

Pixel Programming for Step 1 ELL Students

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Duration: 60 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 1-3, 4-6	English as Another Language, Mathematics	Across Canada	Unplugged

Overview

Students will learn new vocabulary (directions, colours and letters) while using using an unplugged lesson of pixel programming.

Prep Work

Materials:

- Different colours of sticky notes (start with 2 at the beginning)
- Printed upper and lower-case letters (start with a few at the beginning, perhaps using ones that are in the students' names. Have them ready to go/displayed for when your students arrive. The letters prepared in the lesson are O, L, H, T, X, C, I, U)

Print a copy of the Pixel Programming instructions, program, and solutions ahead of time:

<http://bit.ly/pixel-programming-ELL>

Key Coding Concepts

- ✓ Algorithms
- ✓ Debugging
- ✓ Sequence

Curricular Connections

Concepts

References

Original Pixel Programming lesson plan:

<https://www.canadalearningcode.ca/lessons/pixel-programming/>

Assess prior knowledge so you understand of what your students already know.

Lesson

When pulling Step 1 ELLs from their class, use every minute you have with them, beginning with the route that you take from their class to your workspace).

As you are walking, talk about directions en route. Eg. We are going to turn "right" here and show them with your right hand. We are going to go "up" the stairs. Turn "left" into this room. Please sit "down". Review these once you get to the class.

Activity

1. Ensure that your students know the sticky note colours and letters that you will be using. Have the letters that you will be building clearly displayed in a larger size.
2. Do Program 1 together:
3. Tell your students we are going to make a secret picture together
4. Read the directions aloud. When you come to instruction 2, review the 2 colours that you will be using.
5. When you come to Instruction 4, introduce the comma.
6. Assemble the picture together following the program.
7. Ask what letter the picture is showing. Have them match it with the large letter you have displayed.
8. Complete Program 2 together or allow them to try on their own.
9. Complete more programs as time allows.

Assessment

Pre-test for prior knowledge

Success criteria:

Students will recall directions, colours, letters in other lessons.
Students will be able to complete Program 7 or 8 independently.

Extensions

- Add more colours and letters as students gain more vocabulary, knowledge.
- Have them create upper case letters (K, Z) lower case letters. (t, h, l,) using the sticky notes and then write the program themselves.
- Have them spell their names and short vocab words. (IT, HI, HIT, HOT, CUT, COT, LIT, LOT,)

PIXEL PROGRAMMING

INSTRUCTIONS

- 1. We are programming left → right,
top → bottom (like reading!)**
- 2. Choose 2 different coloured sticky notes**
- 3. The number is the amount of sticky
notes to place down in a row**
- 4. The comma means switch colours**

PROGRAMS

<p>Program 1</p> <p>3</p> <p>1, 1, 1</p> <p>3</p>	<p>Program 2</p> <p>1, 2,</p> <p>1, 2,</p> <p>3</p>
<p>Program 3</p> <p>1, 1, 1</p> <p>3</p> <p>1, 1, 1</p>	<p>Program 4</p> <p>3,</p> <p>1, 1, 1</p> <p>1, 1, 1</p>

Program 5

1, 1, 1,

1, 1, 1,

1, 1, 1,

Program 6

3

1, 2,

3

Program 7

1, 1, 1

1, 1, 1

1, 1, 1

Program 8

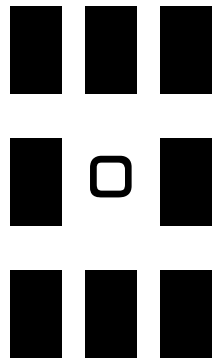
1, 1, 1

1, 1, 1

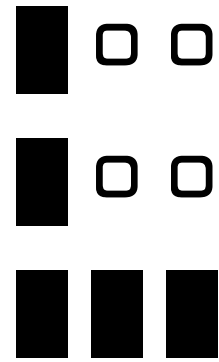
3

SOLUTIONS

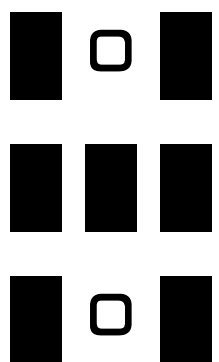
Program 1



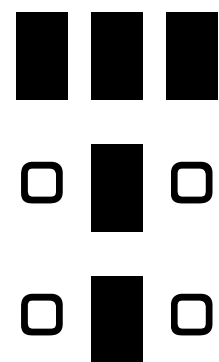
Program 2



Program 3

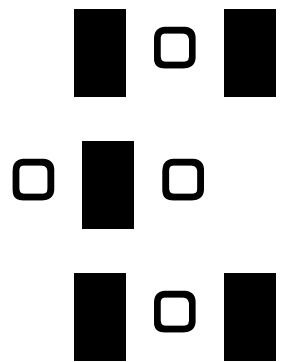


Program 4

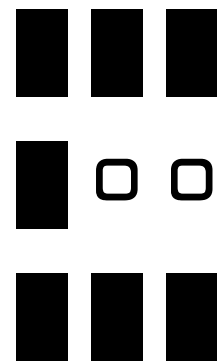


SOLUTIONS

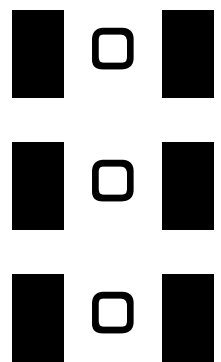
Program 5



Program 6



Program 7



Program 8

