Exploring Computer Science for English Language Learners

ELD Level 3

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Contents

Note from the Authors

Hello Educators!

We want to take a chance to thank you for using this guide as a resource. Exploring Computer Science is a great introduction to an increasingly important field that our students need to be on the forefront of innovation. However, as well designed as it is, ECS is lacking some supports we felt were necessary to teach to English Language Learners.

Both of us have years of experience working with ELLs from many countries and many levels and we have both done the ECS training and taught Computer Science to ELLs. The suggestions in this document come from our own best practices and are based on standards of literacy that come from WIDA. That said, these suggestions in here are just that, suggestions. Use the ones that make sense to your classroom, and modify the ones that don't.

As many teachers of ELLs know, the job is more than just language and literacy strategies. Often times, being an ELL also means being an immigrant, and depending on what country the students immigrated from, and when, it could mean that their familiarity with computers is limited. All the sentence frames in the world won't help the student who has never used a touch pad mouse before, or who isn't familiar with the concept of "click" or "drag". You may need to spend extra weeks on one unit to make sure students are following. Do whatever it takes for your students.

Another big part of ECS is making the course culturally relevant for the students. If your students are from outside the US, you may find many points during the course where there are things that are completely culturally irrelevant to them. These are opportunities for you to explore your students culture and find what may be important or relevant to them. That part is harder to prescribe, but there are plenty of places in ECS to modify projects/lessons to make them more relevant to your kids.

Finally, let this document be a reminder and a reaffirmation that all students can learn about computer science. Don't let anyone tell you that students can't learn something complex like CS because they don't have the language skills necessary. All students deserve the opportunity to learn about the technology that is shaping their future and their society.

Thank you for taking the time to make your class more accessible and ensuring every student gets a chance to learn this. We hope this guide can help and wish you the best of luck!

Andrew Flye and Samantha Basile

Background and Rationale

In the United States, 9.4% of public schools students are classified as English Language Learners (ELLs) (NCES 2017). Massachusetts mirrors the national average of ELLs at 9%. In Boston, however, the number of ELL students climbs to 30% (BPS 2016). Adapting curricula for ELLs is a step towards building essential 21st century academic skills for all students.

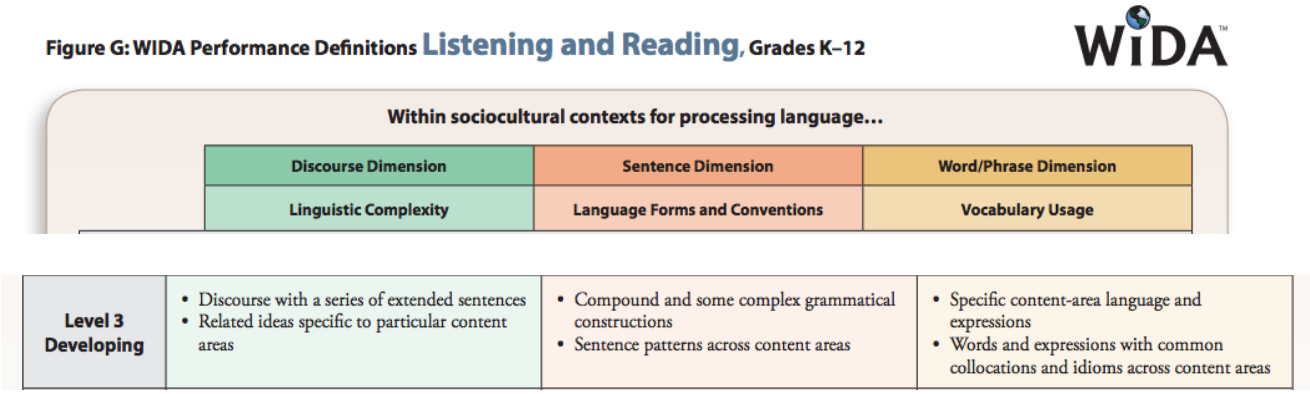
The course Exploring Computer Science (ECS) is an instrumental introduction to computer science with relevant application to students' lives. To bridge the gap between content and language, the ECS curriculum is adapted for ELLs.

At Boston International Newcomers Academy (BINcA), 100% of students are immigrants. The authors decided to adapt the ECS curriculum for students with an English Language Development (ELD) level of 3 because incoming ECS ELLs fall into the ELD level 2 and 3 range, with much fewer categorized as 4 or 5 (see WIDA Performance Definitions below).

Number of students	ELD Level
28.0	2
33.0	**3**
14.0	4
2.0	5

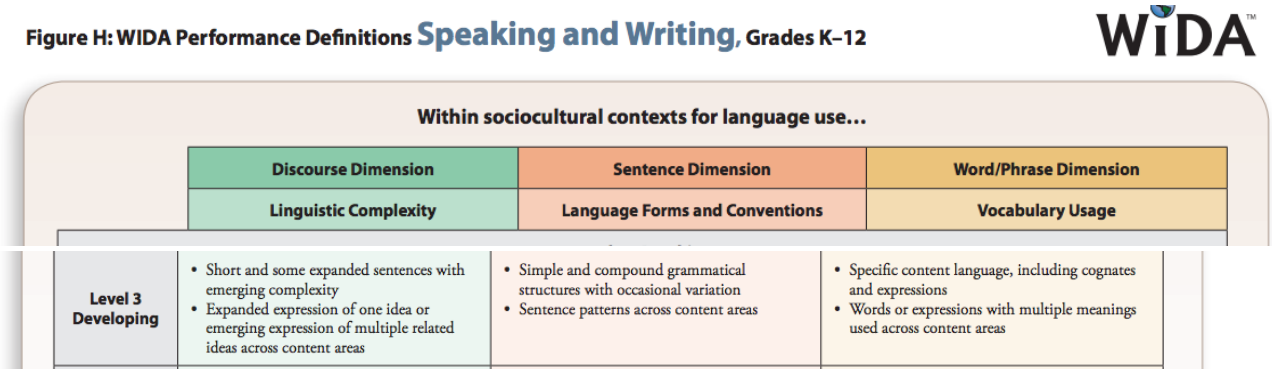
WIDA 2012 Performance Definitions

Figure G: WIDA Performance Definitions Listening and Reading, Grades K–12



	Within sociocultural contexts for processing language…		
	Discourse Dimension	**Sentence Dimension**	**Word/Phrase Dimension**
	Linguistic Complexity	**Language Forms and Conventions**	**Vocabulary Usage**
Level 3 Developing	• Discourse with a series of extended sentences • Related ideas specific to particular content areas	• Compound and some complex grammatical constructions • Sentence patterns across content areas	• Specific content-area language and expressions • Words and expressions with common collocations and idioms across content areas

Figure H: WIDA Performance Definitions Speaking and Writing, Grades K–12



	Within sociocultural contexts for language use…		
	Discourse Dimension	**Sentence Dimension**	**Word/Phrase Dimension**
	Linguistic Complexity	**Language Forms and Conventions**	**Vocabulary Usage**
Level 3 Developing	• Short and some expanded sentences with emerging complexity • Expanded expression of one idea or emerging expression of multiple related ideas across content areas	• Simple and compound grammatical structures with occasional variation • Sentence patterns across content areas	• Specific content language, including cognates and expressions • Words or expressions with multiple meanings used across content areas

Language Focus

The ECS for ELLs curriculum begins by building and refining receptive language skills (listening and reading) as language learners tend to develop these skills first. The authors aim to ensure students practice this academic language daily in the classroom. The course progresses to build and reinforce expressive skills (speaking and writing). When students build confidence and practice with receptive skills, they are increasingly able to apply them when speaking and writing.

Contents

This is the first version of a modified curriculum for ELLs. Note that only Units 1-4 have been adapted, while Units 5 and 6 have not. With input from stakeholders, multiple iterations in

various academic settings, and more time the curriculum team can improve upon and expand this iteration to incorporate Units 5 and 6.

The format of this curriculum mirrors ECS Version 7.0. As teachers trained in ECS are already familiar with the content and format, the contents can serve as an addendum to the existing curriculum map. For each unit, we provide the following:

Language Skills, Strategies, and Objectives

Overview Chart

Daily Lesson Plans

ECS for ELLs Course Overview

Language Goals[1]

In addition to the content goals, teachers and students are guided by language goals. The ECS for ELLs is meant to serve students with ELD level 3, based on K-12 WIDA performance definitions. The authors have organized language goals in two categories: receptive and expressive. Note that the course begins with a focus on receptive skills and builds upon these skills to reinforce expressive skills.

By the end of the course, students will be able to…

Receptive: Listening, Reading

1	***Apply listening and reading skills to*** demonstrate understanding of new concepts by breaking down into components, categorizing, and prioritizing information.
2	***Apply listening and reading skills to*** independently locate, analyze, and apply resources to solve complex real-world problems.
3	***Apply listening and reading skills to*** process, understand, and evaluate content-specific information of a classmate or colleague.

Expressive: Speaking, Writing

1	***Apply speaking and writing skills to*** explain ideas in informal and content-specific registers.
2	***Apply speaking and writing skills to*** summarize, solve a problem, and explain rationale for choosing problem solving strategy.
3	***Apply speaking and writing skills to*** craft precise questions to find resources to solve problems.
4	***Apply speaking and writing skills to*** provide and respond to applicable feedback from peers using key terms and concepts.

[1] The section “Goals” already exist. We understand these to be content goals. We suggest adding a section called “Language Goals.”

Language Skills, Strategies & Objectives

In addition to the content objectives, the authors have added three categories: ***Language Skills, Language Strategies,*** and ***Language Objectives.***

> ***Language Skills*** answer the question, "What can ***students*** do?" These skills are either introduced, reinforced, assessed, or a combination thereof. These skills are observable and measurable.
>
> ***Language Strategies*** answer the question, "What can the ***teacher*** do?" Teachers will use a variety of instructional strategies that focus on language acquisition.
>
> ***Language Objectives*** are equally as valuable as the existing ECS Content Objectives. These provide a language focus for the lesson. Teachers can check for understanding for both language and content.

