

Spatial Thinking Visual Recognition

TEACHER'S GUIDE

OBJECTIVE: The goal here is for students to improve their spatial thinking abilities by figuring out where, and from what direction a picture (in the local neighborhood) was taken. To accomplish this, they will look for "clues" (i.e. landmarks, unique buildings, street signs) that appear in the picture, and use those to find the exact location.

OVERVIEW: To do this exercise, the class will be broken up into teams. Each team will have with them a digital camera, as well as the set of neighborhood pictures they'll need to replicate. As they find each location, they will take a picture that looks as close as possible to the original one, except with one of the team members standing in the picture.

Step 1: Preparation

Before starting this activity, here are a few things to consider:

1. Decide how many teams to have.
 - Groups of 3 to 5 students would be recommended, depending on how many cameras are available and the size of the class.
2. Decide how many pictures you will be using.
 - Probably between 5 and 10, depending on how much time you can devote to the activity.
3. Define the exact area you'll be covering.
 - Decide how large an area you'll use, then as part of the instructions, include the exact boundaries. For example, a 4 by 4 block square near the school.
4. Decide whether you will take the pictures ahead of time, or have the student teams each make a set for the other team(s) to find.
 - If you decide to have the students take the pictures, you should probably allow an extra day just for that, and do the search activity the following day.
5. Consider naming or at least numbering the pictures before doing the search activity. This will make it easier to talk about specific locations during the follow up discussion.

Step 2: Picture Taking

The key to taking pictures for this activity is making sure you include several "hints" in each picture. In other words, a picture where all you see is the front of a house would not be very useful. (Students could search the neighborhood until they find that house, but that would not encourage a lot of spatial thinking.) The goal is to encourage them to use spatial thinking to save time and effort, by including enough hints in the picture to allow them to quickly pinpoint the location based in its relationship to other landmarks in town.

Example

While nothing may stick out when you first glance at this photo, there are several clues that can be useful in figuring out where it was taken.

1. The first thing you might notice here is that we're at an intersection. That would narrow things down considerably.
2. Along with that, the school crossing sign indicates the photo was taken within a block or two of a school. The stop sign may also be useful, since not all streets in the neighborhood would have stop signs.
3. Perhaps the most important (and hardest to see) is what's behind the yellow house. If you look closely behind the house (and the tree branch) there's the top of a bell tower. That should be easy to spot from anywhere in the neighborhood. At that point, you simply need to figure out which direction you're looking at it from.
4. Finally, there can also be more subtle hints to look for. In this case, most trees have lost their leaves. However across the street is a large tree with most of its leaves. That could be helpful in quickly narrowing down the possible locations of this house. (NOTE: This would only be useful if the pictures had been taken recently.)



This example is challenging. A couple things that would make it easier would be 1) if you could clearly tell which side of the bell tower you were looking at or 2) if there was another tall building or object in the background that could be used along with the bell tower to determine exact directions (i.e. North, South, East, etc.)

Step 3: The Activity

When it comes to actually doing this activity, there is a lot of room for variation. Some options to consider would be:

- 1) Have the teams come up with the pictures, (instead of the instructor) and give them to the other team(s) to find.
- 2) Have it be a contest, awarding a prize to the team that is first to complete the assignment.
- 3) Instead of having to find all the locations, have a time limit. When the time is up, see which team has found the most.
- 4) There could also be point values assigned to each picture (based on the difficulty level). The grade for each member of the group is based on their total points.

Step 4: Reflection

As a follow up, spend time in class discussing the activity. You could also have the students write their reflections as an assignment to be graded. Some things to discuss or write about would include:

- Which location was easiest/hardest to find and why?
- Did members of your group each have different ideas about the best approach to use?
- What are some techniques or tricks you discovered for quickly pinpointing each location?
- Do you feel you've become a lot more familiar with the neighborhood after participating in this activity?