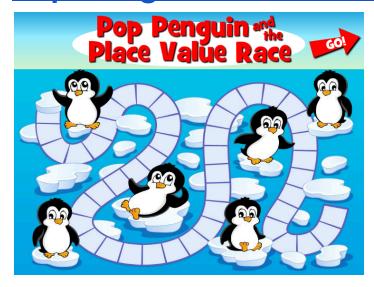# Pop Penguin and the Place Value Race



## Overview

**Curator: Haley Burns**

**Brief Description of Tech Tool:** The penguin siblings are trying to reach the end of the ice course before Pop does, but they have to solve numerous place value problems to make it there! Spin the spinner and answer a question to earn coins. The harder the question, the more coins! Coins can be used to send Pop back some spaces.

**Technical & Cost considerations**: Pop Penguin and the Place Value Race is a free game that can be played on any PC or tablet.

# Evaluation

## Description of Learning Activity

This tech tool would be a great way to practice place value after it is introduced and explained by the teacher. I would not recommend using it to introduce the concept since the questions vary and it could easily frustrate students.

## 1. Learning Activity Types

1. List here one or more activity types from list below that characterize the learning activity you described. Add a few words of explanation if the choice is not obvious.
2. Add the activity type tags to this page. ([help video](#))
3. As you respond to the subsequent evaluation questions, keep these activity types in mind, referring to them as needed.

- *LA-Practice* - practicing for fluency
- *LA-Apply* - applying mathematics to problems and situations

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# 2. What mathematics is being learned?

The intent here is to describe the mathematics being learned and how it fits with your learning goals. Do this first by listing standards and proficiency strands and then with any additional discussion of what is being learned.

This game gives a tremendous amount of practice in place value. Players answer questions about many different place value topics including; bundling, borrowing, using base ten blocks, and comparing number values.

## Standards

CCSS.MATH.CONTENT.2.NBT.A.1
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

CCSS.MATH.CONTENT.2.NBT.A.1.A

100 can be thought of as a bundle of ten tens — called a "hundred."

CCSS.MATH.CONTENT.2.NBT.A.1.B

The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

CCSS.MATH.CONTENT.2.NBT.A.3

Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

CCSS.MATH.CONTENT.2.NBT.B.5

Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

CCSS.MATH.CONTENT.2.NBT.B.6

Add up to four two-digit numbers using strategies based on place value and properties of operations.

CCSS.MATH.CONTENT.2.NBT.B.9

Explain why addition and subtraction strategies work, using place value and the properties of operations.1

## Proficiency Strands

We've also looked at the strands of mathematical proficiency laid out in *Adding It Up*. Show which strands are supported by this tech tool and activity by deleting the others (leaving those that apply). Provide a few words of justification.

- **procedural fluency:** Some of the questions being answered in this game encourage fluency in addition, subtraction, and base ten operations. Playing this game would increase place value fluency.
- **strategic competence:** Some of the questions in this game give the player a partially filled in addition or subtraction problem and then a few "left-over" digits. The player has to create a problem using these digits that requires bundling or borrowing.

# 3. How is the mathematics represented?

This game could be perceived as a virtual manipulative. Players in this game get to add or delete base 10 blocks to answer place value questions. They also move numbers around to create problems that require bundling and borrowing.

# 4. What role does technology play?

The major advantage of this game is its ability to ask several different types of place value questions rapidly and to supply the manipulatives to be successful. For example, the first question may ask you to use missing digits to create a problem. The second question may be asking you pick which number has 5 hundreds, 3 tens, and 0 ones out of a group of twenty numbers. Next, you might be building a number with base 10 blocks. It gives several different ways to practice on overarching topic; place value. Another advantage is the differentiation of this game. Before you answer a question it gives you three difficulty levels. The higher the level the more coins you earn if it is correct. This means that my lower students and my higher students can all be challenged by this game!

**Affordances of Technology for Supporting Learning**

- **Computing & Automating** - The game checks the problems students create by computing them to make sure they are accurate.
- **Representing Ideas & Thinking** - The use of base 10 blocks and other manipulatives encourage the player to represent how place value works.
- Accessing Information -
- Communicating & Collaborating -
- Capturing & Creating -

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# 5. How does the technology fit or interact with the social context of learning?

I think this game could be used in various ways. It could be demonstrated whole group on the smart board. Students could play this game in partners or individually. The differentiation the game offers makes it a prime candidate for individual practice. There is no timer for answers, however, so students would be able to collaborate and work together while solving questions.

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# 6. Additional Comments

This is my favorite game I have found yet! I am very excited to have my students play it in class!