Overview Charts

As an addendum to the existing topic-by-topic overview chart, we created a language-based overview chart. This provides opportunities to introduce, reinforce, and apply language skills while engaging in content-based topics in Units 1-4.

In the spirit of the instructional philosophy of ECS, we have included course-based language goals and topic-based language goals. This provides flexibility to the teacher in terms of sequence. When teachers have completed all units, regardless of order, students will be set up to reach the course-based language objectives.

Daily Lesson Plans

Daily lesson plans are enhanced with daily ***Language Objectives, Language Activities, and Language Resources.***

> ***Language Objectives*** build to reinforce each unit's overall language goals.
>
> ***Language Activities*** identify what and where language is being taught. These include scaffolds, adaptations, and assessments.
>
> ***Language Resources*** provide instructional specific support for teachers to carry out the Language Activities. They include adapted rubrics, graphic organizers, images, sentence starters, and question stems.

Common Language Strategies

Within the daily lesson plans you will find numerous literacy strategies based on the activities. Some are very specific to the activities, but there are many that are fairly general, common practices for ESL students. We will review some of them here for those who are less familiar.

***Pre-teach Vocabulary*:** These lessons were not initially written for ELLs, so many of the resources contain tier 2 vocabulary that is above the level of the average ELL. In order to make texts more understandable, important tier 2 vocabulary should be taught prior to the actual lesson. This could look like adding it to a word journal, keeping the definition visible during the lesson or practicing it over the course of weeks so it becomes internalized.

***Modelling*:** Throughout this course, there are many points where students will engage in discussions, presentations, feedback sessions, Q&A sessions and reading from online resources. These kinds of interactions in academic settings in English may be new to students, so demonstrating with an authentic example yourself will help students understand some of the nuances of the skill.

Translating: There may be times where pre-teaching vocabulary is not worth the time, and adapting isn't possible. In these cases, allowing students the use of translation tools can be a powerful aid. However, different sources have different merits and students should be careful, especially around words with multiple meanings. When possible, sites such as wordreference.com can be encouraged because it tends to give contexts for the translations, despite the prevalence of google translate.

Sentence Frames: Given the large amount of discourse and discussion, students will need help putting their ideas into English words. Content is already a challenge to translate, so providing students with the supporting phrases and structures common to discussion in English will both lift the burden of communicating their ideas and teach them these structures that they can continue to use and practice throughout the class. It is an investment into future discussions.

Time: One final note about these language strategies proposed by the authors. While some of these strategies can be completed by the teacher before the lesson, many of these things can extend your lessons by anywhere from 2-3 minutes all the way up to 30-40 minutes. The times given by the ECS curriculum may not reflect how long it should take for a group of ELLs who are working on this curriculum. We tried to provide estimates of how much time you may need in addition, but all of this is subject to change.

Unit 1: Human Computer Interaction

Unit 1: Human Computer Interaction

Topic Description & Objectives

Language Skills: What can ***students*** do?

Language Strategies: What can ***teachers*** *do?*

- Pre-teach key vocabulary and phrases
- Prompt students with question frames and sentence starters
- Provide graphic organizers
- Jigsaw long readings and articles
- Modify text (as needed)
    - *Format*: **bold**, underline, *italic*
    - *Language*: definitions, simplified
- Add images and multimedia for UDL
- Assess language acquisition on rubrics

Language Objectives:

Receptive (Listening, Reading)

2	***Apply listening and reading skills to*** independently locate, analyze, and apply resources to solve complex real-world problems.

Expressive (Speaking, Writing)

1	***Apply speaking and writing skills to*** explain ideas in informal and content-specific registers.

Unit 1: Human Computer Interaction

Overview Chart

Day	Topic	Language Skill
1-2	Explore the concepts of computer and computing	- Speak and listen to discuss computers
3-4[2]	"Demystify" and learn the function of the parts of a personal computer. Learn the terminology of the hardware components necessary for the purchase of a home computer.	- Read about parts of a computer - Speak in a presentation about what computer to buy
5-7	Explore the world wide web and search engines. Experiment with a variety of search techniques, internet resources, and Web 2.0 applications. Evaluate websites.	- Read information found online - Speak in a presentation about a web 2.0 app
8-9	Examine the implications of data on society and how computers are used for communication.	- Speak to discuss communication - Speak in a presentation about data
10	Tell a story with data	- Read and write to describe images - Speak in a discussion with classmates
11-14	Explore how computers are used as a tool for visualising data, modeling and design, and art in the context of culturally situated design tools.	- Read about culturally situated design tools - Speak in a presentation about their design
15-16	Introduce the concept of a computer program as a set of instructions.	- Write instructions for a simple task - Read directions to a trick quiz
17-19	Explore the idea of intelligence, especially as it relates to computers. Explore what it means for a machine to learn. Discuss whether computers are intelligent or whether they only behave intelligently.	- Read and write to a chatbot on the computer - Listen to hear the differences between computers and humans responses to questions

[2] For ELLs and depending on computer experience, instructional days 3 and 4 may take an extra day. Students require background knowledge about computer hardware, or scaffolds for researching information about the hardware (see "Computer Components Checklist"). To build essential background skills, we provide guidance for introducing these concepts to students in "Addendum to Instructional Days 3-4."

Unit 1: Human Computer Interaction
Instructional Day: 1-2
Language Objectives

- SWBAT **speak** and **listen** to discuss what is a computer and what is computing

Outline of Lesson

- Journal Entry (+1 minute)
- Exploring Computers
- Classification of computer groups (+1 minute)
- Definitions of the terms computer and computing (+2 minutes)
- Demo of computer buying project assignment (+3 minutes)

Language Strategies

Journal Entry

- Model and sentence frame for sharing journal entry with partners

Exploring computers

- Sentence stems for sharing their ideas in groups. Allow students dictionaries or phones to translate examples of things they don't know the English word for.

Classification of computer groups

- Model an example of what classifying looks like.
- Vocabulary: Classification

Definitions of the terms computer and computing

- The question "What is computing?" may be challenging because students may have never heard this term before or even have a similar word to translate between in native language. For this, you may need to provide an example or two before students really get started with this activity.

Demo of the computer buying project assignment

- Model the interview by giving the students a script to read off of with you while you practice. Have students create and write down interview questions to use for later.

Resources/Sentence Frames

Key Vocabulary

- Classify/Classification - To sort into groups based on similarities.

Sentence/Question Frames

- I think that…

- The ideas I had were…

Unit 1: Human Computer Interaction
Instructional Day: 3-4
Language Objectives

- SWBAT **read** and **listen** to learn about the different parts of the computer in a jigsaw activity
- SWBAT research and **read** about different computers online
- SWBAT create a presentation highlighting their solution to the Computer Buying Project

Outline of Lesson

- Research and development of computer buying project (See addendum)
- Project presentation by student teams (+3-5 minutes)

Language Strategies

Research and development of computer buying project

- Students will need extra support in this lesson to learn all of the new vocab about the parts of the computer. This will require some structured research or some direct teaching/exploration about the parts of the computer. The authors recommend finding small articles about each part of the computer and have students jigsaw these.

Project presentation by student teams

- Provide a model of the presentation, along with sentence frames to help them share their presentation. Allow students to read off slides or note cards when presenting.

Addendum to Instructional Days 3-4

This unit assumes that students have computer hardware background knowledge. To make the material accessible to ELLs and/or students with limited computer background knowledge, we provide guidance on how to introduce computer hardware components to students. See end of lesson for suggestions.

Unit 1: Human Computer Interaction
Instructional Day: 5-7
Language Objectives

- SWBAT search for and **read** information online to identify what are good resources for research
- SWBAT **read** and **write** to present about a Web 2.0 application

Outline of Lesson

- Journal entry
- Internet scavenger hunt
- Discussion of other resources for finding information
- Experimentation with these resources
- Jigsaw activity involving Web 2.0 applications
- Journal entry (+2 minutes)
- Website evaluation criteria (+2 minutes)
- Hands-on evaluation of websites

Language Strategies

Journal entry

- No resources needed

Internet scavenger hunt

- It is especially important to select a scavenger hunt list that not only matches the interest of your students, but reflects the language level. See below for some sample items to search for.

Discussion of other resources for finding information

- Keep list of other resources relevant to what the students know (yellow pages or switchboard have no relevance to students)

Experimentation with these resources

- Again, reduce list to only those that students would be familiar with, or aren't already obsolete because of Google.

Jigsaw activity involving Web 2.0 applications

- For presentations, help focus student ideas by creating template of slides for students to use with preset headings.
- Provide some sentence starters for the presentations

Journal entry

- Vocabulary: Evaluate/Evaluation

Website evaluation criteria

- The sample rubric should be adapted to the students language level
- Vocabulary: Hoax, subtly biased
- Provide a list of descriptive words or phrases that students might use for rubrics (Reliability, Source of information)
- Allow students to translate anything they don't know how to say in English

Hands-on evaluation of websites

- Sentence frames for discussion

Resources/Sentence Frames

Key Vocabulary

- Evaluate - Judge how good something is
- Hoax - Something that is fake
- Subtly Biased - Something that is biased in a small, difficult to see way

Sentence/Question Frames

- Based on my rubric...

Examples for Scavenger Hunt List:

1. Mayor of city
2. The population of your home country
3. The location of a restaurant that serves food from your country
4. A list of movies playing at your favorite movie theater
5. The rating for the top movie at your favorite movie theater

Unit 1: Human Computer Interaction
Instructional Day: 8-9
Language Objectives

- SWBAT **speak** to discuss different methods of communication
- SWBAT **speak** and **write** to create a presentation about a specific situation about data privacy

Outline of Lesson

- Journal entry
- Identification of communications mechanisms
- Communication methods chart (+2 minutes)
- Impact of changes to communications on society
- Privacy Activity (+5 minutes)

Language Strategies

Journal entry

- "Create a list of ways to communicate that require a computer."

