Pictures Observation game

This activity is designed to teach young children to learn how to debug by identifying erroneous code by seeing it as out of place. This is taught by using association and done by using spot the differences and spot the strange points.

Definition of Pictures observation game

Observation is essential in many study skills and it's the source for our creativity and critical thinking (*"Observation Exercises Part 2",* 2016). So, it can be defined as the game that allows children to use observation skills to analyse every elements in the given pictures, images or screenshots. It helps children on concentrations with entertaining contributions aspects. Learners can form groups in order to enhance teamwork skills or they can challenge themselves by solo.

Type of Pictures observation game

For this activity, there are 2 types of pictures observation games will be provided in general which is Spotting strange points in the given pictures game and Spotting differences game, further, Spotting differences game will be divided into 2 platforms which are spotting differences between 2 casual pictures or images and spotting differences between 2 screenshots of set of codes.

Type	Environment to play	Brief description
Spotting strange points game	Outdoor, with tables and chairs	This game will provide several images which are already edited by photoshop (or other applications) and contain 1-2 strange spots for each image. Young code learners are asked to find a strange or weird point in a given image in each stage.
Spotting differences game (casual pictures)	Outdoor, with tables and chairs	Spotting the differences between 2 images (which are same images but 1 of them is edited to become slightly different to the remaining one).
Spotting differences game (codes screenshots)	Outdoor, with tables and chairs	Spotting the differences between 2 screenshots of set of codes (which are the same set of codes but 1 of them is edited).

Two stages of STEM education

STEM education begins while learners are young, in order to create a better outcome since young children are easy to be creative. This activity contains 3 different stages that focus on 2 age groups:

Stage	STEM teaching content	Expected Outcome
Primary School	Spotting strange points in given images and spotting differences between 2 similar images.	Young learners are interested in participating in STEM courses not because of they have to.
Middle school	Spotting differences between 2 images with a set of code.	Understand academic requirements, learn overcome challenges

General goal: This will help the kids to learn the basics of spotting bugs among the codes whether there are strange or weird parts of their coding. If there are strange spots in the image, means there will be a bug among the codes, and if not, the codes have no bug.
Preparation: A certain number of perfect images or edited images which contain strange points.

Confirm target participants Why

the beginning levels are chosen:

- The activities are clearly to be understood for young learners because the game does not have the complexity of rules requirements.
- Young learners are considered to be the curious group age that they will have more motivations to spot the strange points and different points.

Applying STEM to Pictures observation game

Area for this activity: Engineering, Science, Technology and some of the Math skills are required.

Spotting strange points game: In this game, instructors will allow learners to find the weird points in the given pictures. Then, after learners have spotted the strange point, instructors will explain to the learners why it is strange in terms of Science, for example, the bicycle picture below that the paddles are not balancing so that the bicycle would not run, besides, instructors will also teach the structures that make the bicycle which will be related to Engineering and that part of a bicycle's structure is the paddles. Learners can also get to know about Technology because a bicycle is considered a Technology.

Example image:

Spotting differences game (pictures): In this game, students are allowed to find a certain number of different points between two similar pictures. The number of differences will be based on the difficulty level such as 5 or 10 and even up to 20, then young learners will be practicing the basic counting skills with the number of differences in the given pictures which related to Math for example, 3 differences have been spotted by learners in the spotting 10 differences game, so there will be 7

differences left. In addition, learners will also investigate more about components that made up the images which slightly related to Engineering.

Example image:

Spotting differences game (codes screenshots): In this game, students will be able to spot the differences between 2 similar pictures of codes. With the Math aspect with similar to spotting differences between 2 similar pictures above which improving young learners skills of basic counting skills, this game also help the students to have a more intuitive look of coding that will see how coding actually looks like. During the game, instructors will also explain about coding is a part of computer science that will be considered of relation to Science in stem and coding will also create technology, for example, the code to activate a specific application which related to Technology.

Example image:

```
1. #include <stdio.h>
2.
3. int main()
4. {
5.   printf("Hello World\n");
6.   return 0;
7. }
```

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References:

Observation Exercises Part 2. (2016). Retrieved from http://www.study-bodylanguage.com/observation-exercise.html

Science, Technology, Engineering and Mathematics. (2019). Retrieved from https://education.qld.gov.au/curriculum/school-curriculum/stem