

Dijkstra's Activity | Teachers Guide

Overview

Activity Title: Journey Through Puzzle Town

Activity Duration: 45 minutes

Welcome to Kofi Town, where you will embark on a “quick” journey through each possible destination. This activity aims to introduce the basic concepts of Dijkstra's shortest path algorithm in a fun and engaging way.

Tools to have

Worksheet provided for each student or pair of students.

Concepts Covered

- Path: A way or route between two points on a map.
- Shortest Path: The path between two points that requires the least distance traveled or the minimum time.
- Algorithm: A set of instructions or rules designed to perform a specific task or solve a problem.
- Dijkstra's Algorithm: A famous algorithm used to find the shortest path between points in a graph, where points are places and lines (edges) represent the route and distance between these places.

Learning outcomes

- Understand the concept of finding the shortest path between points.
- Apply basic problem-solving and decision-making skills to navigate through a map.
- Recognize how algorithms can be used to solve real-world problems.
- Develop spatial awareness and map-reading skills.

Activity Structure

Introduction and explanation (10 minutes): Briefly explain the concepts of paths, shortest paths, and the basic idea of algorithms, using simple terms and examples relatable to elementary school students.

Quick example to use: Imagine you are walking to school and there are two possible streets that can take you to it. Pine street takes 5 minutes to walk to the building, while Maple street only takes 2. “What do you think the shortest path would be ?”

Correct answer is Maple because the time it takes to walk to the school is 3 minutes less than it is to walk from Pine st.

Once students have a good grasp on that example or they need another example, what better way to understand is to learn by doing.

Activity Execution (30 minutes): The students will then take no more than 30 minutes to solve each question to the best of their ability.

💡 **Refer to the answer key to compare the correct answers with what the students have**

Conclusion and Discussion(5 minutes): Review the answer with the students once they are all done or before the session for this activity is over.

Here is the image of the map on the student’s worksheet.