Identification of communications mechanisms

- No resources needed

Communications methods chart

- Vocabulary: Gossip, Mourn,

Impact of changes to communications on society

- No resources needed

Privacy Activity

- You may need to adapt slightly the situations for the students to discuss (for example: in B - "enthusiastic 'Legalize marijuana'" might be a confusing phrase)
- Provide slides with Headings on the pages already that reflect the questions you want students to answer. This will allow them to focus their language better.
- Allow students extra time to practice their presentations in their groups before presenting before the class

Resources/Sentence Frames

Key Vocabulary

- Gossip - Talk about someone when they aren't there. Usually a bad thing.
- Mourn - To feel sad about someone who has died.

Unit 1: Human Computer Interaction

Instructional Day: 10

Language Objectives

- SWBAT **read** a list of words and create an image based on them **or** write to describe what is in a picture
- SWBAT **speak** to classmates to discuss the different ways of representing data.

Outline of Lesson

- Journal Entry
- Room activity (+5 minutes)

Language Strategies

Journal entry

- It may be worth it to translate the word “data” into your students’ languages when you ask this question, just in case it is not familiar to them yet in English.

Room activity

- Use the word list and the picture.
- For the word list, provide translation or pictures next to some of the slightly less common words (Trophy, Lava Lamp, Globe, Goldfish, Toy Soldiers, etc)
- For the picture, allow students to write things in native language first, then translate, if needed for some of the objects that are less common.
- Vocabulary: Aggregate, Generate

Resources/Sentence Frames

Key Vocabulary

- Aggregate - In total, everything together
- Generate - To create or make

Unit 1: Human Computer Interaction
Instructional Day: 11-14
Language Objectives

- SWBAT read to learn about culturally situated design tools
- SWBAT speak in a presentation about the design they created

Outline of Lesson

- Research on the cultural background associated with the design tool (+7-8 minutes)
- Design tool tutorials (+5-7 minutes)
- Creation of designs using design tool
- Preparation of presentations (+5 minutes)
- Group presentations (+5 minutes)

Language Strategies

Research on the cultural background associated with the design tool

- The background articles for these tools can vary from simple to complex in terms of vocabulary and grammar. You may choose to just let the students approach it as is, with the help of translation services, or, you may choose to type up and adapt your own to match the levels of your students.
- Sentence frames for discussing the sections they read

Design tool tutorials

- Again, the language used can be slightly more complex than the students' levels at time. Given the amount of material, either adapt them yourself before, or allow students to use translation tools during the activity.

Creation of designs using design tools

- No resources needed

Preparation of presentations

- Prepare slide layout ahead of time with headings to help students focus their language and efforts.
- Allow students time to practice with each other before going before the class.
- Create stems to help students address the questions that are asked of them.

Group presentations

- Give students time to write down questions after the group presents, if you want there to be dialogue between presenters and audience.
- If you plan to ask questions to the presenters, give them to the students ahead of time so they are prepared with the language necessary to answer.

Resources/Sentence Frames

Sentence/Question Frames

- I read about ….
- What this means is ...

Unit 1: Human Computer Interaction
Instructional Day: 15-16
Language Objectives

- SWBAT **write** sequential instructions on how to make a peanut butter and jelly sandwich.
- SWBAT **read** directions on a quiz to understand what to do.

Outline of Lesson

- Following directions (+4 minutes)
- Designing a program (+4 minutes)
- Running a program
- Being more precise with instructions (+3 minutes)

Language Strategies

Following directions

- The format and content of the quiz makes reading a daunting task. We suggest creating a quiz that is easier to read and has less words to achieve the same goal.
- The directions at the top should be shorter and more succinct
- For question 3, just tell the students to write “December” in the corner, instead of the “month that starts with D”.
- Given the point of the quiz, you may choose to leave it as is, but if not, many questions can be written with less language and more directly.
- Extra time to read the quiz

Designing a program

- Instead of using PB&J (many non-American students are not familiar with pb&j), consider using an example that is more universal to students of different cultures. Examples could be: how to get ready for school, get out of bed, walk to the principal’s office, buy lunch at school, etc.
- Before starting the PB&J activity, brainstorm with students, a list of vocabulary necessary to describe how to make a sandwich. Otherwise, at least provide a list yourself. (Ex: Spread, knife, remove, twist, etc)
- Provide the structure of, “First… then… then...then… finally…”

Running a program

- When running the program, try to display the written directions while you read them, so students can easily see the precision (or lack thereof) of the language.

Being more precise with instructions

- In the curriculum, it suggests you “guide the students towards…”, a long paragraph full of content. Ensure that when you review this information with students, it is presented visually, not just verbally.

Unit 1: Human Computer Interaction
Instructional Day: 17-19
Language Objectives

- SWBAT listen to a demonstration of intelligence vs artificial intelligence
- SWBAT read and write to have a conversation with a chatbot

Outline of Lesson

- Journal entry
- Explain what it means for a machine to learn (+8 minutes)
- A simple model of machine learning

Language Strategies

Journal entry

- No resources needed

Explain what it means for a machine to learn

- The CSUnplugged activity will need adapting depending on your class. The directions are written out with a lot of language and too much grammar. Depending on your students, you should summarize the directions and then model it. The questions used in the activity are also potentially difficult or unrelatable to your students. Feel free to adapt those as necessary, though you may then have to come up with your own answers for the computer.
- For the activity where students chat with the bots, it might be helpful to also provide some possible conversation points and questions.

A simple model of machine learning

- Feel free to let your students choose their native language for this part, even though the instructions recommends “Think in American.”

Unit 2: Problem Solving

Unit 2: Problem Solving

Language Description & Objectives

Language Skills: What can ***students*** do?

- Verbally describe information about a problem, including:
  - Explanation of the problem
  - Processes used to solve
  - Reflection on the process
- Read instructions and descriptions of problems to pull out key information needed to move forward
- Write compound sentences to describe how a problem was solved.

Language Strategies: What can ***teachers*** do to support learning?

- Pre-teach key vocabulary and phrases
- Prompt students with question frames and sentence starters
- Provide graphic organizers
- Jigsaw long readings and articles
- Modify text (as needed)
  - *Format*: **bold**, underline, *italic*
  - *Language*: definitions, simplified
- Add images and multimedia for UDL
- Assess language acquisition on rubrics
- Ensure consistent exposure to supports

Language Objectives:

Receptive (Listening, Reading)

1	***Apply listening and reading skills to*** demonstrate understanding of new concepts by breaking down into components, categorizing, and prioritizing information.

Expressive (Speaking, Writing)

2	***Apply speaking and writing skills to*** summarize, solve a problem, and explain rationale for choosing problem solving strategy.

Unit 2: Problem Solving

Daily Overview Chart

Day	Topic *copied from ECS Version 7.0*	Language Skill
1-2	Introduce data collection and problem solving	- Speak about data collected - Read articles to summarize key information - Write research questions - Apply grammar concepts to reading comprehension: conditionals (could, would, should, might) - Write compound sentences
3	Introduce the four steps of the problem solving process.	- Speak/write about how to solve a problem (Candy bar breaking) - Listen to other solutions/ask questions - Write a reflection
4-6	Apply the problem solving process. Use different strategies to plan and carry out the plan to solve several problems.	- Read to understand instructions / problem - Speak to explain problem solving process - Speak to answer reflection questions
7-9	Reinforce the four steps of the problem solving process.	- Read to understand cornrow braiding instructions - Speak to explain problem solving process
10-12	Count in the binary number system. Convert between binary and decimal numbers in the content of topics that are important to computer science.	- Speak to explain using content-specific vocabulary
13-14	Introduce the linear and binary search algorithms	-Write compound sentences to answer content questions using words with multiple meanings and content-specific vocabulary
15-16	Explore sorted and unsorted lists and various sorting algorithms.	- Read and listen to follow directions - Speak to explain solution
17	Introduce minimal spanning trees and how graphs can be used to help solve problems.	- Read to follow directions - Speak to explain and defend strategies to solve a problem
18-21	Final projects and presentations.	- Write explanation to a problem - Speak to present explanation to class

Unit 2: Problem Solving
Instructional Days: 1-2

Language Objectives

- SWBAT **read** to identify main ideas using guided questions and jigsaw activity
- SWBAT **read/listen** to understand ideas in context using pre-taught content-specific vocabulary and conditional grammar structures
- SWBAT **speak/write** using compound grammatical structures to share information

Outline of Lesson

- Communication Methods and Data Chart (+3 minutes)
- Data Journal (+3 minutes)
- How data is linked back to us (+8 minutes)
- Solving Community Problems Activity (+3 minutes)
- Difference between using data used for making a case and data that informs discovery
- Research questions
- Journal Entry

Language Strategies

Communication Methods and Data Chart

- Review key vocabulary: “break up with”, “figure out”, “gossip about”
- Question frames
- Sentence starters

Data Journal

- Key vocabulary: “give off” (= generate); aggregate (= collect); implications (= consequences, results of); search engine (ex: Google.com to find information on the internet)
- Question frames
- Graphic organizer 1
- Grammar refresher: conditional “would, should, could, might”

How data is linked back to us

- **NOTE**: The articles may be too challenging for ELLs in ELD 3. We have a few suggestions:
    1. Find an article with similar content on NewsELA.com. Articles can be adapted for grade level and ELD level.
    2. Adapt the articles, asking ELA or ESL teachers for advice.
    3. Jigsaw the original articles (see strategy below).
    4. Do a combination of adaptation and jigsaw.
- Focus questions for each article
    - **MAIN**: What are the possible implications of data being linked back to us?
    - **NY Times article:** What happens when we share our search data?

    - **Netflix article**: What was purpose of collecting personal data? What was the result?
    - **Facebook / Social media**: How do we give off data? What is the impact on our privacy?
- **Strategy: Jigsaw.** Divide students into 3 groups. Assign one article each group. Divide each article into smaller "chunks". Assign one student to read and summarize the main points. In groups (or individually) answer the focus question. Representatives from each group share out each article's main points. Students take notes on each article. Share answers to focus questions.

