Lesson #3: Downloading the IDE

📝 Overview:

Students will download the IDE, Pyzo onto their computers. In addition to completing the download, students will have another opportunity to gain another badge/certification through an unplugged discrete math activity.

🧑‍🏫 Student Agency:

Students will be completing a discrete math activity toward the end of the lesson. During this activity they will be working with their partner to problem-solve and use basic math functions that they use everyday.

🛤️ Pathway:

- Coding/Computational Thinking

⏰ Duration: One class (40 minutes)

   *Potentially two classes

👤 Essential Question:

- What is computer programming and why is it important?
- What are the benefits of coding?

🎯 Objectives:

- Students will be able to successfully complete the download process for the IDE Pyzo.
- Students will be able to complete another badge opportunity.

🧍 Competencies & Practices	🔍 Student Artifacts/Evidence
Collaboration	Students will be working with a partner to successfully answer a discrete math problem in order to unlock their boxes to earn a badge.

Lesson #3: Downloading the IDE

Simulation	The Martian movie simulation
Problem Decomposition	Breaking down the discrete math activity.

Teacher Preparation:
- #006-Installation Files- Python or flash drives with installation files
- #007-Potatoes Discrete Math Challenge printouts
- #008- Potatoes Discrete Math Challenge Answer
- Optional: Lock boxes and 4 digit combination locks - #009- LockBox Picture
- Print and cut out #010-Agriculture Certifications/Badges (1 badge per team)

Materials for Students:
- Computers
- Optional: Flash drives with download files
- Challenge printouts
- Optional: Lock boxes with badges inside

Students Prior Knowledge:
Understand basic math concepts such as adding, subtracting, multiplying and dividing.

Concepts:
- IDE- integrated development environment

Habits of Mind:
- Persisting
- Listening and Understanding with Empathy
- Striving for Accuracy
- Thinking and Communicating with Clarity and Precision

Lesson #3: Downloading the IDE

Lesson Sequence:

1. **Anticipatory Set:**
   a. Review the term the 4 Color Theorem.
2. **Engaging Activities:**

   🎙️ **Remarks**
   a. In order to start coding Python, we need to download an IDE. IDE stands for Integrated Development Environment and all programmers use some type of an IDE when creating their code. This is basically the program they use when they code and there are many different ones but we will be using the IDE, Pyzo.
   b. Have students either plug in USB drives or open #006-Installation Files-Python. They will be downloading three programs: Pyzo, Miniconda and Python.

   > 📇 **Teacher Tip:** Downloading the programs from USB drives will typically make the download process faster. If multiple computers are downloading from the internet, the process may be slower.

   c. Walk students through #1 which is installing Pyzo. They do not need to make any changes to anything.
   d. Once #1 is complete, walk students through the installation of #2 which is Miniconda. They do not need to make any changes.

   > 📇 **Teacher Tip:** Installing the 32-bit of Miniconda is important because the Finch robots will not work with the 64-bit.

   e. Once #2 is complete, they will need to install #3 which is Python. They do not need to make any changes.
   f. Once all three downloads are complete, they will see the Pyzo icon on their desktop. They will need to open the program and click the link, "Use this environment".
   g. Explain that the bigger box is called the "editor" this is where you will type your code. This is the input.
   h. The smaller box is called the "shell" this is the output- where you will see the results of your code.

Lesson #3: Downloading the IDE

i. Before you see an output in the shell, you need to save your code. The easiest way to do this is by hitting CTRL+SHIFT+E. Anytime you want to run your code, you need to save it first. You will know if you didn't save your code because in the tab section on the top has a small red box. We'll walk through these steps again during our next lesson.

j. Have students close their computers and pair with their group member to prepare for the second badge opportunity. For this challenge, they will need to figure out the answer to unlock the box to get their second badge. Once they obtain their badge, they may put it on the leaderboard.

k. Hand out the #007- Potatoes Discrete Math Challenge as well as lock boxes. Each group should get one sheet. They will have the remainder of class to complete this challenge.

Teacher Tip: This activity should be done in 20-25 minutes.

Assessment Questions	Yes	No
What is an IDE and how do programmers use them?		
What is the editor?		
What is the shell?		

Activities for Relearning:
If time is running out for the badge opportunity, students who have already completed the challenge should be encouraged to help other groups.

Activities for Enrichment:
Students can research other IDE's used by programmers. They can also try to use the Pyzo program on their own.

Resources for Teachers:
- https://pyzo.org/index.html
- https://docs.conda.io/en/latest/miniconda.html
- https://www.python.org/