Solving Community Problems Activity

- Preview scenario with images & key vocabulary
- Key vocabulary: case vs. discovery
- Grammar refresher: conditional "would, should, could, might"

Assignment

- Graphic organizer 2

Journal Entry

- Sentence starters

<u>Resources</u>

Question Frames

- What was your method for collecting data about…
- In scenario #, [question]
- What makes you say that?

Sentence Starters

- My method was… because…
- Available data **were *(plural)*…**
- **X** has access to the data…
- **X** can be learned from the data in aggregate.
- I chose this method because…
- First,... Then,... Next,... Finally,...
- These are the same / different steps I would use to solve all problems because…

Graphic Organizer 1

If we aggregate (collect) data from a lot of people…

What good things could happen?	**What services could be improved?**

Graphic Organizer 2

After-school activity	Location	Transportation	Time	Other interesting data

Unit 2: Problem Solving
Instructional Day: 3

Language Objectives

- SWBAT **speak** in small groups and **write** independently how to solve the candy bar problem using sentence frames and question starters (Expressive 2)
- SWBAT **listen** and speak with the whole class, solutions to the problem using sentence frames (Receptive 1)
- SWBAT use sentence frames to **write** a reflection (Expressive 2).

Outline of Lesson

- Candy Bar Activity (+2 minutes)
- Discussion of Solutions
- Introduction of the steps of the problem-solving process (+4 minutes)
- Journal Entry (+2 minutes)

Language Strategies

Candy bar Activity

- Key vocabulary: break (= divide, split), "in half" (= in two equal pieces)
- Sentence/Question frames (for discussing and writing plan; adding / presenting / questioning ideas)

Discussion of Solutions

- Sentence/Question Frames

Introduction of the steps of the problem-solving process

- Key vocabulary: "carry out" (= do it)
- "Understand the problem": students show evidence of this by annotating and/or summarizing in their own words
- Students categorize their problem solving process into 4 steps
- Teacher shows examples of work from each step (student work or prepared work)
- Compound sentences using "because", "but", "and"
- Students discuss how to solve N-pieces problem by using the 4 categories of problem-solving with a partner.

Journal Entry

- Key vocabulary: "refine", "however"/"yet"
- Sentence/Question Frames
- Add example "real life" problems

Resources/Sentence Frames

Key Vocabulary

- “break” (= divide, split), “in half” (= in two equal pieces)
- “carry out” (= do it)
- “Understand the problem”: students show evidence of this by annotating and/or summarizing in their own words
- “refine”, “however”/”yet”

Sentence/Question Frames

- In order to solve this problem, I would…
- Why did you decide to ….?
- What makes you say that?
- I did … because …

Unit 2: Problem Solving
Instructional Days: 4-6

Language Objectives

- SWBAT **speak** to ask questions for evidence and explanations
- SWBAT **speak/write** to explain how student solved a problem using sentence starters
- SWBAT **read** to break down components of a problem by identifying key information

Outline of Lesson

- Handshake Activity and Fence Post Activity (+5 minutes)
- Explanation of solutions
- Handshake Activity and reflections
- Presentations of Handshake Activity
- Discussion of reflections

Language Strategies

Handshake Activity and Fence Post Activity

- **Key vocabulary**: fence, post, rails, yards (teacher provides graphic with images); assume (= understand that)
- Modify instructions - problems #1 and 2
    - Read and summarize (pairs)
    - Attempt solution (individual)
    - Share solution with partner (pairs)
    - Share solution with class

Explanation of Solutions

- Sentence/Question Frames

Handshake Activity and reflections

- Sentence/Question Frames

Discussion of reflections

- I started here because…
- Then I did this… because…
- This solution ***could/could not*** be given to a computer because…

Resources

Sentence/Question Frames

- I found the solution by…
- First… Then… Next… Finally..
- *(Student's name)* thought that…
- We did this because…

- What makes you say that?

Unit 2: Problem Solving
Instructional Days: 7-9

Language Objectives

- SWBAT **read** to understand historical and cultural significance of cornrow braiding
- SWBAT **speak** to describe problem solving process using key words and sentence/question frames

Outline of Lesson

- Introduction to cornrow braiding
- Group discussion on cultural background of cornrow braiding
- Cornrow curves design tool tutorial
- Gallery walk

Language Strategies

NOTE: *Information presented on the website may be challenging for ELLs. The authors suggest that students interact with the content in multiple ways: read aloud, modified for key concepts, individually, in pairs, and/or whole class review.* ***This entire lesson may take significantly more time with ELLs than the ECS curriculum allows.***

Introduction to cornrow braiding

- **Keyword**: cornrow = from slavery when African Americans worked in agriculture; compound word = corn (shape of braid resembles corn) + row (arrangement of braids in a line)

Group discussion on cultural background of cornrow braiding

- Adapt jigsaw strategy as needed
- Sentence starters

Cornrow curves design tool tutorial

- Key Vocabulary: iteration (Tier 2 word with multiple meanings; as a noun)
- Question frames

Cornrow curves project

- Sentence starters

Gallery walk

- Sentence starters

Resources

Key Vocabulary

- Iteration: when you repeat a process (noun)

Sentence Starters

- The most important idea from this passage is…
- First... Then… Next… Finally…

Question Frames

- What makes you say that?

Unit 2: Problem Solving
Instructional Days: 10-12

Language Objectives

- SWBAT **write** a compound sentence to answer the question, “Why are binary numbers important in computer science?”

Outline of Lesson

- Journal Entry
- CS Unplugged Activity 1: Count the Dots - Binary Numbers (counting in binary)
- CS Unplugged Activity 1: Count the Dots - Binary Numbers (binary number system)
- Revisit journal entry
- Journal entry
- Discussion of why binary numbers are important in computer science
- CS Unplugged Activity 1: Count the Dots - Binary Numbers (Email and Modems, Counting Higher than 31

Language Strategies

- Key Vocabulary: decimal (deci = 10; refers to base10 system, rather than base2 in binary)

Resources

- *No additional resources needed*

Unit 2: Problem Solving
Instructional Days: 13-14

Language Objectives

- SWBAT **read** to understand and follow instructions with Tier 2 and Tier 3 words
- SWBAT **speak** to apply key vocabulary and explain their problem solving process

Outline of Lesson

- Tower Building Activity (+2 minutes)
- Model tower building algorithm
- Model binary search
- Comparison of linear and binary search

Language Strategies

Tower Building Activity

- **Key vocabulary:** get the job done (=complete a task); lifter (= something that lifts something else); stack (as verb, as noun); regardless (= not related to, despite); interlocked (= fits together and connect on top and bottom); unlimited (= infinite, never ends)

Model tower building algorithm

- Sentence starters

Model binary search

- Sentence starters

Comparison of linear and binary search

- Sentence starters
- **Key vocabulary**: linear (in a line)

Resources

Sentence Starters

- First… Next… Then… Finally…
- This is similar/different because…
- This is (not) appropriate because…

Unit 2: Problem Solving
Instructional Days: 15-16

Language Objectives

- SWBAT **read** and listen to follow directions in text with Tier 2 words and a basic idiom
- SWBAT **speak** to explain solution in compound sentences using sentence frames

Outline of Lesson

- Journal Entry (+2 minutes)
- CS Unplugged Activity 7 - explore sorting (+2 minutes)
- CS Unplugged Activity 7 - discover and describe sorting algorithms
- CS Unplugged Activity 7 - compare sorting algorithms

Language Strategies

Journal Entry

- Modify prompt (format and content) and add examples or images
- Sentence frames
- **Key vocabulary**: "It **matters**"/"it **doesn't** matter (= it **is** important/ it **isn't** important); sorted (= in a specific order); **data set** (= information about one subject); **sort** (verb = to categorize; noun = a type or category)

CS Unplugged Activity 7 - (all)

- **Key vocabulary**: **sort** (verb = to categorize; noun = a type or category); **data set** (= information about one subject); **seal** (verb = to close; noun = something that helps join two things together like tape or wax)
- **Grammar**: -est = superlative (the most of something)

Resources

NOTE: *Instructions are available in English, Italian, French, Turkish, Portuguese (Brazil), Polish, Hungarian, Greek, and Slovenian online.*

- **Journal Entry prompt**

First, answer the question: Is it important (= does it matter) for these items to be **in a specific order** on a list? Write "Yes" or "No".

- Shopping (food, clothes)
- Information or facts about you
- Movies

Next, add 3 examples of lists where it **IS important** for items to be in a **specific** order.

- _____

- _____
- _____

- **Sentence Frames**

It matters that they are sorted because…
If the list is not sorted, …

Unit 2: Problem Solving
Instructional Days: 17

Language Objectives

- SWBAT **read** compound sentences to understand instructions
- SWBAT **speak** to defend rationale for choosing problem solving strategy

Outline of Lesson

- CS Unplugged Activity 9: The Muddy City - Minimal Spanning Trees (+1 minute)
- CS Unplugged Activity 9: The Muddy City - Minimal Spanning Trees (extension)

Language Strategies

CS Unplugged Activity 9: The Muddy City - Minimal Spanning Trees

- **Key vocabulary:** network (= an interconnected system or group like the internet or a group of friends)
- Sentence starters (for speaking)

CS Unplugged Activity 9: The Muddy City - Minimal Spanning Trees - EXTENSION

- *See above*

Resources

NOTE: *Instructions are available in English, Italian, French, Greek, Portuguese (Brazil), Polish, and Slovenian online.*

- **Sentence starters (for speaking)**

To solve the problem, I…
I did this because…

Unit 2: Problem Solving
Instructional Days: 18-21

Language Objectives

- SWBAT **speak** to explain process and product in compound sentences using key phrases
- SWBAT **write** to explain process and product with key words and expressions

Outline of Lesson

- Explanation of final project (+2 minutes)
- Completion of final projects (+5 minutes)
- Presentations of final projects

Language Strategies

Explanation of final project

- **Key vocabulary:** carpool (= share a car ride with a group of people); determine (= identify)
- **Modify** final project description
    - Format: include **bold**, underline, and *italics*
    - Content: images, eliminate unnecessary words/phrases

Completion of final projects

- Key phrases for compound and complex sentences

Presentations of final projects

- Add language category on rubric

Resources

Key Phrases (compound and complex sentences)

- **To explain your reason or purpose:**
    - ...in order to…
    - ...so that...
    -
- **Conjunctions to compare ideas:**
    - Although
    - However
    - Despite
    - Even though

Rubric (Add "Language" category)

- Student uses compound and some complex sentences that relate to an idea
- Student uses Tier 2 words and expressions

Unit 3: Web Design

Unit 3: Web Design

Topic Description & Objectives

Language Skills: What can ***students*** do?

- Recognize and apply context clues
- Apply knowledge of key vocabulary

Language Strategies: What can ***teachers*** do to support learning?

- Pre-teach key vocabulary and phrases
- Prompt students with question frames and sentence starters
- Create labelled models of storyboards, websites and HTML/CSS documents to provide context for new vocabulary
- Use partner reading strategies while reading through online tutorials
- Provide frames and model how to give and receive feedback from peers
- Provide visual representations of explanations

Language Objectives:

Receptive (Listening, Reading)

3	***Apply listening and reading skills to*** process, understand, and evaluate content-specific information of a classmate or colleague.

Expressive (Speaking, Writing)

3	***Apply speaking and writing skills to*** craft precise questions to find resources to solve problems.
4	***Apply speaking and writing skills to*** provide and respond to applicable feedback from peers using key terms and concepts.

Unit 3: Web Design

Daily Overview Chart

Day	Topic	Language Skill
1	Explore issues of social responsibility in web use as well as the relative merits of the influence of web on society, personal lives and education.	- Write/speak to share their own experiences with technology - Listen/read along with a video to learn more information - Write a reflection
2	Create a storyboard for a website	- Speak to respond and summarize each other's ideas - Use context clues to understand the parts of a website - Write feedback to their classmates
3-4	Introduce the use of basic html	- Read feedback from their peers to edit storyboards - Speak and listen for instructions from a peer to do pair programming - Use context clues while reading to understand new vocabulary and apply it to website creation
5	Introduce basic formatting in html	- Read a text and use context to determine why emphasis was used - Write a text with purposeful emphasis used
6-7	Explore image editing for the web using photoshop	- Speak to share their opinions and respond to classmates about images - Write sentences using new content-specific vocabulary to describe how they edited a photo
8-9	Introduce basic css	- Use context clues while reading to define and understand new concepts about CSS
10-11	Explore the concept of separating style from structure by keeping separate html and css files	- Use context clues while reading to define and understand new concepts about CSS - Read and use feedback from peers
12-13	Web design project	- Write content for a website storyboard
14	Add hyperlinks to other websites	- Use context clues while reading to define and understand new concepts about CSS.
15-16	Introduce a variety of page layout styles	- Read online tutorials to learn and implement new CSS skills

17-19	Practice the use of various design aspects	- Provide verbal and written feedback to classmates
20-21	Introduce several different enhancements to website design, including web user interface elements such as menus and navigation bars	- Read online tutorials to learn and implement new CSS skills
22-25	Final project and gallery walk	

Unit 3: Web Design
Instructional Day: 1
Language Objectives

- SWBAT **write** and then **speak** to share their own experiences with the web and their online lives, in a whole class discussion.
- SWBAT **listen** to and **read** along with the video Growing Up Online, and explain the main ideas in their own words.
- SWBAT use sentence frames to **write** a reflection of the video.

Outline of Lesson

- Discussion of Online Experiences (+2 minutes)
- Discussion of parts 1-3 *Growing Up Online* from the PBS series *Frontline* (+5 minutes)
- Journal entry reflecting on the *Growing Up Online*

Language Strategies

Discussion of Online Experiences

- Give the students the main discussion questions all at once, with some time to write answers that they can share out.
- Sentence frames for their answers and to respond to each other in the discussion
- Vocabulary: “How often” (Provide examples: once per day, once per week, etc)
- Vocabulary: “Application” = App

Discussions of Growing Up Online

- Turn on Closed Captions on the video so students can read and listen if they need to
- Provide a worksheet for students to fill in blanks that highlight the important information from the video
- Plan to pause the video every 10 minutes or so to have students summarize what is going on up to that point.
- Vocabulary: “Growing Up Online” = Discuss what that means before starting the video

Journal Entry

- Make the reflection question more specific. “Did your thoughts about the internet/web apps change after watching the video?” Explain.
- Sentence frames

Resources/Sentence Frames

Key Vocabulary

- “How often” = Give examples of how to answer this question
- “Application” = App
- “Growing Up Online” = Phrase that means kids are growing up with access to the internet from a very young age.

Sentence/Question Frames

- I do something _____ times per _____ (Answer to “how often?”)
- My thoughts changed from…. To….
- My thoughts changed/did not change because...

Unit 3: Web Design
Instructional Day: 2
Language Objectives

- SWBAT **speak** to respond/summarize to each other's ideas in a whole class discussion
- SWBAT **read** and use context clues to understand the different parts of a website.
- SWBAT **write** feedback for their classmates about their storyboards

Outline of Lesson

- Review Journal from previous day
- Brainstorm ideas for a website (+1 minute)
- Create a storyboard for a web page (+6-7 minutes)
- Gallery walk (+2 minutes)

Language Strategies

Review Journal from previous day

- Choose 1-2 students ahead of time to share their journals, and 1-2 students who will listen and respond to their journals.
- Provide sentence frames for students to respond with.

Brainstorm ideas for a website

- Vocabulary: Website

Create a storyboard for a website

- Additional Content: Students will need an example storyboard of a website they are familiar with to help demonstrate the new vocabulary. Show them the actual website, then your storyboard, which has labels showing the different vocabulary.
- Vocabulary: Storyboard, Outline, Content, Navigation, Design Elements

Gallery Walk

- Provide sentence frames specifically about websites/storyboards for constructive feedback
- Keep a list of relevant content-specific vocabulary displayed somewhere in the room that is easy to see for spelling.
- Provide extra time for students to think and write their feedback

Resources/Sentence Frames

Key Vocabulary

- "Website" = The places you go when you are on the internet (Show examples)
- "Outline" = Just like in English, a quick summary of all the parts of your idea
- "Content, Navigation, Design Elements" = Use your example storyboard to show the meanings of these words

- “Constructive Feedback” = Specific feedback that the person can use to make a change to their idea.

Sentence/Question Frames

- I heard you say that...
- I really liked… One way to make it better is...

Unit 3: Web Design
Instructional Day: 3-4
Language Objectives

- SWBAT **read** feedback from their classmates to edit their storyboards
- SWBAT **speak** and **listen** to/for instructions from their classmates to do pair programming
- SWBAT use context clues to understand new content-specific vocabulary and reproduce their own examples

Outline of Lesson

- Revise a storyboard (+3 minutes)
- Demo of an HTML editor (+2 minutes)
- HTML page with a title and body
- HTML page with headings and paragraphs
- HTML page with line breaks and horizontal lines (+2 minutes)

Language Strategies

Revise a storyboard

- Provide sentence frames for students to ask each other for clarification about the feedback

Demo of an HTML Editor

- Vocabulary: Tag, Editor, Browser,

HTML page with a title and body

- Sentence frames for pair programming instructions to their partner
- Vocabulary: Homepage

HTML page with headings and paragraphs

- Provide a sample prompt for students' paragraphs, sentence frame if needed.

HTML page with line breaks and horizontal lines

- Provide an example of what a line break is and a horizontal line is to help define these.
- Vocabulary: Line break, horizontal line

Resources/Sentence Frames

Key Vocabulary

- Tag = A label used in HTML to tell the computer what each piece of code is supposed to do
- Editor = The program that you use to create HTML code
- Browser = The thing you use to get on the internet (Chrome, Safari, IE)

- Homepage = The main page of a website
- Line break = When text is sent to the line below instead of all in one row
- Horizontal = Goes left to right, not up and down.

Sentence/Question Frames

- What did you mean when you said…
- First, type…. Next type…
- Click on...

Unit 3: Web Design
Instructional Day: 5
Language Objectives

- SWBAT **read** a text and use context clues to determine why emphasized text is being used
- SWBAT **write** text, strategically emphasizing specific parts

Outline of Lesson

- Review of HTML tags learned to date (+5 minutes)
- HTML pages that include emphasized text (+5 minutes)
- Journal Entry

Language Strategies

Review of HTML tags learned to date

- I have, you have with HTML tags

HTML pages that include emphasized text

- Provide a text/website that has examples of emphasized text.
- Ask students to determine the meaning trying to be communicated with the emphasis
- Have students write ideas of what things they would like to emphasize in their websites.
- Vocabulary: Emphasize/Emphasis, Bold, Italics

Journal Entry

- Sentence frame

Resources/Sentence Frames

Key Vocabulary

- Emphasize = To make something more noticeable
- Bold = When text is thicker and darker than normal
- Italics = When text is slanted and thinner

Sentence/Question Frames

- One thing is…. Another thing is...

Unit 3: Web Design
Instructional Day: 6-7
Language Objectives

- SWBAT **speak** to share their opinions on images and respond to their classmates ideas
- SWBAT **write** sentences using new content-specific vocabulary to describe how they edited an image

Outline of Lesson

- Discussion of the various web images formats (+3 minutes)
- Resizing and cropping images (+4 minutes)
- Selecting and cropping an image
- HTML pages that include images (+2 minutes)

Language Strategies

Discussion of the various web image formats

- Display discussion questions for all students to read and write a response to before discussing
- Provide sentence frames for sharing ideas
- Provide sentence frames for responding to each other's ideas
- Vocabulary: Resolution

Resizing and cropping images

- Ask students to write a sentence or two describe their image and how they edited it. Include the new vocabulary: Crop, Resize, Resolution.
- Vocabulary: Crop, Resize

HTML pages that include images

- Provide a visual example of an image to showcase what width and height are
- Vocabulary: Width, Height

Resources/Sentence Frames

Key Vocabulary

- Resolution = How clear/detailed a picture is
- Pixel = The smallest piece that makes up an image
- Crop = To cut out just a certain piece of the image to keep
- Resize = Change the size
- Width = How big the image is in the horizontal/x-direction, measured in pixels or inches
- Height = How big the image is in the vertical/y-direction, measured in pixels or inches

Sentence/Question Frames

- In my opinion…
- In addition to what ____ said, I think…

Unit 3: Web Design
Instructional Day: 8-9
Language Objectives

- SWBAT use context clues and labelled examples while **reading** to define and then apply new vocabulary about CSS

Outline of Lesson

- Overview of CSS (+4 minutes)
- Sample of inline styles
- A web page that uses inline styles (+2 minutes)
- Sample internal style sheet (+2 minutes)
- Review and revise home page storyboard (+3 minutes)
- Create an internal style sheet for home page
- Gallery walk

Language Strategies

Overview of CSS

- Be sure to use the table provided and a visual representation when defining Selector and Declaration
- Vocabulary: Cascading Style Sheets, Selector, Declaration, Formatting,

Sample of inline styles

- Vocabulary: Inline

A web page that uses inline styles

- Provide a model of inline styles with the Selector and Declaration labelled to help students define those terms.

Sample internal style sheet

- Provide a model of the Internal Style Sheet with the selector and declaration labelled to help define the terms
- Vocabulary: Internal

Review and revise home page storyboard

- The information that the curriculum suggests that you “point out” should be provided visually in additional to telling this to the students. A powerpoint slide will be sufficient.
- Vocabulary: Decomposition

Create an internal style sheet for home page

- No resources needed

Gallery walk

- Sentence frames for providing feedback

Resources/Sentence Frames

Key Vocabulary

- Selector: the specific HTML tag you are focusing on
- Declaration: The thing you are going to change, and how you will change it
- Formatting: The specific way something is setup to look
- Inline: Within the same line as the HTML code
- Internal: Inside
- Decomposition: To break down into parts

Sentence/Question Frames

- One thing I like about your website is…
- One thing you could do to improve your website is…

Unit 3: Web Design
Instructional Day: 10-11
Language Objectives

- SWBAT use context clues and examples while **reading** to define and understand new vocabulary about CSS
- SWBAT **read** and apply feedback from peers to adjust their websites.

Outline of Lesson

- Complete the gallery walk (+2 minutes)
- Journal entry
- Review of html/css concepts
- Creation of an external style sheet (+5 minutes)
- Add an external style sheet to the home page (+3-5 minutes)
- Share projects

Language Strategies

Complete the gallery walk

- Sentence frames from the previous lesson
- Provide a little extra time for students to read their feedback and process it

Journal Entry

- Sentence frames to start journal entry. Keep a list of the relevant new vocabulary displayed somewhere where the students can access it (Formatting, selectors, declaration, etc)

Review of HTML/CSS concepts

- No extra resources needed

Creation of an external style sheet

- Use a labelled model of an external style sheet to help define the new vocab.
- Again, the curriculum asks the instructor to “note” some important information. Put this information in a visual form as well as sharing it with them verbally. A powerpoint slide is sufficient for this.
- Vocabulary: External, Reusable

Add an external style sheet to the home page

- If the students have received a lot of feedback from their peers, give them 3-5 minutes to read their feedback with a partner and summarize what their take away from the feedback is to the partner.

Share projects

- No resources needed

Resources/Sentence Frames

Key Vocabulary

- External: Outside. Opposite of internal.
- Reusable: Something you can use more than one time.

Sentence/Question Frames

- Based on the feedback, it sounds like….

Unit 3: Web Design
Instructional Day: 12-13
Language Objectives

- SWBAT **write** phrases or sentences to provide a language component to the design aspects of their website storyboard.

Outline of Lesson

- Storyboard for multi-page website (+8 minutes)
- Create a web page that includes layout styles

Language Strategies

Storyboard for multi-page website

- When listing requirements for the storyboard (Different paper for each page, usability by diverse users), provide a visual of these requirements. Preferably a handout or something they can refer to throughout their design process.
- The varying content of the students' websites will create a large variety of language needs by the student. Have students pair up and share their storyboards before they begin the coding process. Have the partner give feedback about the language, rather than the design.
- Sentence frames for feedback
- Vocabulary: Usability

Create a web page that includes layout styles

- No resources needed

Resources/Sentence Frames

Key Vocabulary

- Usability: How easy/hard it is to use something.

Sentence/Question Frames

- I don't know what you mean by….
- It was very clear when you said ...

Unit 3: Web Design
Instructional Day: 14
Language Objectives

- SWBAT use context clues and examples while **reading** to define and then apply new vocabulary about CSS

Outline of Lesson

- Explanation of how to add hyperlinks (+4 minutes)
- Addition of hyperlinks to webpages

Language Strategies

Explanation of how to add hyperlinks

- Provide a visual explanation along with verbal directions about how to create hyperlinks.
- A labelled model showing what is the Web Address, and Link Text is needed to show the meaning of these new pieces.
- Vocabulary: Hyperlink, web address, link text

Addition of hyperlinks to webpages

- No resources needed

Resources/Sentence Frames

Key Vocabulary

- Hyperlink - A piece of text or image that directs a user to a new webpage
- Web Address - The website's address, as taken from the address bar (show examples)
- Link text - What is physically displayed on the page as part of the hyperlink.

Unit 3: Web Design
Instructional Day: 15-16
Language Objectives

- SWBAT **read** tutorials provided by an online source to learn and implement new CSS tools.

Outline of Lesson

- Explanation of how to create an HTML table (+10 minutes)
- Examples of data that lends itself to being presented in a table (+2 minutes)
- Explanation of how to create an HTML ordered and unordered list and how to add styling to list elements (+7 minutes)
- Examples of data that lends itself to being presented in a list (+2 minutes)
- Preliminary css positioning and opacity exercise (+5 minutes)
- Explanation of how to create a menu (+7 minutes)
- Add layout styles to web page

Language Strategies

Note: *This lesson relies heavily on reading online tutorials and resources. It will be challenging for a teacher to adapt this material for the students, so instead, other strategies, such as partner reading, translating and pre-teaching vocabulary will have to suffice. You will probably also need to provide much more time than the ECS curriculum recommends.*

Explanation of how to create an HTML table

- Model for the students how to get information from the w3 schools website (where to look on the page, what parts of the page provide relevant information and what parts are unnecessary)
- Put students into pairs and have them read through the demos/explanations together. One student reads, one summarizes.
- Vocabulary: Row, Column,

Examples of data that lends itself to being presented in a table

- Give students 2-4 minutes to brainstorm ideas before sharing with the class. Record answers somewhere that all students can see.

Explanations of how to create an HTML ordered and unordered list

- Same as above

Examples of data that lends itself to being presented in a list

- Give students 2-4 minutes to brainstorm ideas before sharing with the class. Record answers somewhere that all students can see.

Preliminary CSS positioning and opacity exercise

- Same as above

Explanation of how to create a menu

- Same as above

Add layout styles to web page

- No resources needed

<u>Resources/Sentence Frames</u>

Key Vocabulary

- Row - Horizontal boxes on table
- Column - Vertical boxes on table

Unit 3: Web Design
Instructional Day: 17-19
Language Objectives

- SWBAT provide **verbal** and **written** feedback to classmates about the language and design of their websites
- SWBAT write about a chosen topic to create a website

Outline of Lesson

- Explanation of the project
- Design and creation of a website that links to at least 5 different websites (+5 minutes)
- Gallery walk

Language Strategies

Explanation of the project

- Provide a visual of the requirements (slides, a rubric, a handout)
- Add language requirement to rubric (Writing, sentence complexity, amount of sentences, etc)

Design and creation of a website that links to at least 5 different websites

- Before coding, have students partner up and share the language component of their websites to give feedback to each other on how clear/understandable it is.
- Sentence stems for this feedback

Gallery walk

- Sentence stems for feedback

Resources/Sentence Frames

Sentence/Question Frames

- One thing I did not understand was….
- Can you clarify what you mean by...

Unit 3: Web Design
Instructional Day: 20-21
Language Objectives

- SWBAT **read** tutorials provided by an online source to learn and implement new CSS tools.
- SWBAT **read** written feedback from peers to improve and adapt websites.

Outline of Lesson

- Exploration of a variety of enhancement possibilities (+8-10 minutes)
- Creation of a multi-page website (+5 minutes)
- Share student work

Language Strategies

Exploration of a variety of enhancement possibilities

- Model how to look at the w3schools website and what parts of the page to look at for information.
- Have students work in pairs to look at the w3 schools resources. Have one student read a section and have the partner summarize what they read, then switch roles.
- Vocabulary: Menu, Navigation bar

Creation of a multi-page website

- Put students in pairs and have them read their feedback together, summarizing the meaning of the feedback.

Share student work

- Sentence frames for feedback

Resources/Sentence Frames

Key Vocabulary

- Menu: A list of all the options of where you can go on a website
- Navigation bar - The part of the website that shows what other pages in the website you can go to.

Sentence/Question Frames

- From the feedback ,it sounds like you're saying...

Unit 3: Web Design
Instructional Day: 22-25
Language Objectives

- SWBAT **read** to understand a problem/situation they will address
- SWBAT **write** content about a chosen topic to create a website

Outline of Lesson

- Explanation of final project
- Final project
- Gallery walk

Language Strategies

Explanation of final project

- You may choose to reduce the number of options on the final project to help reduce the language support needed for the students. I recommend giving choices that do NOT require research. The additional skill of researching a potentially complex topic online may take away from their expression of their newly acquired skills in HTML and CSS.
- Add language to the rubric for grading
- Vocabulary: Ethical Dilemma,

Final project

- Again, have students assigned with a partner that they can demonstrate the language used in the website to see if it makes sense and is understandable.

Gallery walk

- Sentence frames for feedback

Resources/Sentence Frames

Key Vocabulary

- Ethical Dilemma - An issue of morality where there are 2 different options and you must use your judgment to evaluate what is right and what is wrong.

Sentence/Question Frames

-

Unit 4: Introduction to Programming

Unit 4: Introduction to Programming

Topic Description & Objectives

Language Skills: What can ***students*** do?

- Read instructions and peer feedback to move forward with the task
- Speak using content-specific vocabulary to:
    - Give instructions to a partner in pair programming
    - Describe the process used and the solution to a problem
    - Describe new programming content verbally before putting it into code
    - Give feedback to classmates
- Write to explain solutions and summarize problems
- Listen to instructions from partners in pair programming.

Language Strategies: What can ***teachers*** do to support learning?

- Pre-teach key vocabulary and phrases
- Prompt students with question frames, feedback frames and sentence starters
- Add images and multimedia for UDL
- Modify text (as needed)
    - *Format*: **bold**, underline, *italic*
    - *Language*: definitions, simplified
- Assess language objectives on rubrics
- Ensure consistent exposure to supports

Language Objectives:

Receptive (Listening, Reading)

1	***Apply listening and reading skills to*** demonstrate understanding of new concepts by breaking down into components, categorizing, and prioritizing information.

Expressive (Speaking, Writing)

2	***Apply speaking and writing skills to*** summarize, solve a problem, and explain rationale for choosing problem solving strategy.

Unit 4: Introduction to Programming

Daily Overview Chart

Day	Topic	Language Skill
1	Introduce Scratch programming language, including the basic terms utilized in the language.	- Speak to give instructions to partner - Read to understand basic instructions
2-3	Practice using the basic features of Scratch in the context of creating a simple program.	- Speak to give instructions to partner - Read to understand basic instructions and complete simple Scratch project.
4	Create a dialogue between two sprites.	- Write and orally present a dialogue - Listen and apply partner's ideas
5-6	Introduce the methods of moving sprites in Scratch.	- Speak and listen to pair program - Read basic instructions on blocks in Scratch
7-8	Practice the concept of event driven programming through the creation of the alphabet game.	- Read blocks to understand cause and effect - Speak about cause and effect
9	Introduce the concept of broadcasting via role play.	- Write to summarize - Read basic instructions in block coding
10-13	Write Scratch stories and present them to the class. Peer reviews are conducted.	- Read to follow instructions - Speak to analyze a Scratch story
14	Introduce the concept of the variable.	- Speak to explain the concept of iteration
15	Introduce the concept of conditionals.	- Read to apply "if...then" conditions - Write at least one "if...then" statement
16-17	Introduce And, Or, and randomness.	- Speak using "if...then…" conditionals to share solutions
18	Apply knowledge of conditionals to develop a Rock Paper Scissors program in Scratch.	- Speak using "if...then…" conditionals to discuss Rock Paper Scissors activity - Write to describe process
19	Build on previous programming concepts to create a timer.	- Speak to solve a problem and explain rationale for solution - Speak to give feedback

20-23	Create a timing game in Scratch and present it to the class. Conduct peer reviews.	- Speak to solve a problem and explain rationale for solution - Speak to give feedback
24	Investigate two types of games that may provide ideas for the final project.	- Read to break down and follow instructions - Read to analyze basic programming commands
25	Explain final project and rubric for the final project.	- Read to break down and follow instructions to choose a final project - Speak to ask questions
26-28	Work on final projects. Conduct peer reviews.	- Speak and write to analyze process and accuracy of project and provide peer feedback - Read to understand feedback
29	Complete final projects.	- Read to understand and apply peer and teacher feedback to project - Speak to practice presentation
30	Presentations of final projects.	- Listen to demonstrate understanding of new concepts - Speak and write to explain how the student approached the problem and defend rationale for choosing problem solving strategy

Unit 4: Introduction to Programming
Instructional Day: 1

Language Objectives

- SWBAT **speak** to elicit information when using sentence frames and question stems
- SWBAT **speak** to give instructions when serving as "navigator" in pairs
- SWBAT **read** to understand basic Scratch programming instructions

Outline of Lesson

- Journal Entry
- TPE (Think - Puzzle - Explore) chart about programming/Scratch
- Investigate features of Scratch (+2 minutes)

Language Strategies

Journal Entry

- Discussion: Question stems

TPE (Think - Puzzle - Explore) chart about programming/Scratch

- Sentence frames

Investigate features of Scratch

- **Key vocabulary:** Drag and drop (= move something to a different part of the screen with your mouse); block (noun = an instruction)
- **Rubric**: Add "language" category for ELLs

Resources

Question Stems

- What makes you say that?

Sentence Frames

- I know…
- I want to know...

Rubric

- ***Language***: Student listen to and use content-related words (like click and directions) in mini presentation with partner; Student reads to understand basic Scratch programming instructions

Unit 4: Introduction to Programming
Instructional Day: 2-3

Language Objectives

- SWBAT **speak** to give precise instructions to partner when pair coding.
- SWBAT **read** to understand basic Scratch instructions.

Outline of Lesson

- Journal Entry
- Class discussion of journal entry
- Name programs

Language Strategies

Journal Entry

- *No additional supports needed.*

Class discussion of journal entry

- No additional supports needed

Name programs

- *No additional supports needed.*

Resources

Sentence Frames

- In my experience…

Unit 4: Introduction to Programming
Instructional Day: 4

Language Objectives

- SWBAT **speak** with 85% pronunciation accuracy and inflect when appropriate (question, exclamation, etc.)
- SWBAT **write** to create a clear, comprehensible, and basic dialogue with one unifying topic or theme
- SWBAT **listen** to understand instructions and ideas from partner

Outline of Lesson

- Gallery walk of name projects
- Develop dialogue (+7-8 minutes)
- Student presentations

Language Strategies

Gallery walk of name projects

- Sentence frames

Develop dialogue

- **Key vocabulary**: dialogue (= a written conversation); "when green flag clicked" (= when you click on the green flag; "clicked" past participle of "click)
- **Dialogue Rubric:** add "language" category
- **Draft dialogue on paper** prior to adding to Scratch

Student presentations

- See "**Dialogue Rubric"**

Resources

Sentence Frames

- In my opinion…
- I noticed…

Dialogue Rubric

- ***Language***: Dialogue is clear and comprehensible in English; Student pronounces 85% of words correctly in presentation.

Unit 4: Introduction to Programming
Instructional Day: 5-6

Language Objectives

- SWBAT **speak** to pair program Sprites using content words and programming language
- SWBAT **read** basic instructions on blocks in Scratch to problem solve and complete a task

Outline of Lesson

- Journal Entry
- Moving.sb
- Discussion of responses to questions
- Baseball.sb

Language Strategies

NOTE: *New concepts and content words are introduced to all students regardless of ELL level in the main ECS curriculum. ELLs may need support with some words and/or concepts. It is important to reinforce new content words with ELLs to ensure they acquire the meaning and demonstrate accurate usage.*

Journal Entry

- **Key vocabulary:** would (conditional, because example is not necessarily real)
- Sentence stems

moving.sb

- **Key vocabulary**: basically (= essentially, in simple terms); run the bases (= move from one base to the next); circle (verb = to move in a circle)

Discussion of responses to questions

- **Key vocabulary**: reinitialize (= start again)

baseball.sb

- No resources needed

Resources

Sentence Stems

- I would create a graph for a line by…

Unit 4: Introduction to Programming
Instructional Day: 7-8

Language Objectives

- SWBAT **read** to understand the relationships between cause and effect in programming
- SWBAT **speak** about cause and effect

Outline of Lesson

- Presentation of solution for baseball extension
- Journal Entry
- Description of Alphabet Learning Game (+3 minutes)
- Alphabet Learning Game (+3 minutes)
- Student presentations

Language Strategies

Presentation of solution for baseball extension

- Sentence frames

Journal Entry

- **Key vocabulary**: "surfing the web" (= spending time on the internet; searching for information online); user events (= actions [like clicking, typing] the person who uses the computer does)

Description of Alphabet Learning Game

- **Key vocabulary**: when clicked/pressed (= after the user does this action)
- Cause and Effect
- Alphabet Sample Rubric: add "language" category

Alphabet Learning Game

- *Teacher can clarify instructions or check for understanding with students.*

Student presentations

- Cause and Effect sentence frames

Resources

Sentence Frames

- In order to find a solution I first… Next… Then…

Cause and Effect

- Cause (present) → effect (present)
- ***If/when*** (cause) → ***then*** (effect)
- *Example 1:* When [the] green flag **[is] clicked** (*present*) → the Sprite **moves** (*present*).

- *Example 2**: If*** [the] Sprite **[is] clicked** (*present*) → ***then*** the Sprite **jumps** (*present*).

Alphabet Sample Rubric

- Language: Student uses content language when speaking during pair programming with partner

Unit 4: Introduction to Programming
Instructional Day: 9

Language Objectives

- SWBAT **write** to summarize broadcasting process using content words and sentence frames.
- SWBAT **read** basic instructions in block coding to pair program Sprite in Scratch.

Outline of Lesson

- Journal Entry (+2 minutes)
- Discussion of journal entry
- Role Play
- Scratch Summer Story

Language Strategies

Journal Entry

- "Broadcast" images

Discussion of journal entry

- Sentence frames (1)

Role Play

- Key vocabulary: set the stage (= create a scene or context for the performance)
- Sentence frames (2)
- Scratch Broadcast Role Play

Scratch Summer Story

- Summer Story Project
- Summer Story Project Sample Rubric

Resources

"Broadcast" Images

Sentence Frames

- **(1) Even if/though** this is happening... **it does/ does not mean that** that is happening.
- (2) **Instead of** … we might/**could/would/should** …

Scratch Broadcast Role Play

- **Key vocabulary**: broken down (= put or separated into categories); when X clicked (...this happens); to pose (= model without moving);

Summer Story Project

- **Key vocabulary**: feel free to (= do it if you want to)

Summer Story Project RUBRIC

- ***Add "language" category:*** Student uses content words (broadcast) and sentence frames (even if...instead of…) to answer questions and summarize process.

Unit 4: Introduction to Programming
Instructional Day: 10-13

Language Objectives

- SWBAT **read** to follow instructions to create a Scratch story
- SWBAT **speak** to analyze features of and suggest how to improve features of projects

Outline of Lesson

- Introduction of project
- Journal Entry
- Review of brainstorming
- Scratch story
- Scratch story project
- Peer review and discussion
- Completion of Scratch story project
- Presentation of stories

Language Strategies

Introduction of project

- Story Project Sample Rubric

Journal Entry

- *No additional supports needed.*

Review of brainstorming

- Feedback Frames

Scratch story

- *No additional supports needed.*

Scratch story project

- *No additional supports needed.*

Peer review and discussion

- Peer Review Sheet

Completion of Scratch story project

- *No additional supports needed.*

Presentation of stories

- This **worked/didn't work** well because…

Resources

Story Project Sample Rubric

- Add “language” category: Student’s conversation is logical; Grammar is mostly accurate; Spelling is mostly accurate

Feedback Frames

- What makes you say that?
- I suggest… because…
- What if…?

Peer Review Sheet

- In “Notes”: need… ; add… ; change… ;
- In “Additional Feedback”: Overall… What if…?

Unit 4: Introduction to Programming
Instructional Day: 14

Language Objectives

- SWBAT **speak** to explain the concept of iteration using Cause and Effect sentence frames.

Outline of Lesson

- Finish Presentations
- Journal Entry
- Make Variable Example
- Enhance Variable Example

Language Strategies

Finish Presentations

- *See Instructional Days 10-13.*

Journal Entry

- Provide translation for the word “variable” via Google Translate
- Haitian Creole: varyab; French: variable; Spanish; Arabic: متغير; Chinese: 变量; Swahili: Kutofautiana

Make Variable Example

- Cause and Effect

Enhance Variable Example

- *No additional resources needed.*

Resources

Cause and Effect

- **When** this happens...**then** this happens (present tense).
- **If**...**then…** (present tense)

Unit 4: Introduction to Programming
Instructional Day: 15

Language Objectives

- SWBAT **read** to apply "if...then" conditions to create a program
- SWBAT **write** at least one "if...then" statement to send a message about the nutrition program

Outline of Lesson

- Journal Entry
- Discuss conditional
- Age program
- Age solutions
- Enhance variable example

Language Strategies

Journal Entry

- **Key vocabulary:** comes to mind (= do you think of)

Discuss conditional

- Solicit additional examples from students. Point out that it is in the **present** tense.

Age program

- *No additional supports needed.*

Age solutions (5 minutes)

- Remind students that format (punctuation and spacing) are very important in ECS, just like in ELA class.
- *No additional supports needed.*

Enhance variable example

- Include "if...then…" statement in message.

Resources

- *No additional supports needed.*

Unit 4: Introduction to Programming
Instructional Day: 16-17

Language Objectives

- SWBAT **speak** using “if...then…” conditionals to share solutions

Outline of Lesson

- Journal Entry
- And/Or discussion
- Grades program
- Random discussion
- Dice

Language Strategies

Journal Entry

- Provide translation for “random” if needed via Google Translate.

And/Or discussion

- *No additional resources needed*

Grades program

- Speaking support: “If… then…”

Random discussion

- **Key vocabulary**: simulations (= a computer model)

Dice

- Teacher to encourage students to use “if...then…”

Resources

- *No additional resources needed.*

Unit 4: Introduction to Programming
Instructional Day: 18

Language Objectives

- SWBAT **speak** using conditional statements to discuss Rock Paper Scissors activity
- SWBAT **write** using ordinal words to explain process to create Rock Paper Scissors project

Outline of Lesson

- Review of Rock Paper Scissors rules
- Rock Paper Scissors discussion
- Rock Paper Scissors project

Language Strategies

Review of Rock Paper Scissors rules

- Students should use "If… then… " when they speak.

Rock Paper Scissors discussion

- *No additional supports needed.*

Rock Paper Scissors project

- When explaining, students should use ordinal words: "First… Next… Then… Finally…"

Resources

- *No additional supports needed.*

Unit 4: Introduction to Programming
Instructional Day: 19

Language Objectives

- SWBAT **speak** to solve a problem and explain rationale for solution
- SWBAT **speak** to give feedback to peers using conditional sentence frames and question guidance

Outline of Lesson

- Review of Rock Paper Scissor solutions
- Creation of a timer
- Review of Timer solutions
- Introduction of Timing Game
- Timing Game theme

Language Strategies

Review of Rock Paper Scissor solutions

- Sentence frames

Creation of a timer

- Sentence frames

Review of Timer solutions

- Sentence frames

Introduction of Timing Game

- Sentence frames
- **Key vocabulary:** time's up (= no more time)
- Timing Game Sample Rubric

Timing Game theme

- *No additional resources needed.*

Resources

Sentence Frames

- To solve this problem I … because …
- If… then…
- Why did you decide to do that?

Timing Game Sample Rubric

- Add the following to "Give the user feedback…": using question and sentence guidance:
    - To solve this problem I… because…

- Why did you decide to do that?
- If… then…
- I suggest… because…

Unit 4: Introduction to Programming
Instructional Day: 20-23

Language Objectives

- SWBAT **speak** to solve a problem and explain rationale for solution
- SWBAT **speak** to give feedback to peers using conditional sentence frames and question guidance

Outline of Lesson

- Timing game
- Peer review and discussion
- Completion of timing game
- Arcade walk

Language Strategies

Timing game

- Sentence frames

Peer review and discussion

- Sentence frames

Completion of timing game

- *No additional resources needed.*

Arcade walk

- Sentence frames

Resources

Sentence Frames

- To solve this problem I … because …
- If… then…
- Why did you decide to do that?
- **X** is complete but **Y** needs additional work **because…**
- This works/doesn't work because…

Unit 4: Introduction to Programming
Instructional Day: 24

Language Objectives

- SWBAT **read** to break down and follow instructions
- SWBAT **read** to analyze basic programming commands in games to inform the creation of their own game

Outline of Lesson

- Monkey game
- Review of answers
- Pinball game

Language Strategies

Monkey game

- Strategic formatting of "Project" document

Review of answers

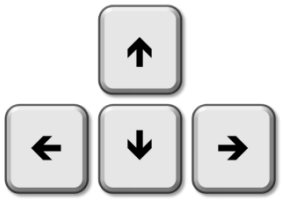
- *No additional resources needed.*

Pinball game

- **Key Vocabulary**: bounce off of (= hit and move away); keep track of (= monitor, follow); checked off (= marked complete)

Resources

Monkey Game Project
Modify the document to include strategic formatting, as below.



1) Play the game by using the **arrow keys**. What **blocks** make the monkey **respond** to the keys?

2) Does the banana **always** appear in the same place?

3) What **blocks** do you think decide what **X** and **Y** the banana should change to?

4) What are the **names** of the **orange** blocks under Variables?

5) What block(s) are used to **change** the score?

Unit 4: Introduction to Programming
Instructional Day: 25

Language Objectives

- SWBAT **read** to break down and follow instructions to choose a final project
- SWBAT **speak** to ask questions to clarify instructions or ask about the process

Outline of Lesson

- Review of responses for Pinball Project
- Introduction of projects
- Final projects

Language Strategies

Review of responses for Pinball Project

- *No additional resources needed.*

Introduction of projects

- Final Project
- Final Project Sample Rubric

Final projects

- Question Stems

Resources

Final Project

- Add images to each section, such as the following:

My Community Project

My Career Project

My Dreams Project

Final Project Sample Rubric

- Add “language” category under “Presentation”: Student uses content words to explain contents of project and how the program works; Student uses “if...then” to explain project.

- Add the following to “Peer Grading”: using question and sentence guidance:
    - To solve this problem I… because…
    - Why did you decide to do that?
    - If… then…
    - I suggest… because…

Question Stems

- “If...then…”
- “What do you mean by…?”

Unit 4: Introduction to Programming
Instructional Day: 26-28

Language Objectives

- SWBAT **speak** and **write** to analyze process and accuracy of project and provide peer feedback
- SWBAT **read** to understand feedback and apply to project

Outline of Lesson

- Work on final project
- Peer review and discussion
- Completion of final project

Language Strategies

Work on final project

- *See "Question Frames" from Instructional Day 25*

Peer review and discussion

- Conversation and sentence starters

Completion of final project

- *No additional resources needed.*

Resources

Conversation and Sentence Starters

- To solve this problem I… because…
- Why did you decide to do that?
- If… then…
- I suggest… because…

Unit 4: Introduction to Programming
Instructional Day: 29

Language Objectives

- SWBAT **read** to understand and apply peer and teacher feedback to project
- SWBAT **speak** to practice presentation

Outline of Lesson

- KWL Chart
- Completion of final projects

Language Strategies

KWL Chart

- *No additional resources needed.*

Completion of final projects

- *No additional resources needed.*

Resources

- *No additional resources needed.*

Unit 4: Introduction to Programming
Instructional Day: 30

Language Objectives

- SWBAT **listen** to demonstrate understanding of new concepts
- SWBAT **speak** and **write** to explain how the student approached the problem and defend rationale for choosing problem solving strategy

Outline of Lesson

- Gallery Walk
- Final Project Presentation

Language Strategies

Gallery Walk

- *No additional resources needed.*

Final Project Presentations

- Peer Review Sheet

Resources

Peer Review Sheet

- If… then…
- I suggest… because…