

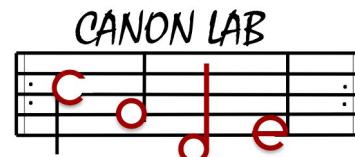


# EXPLORING STUDENT BEHAVIOR USING THE TIPP&SEE LEARNING STRATEGY

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*Computing for ANyONE:  
Designing for equity and inclusion*



# CS/CT instruction must support all learners.





Title

Sprites

Instructions

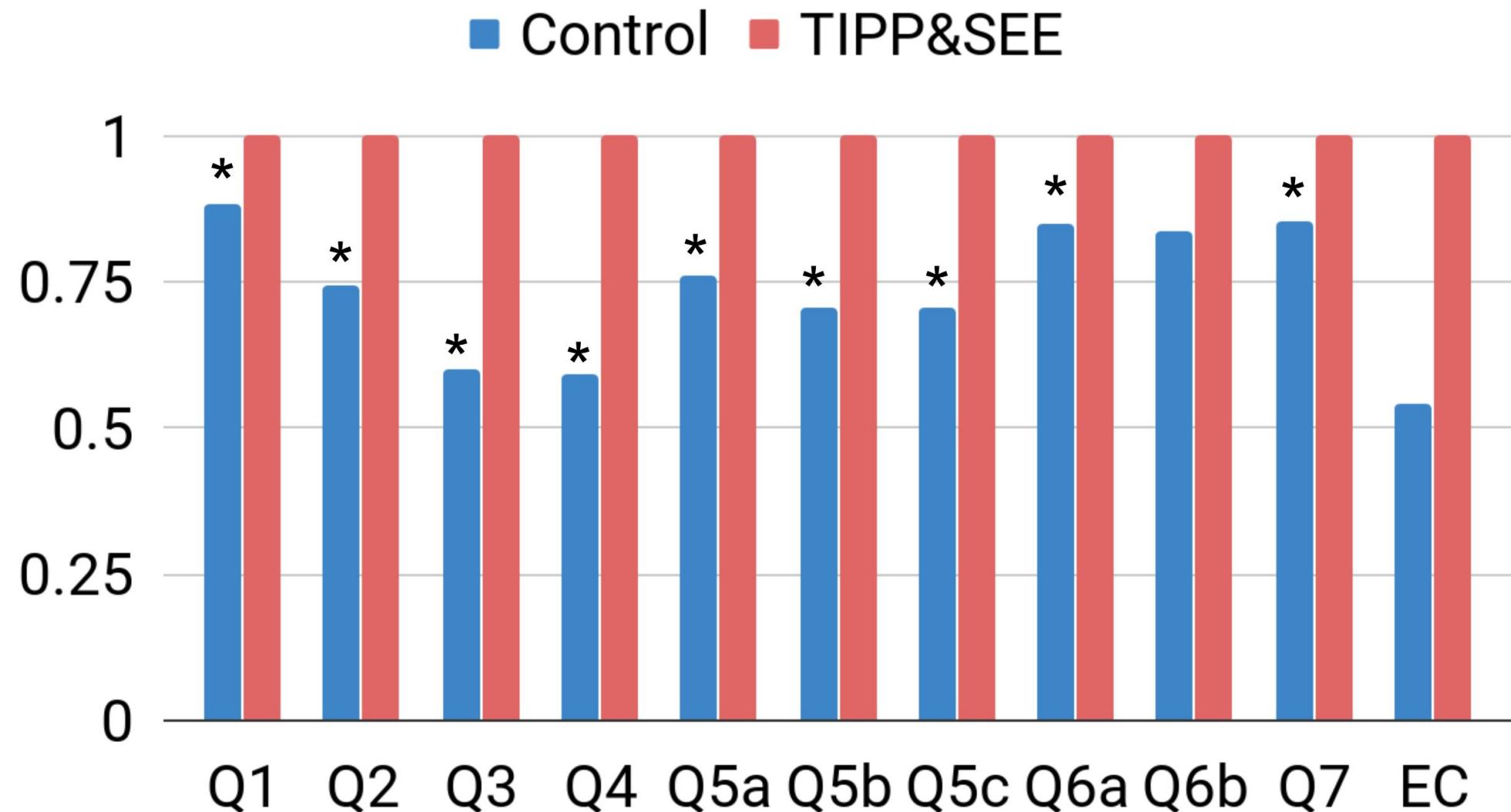
Events

Purpose

Explore

Play

# Stronger Performance from TIPP&SEE Students



# Why did TIPP&SEE students perform better?



Scratch Projects

## EVENTS OFRENDA (continued)

Circle what you learned:

4. Predict which block makes the sprite bigger.

change size by 100 say I am Grandpa John. for 2 seconds change size by -100

5. Predict which block makes the sprite smaller.

change size by 100 say I am Grandpa John. for 2 seconds change size by -100

6. Predict which block makes the sprite talk.

change size by 100 say I am Grandpa John. for 2 seconds change size by -100

Tinker Time! Explore Left sprite's script. Circle the answers

Change the number in the change size by 100 block to 200. Bigger numbers make the sprite BIGGER or SMALLER ?

Change the number in the change size by 100 block to -300. Bigger numbers with a negative sign in front make the sprite BIGGER or SMALLER ?

Your Quest: Put your family members in the Ofrenda!

1. Left Sprite: Change the Costume and Say blocks

2. Middle & Right Sprites:

- o Add scripts using a when this sprite clicked block
- o Select a Costume for each sprite
- o Use the Say blocks to tell your story

Change Costume:

1. For each Sprite, click on the Costumes tab



2. Then click on a Costume

OTHER BLOCKS TO PLAY WITH

think for seconds

when space key pressed

play sound until done

go to x: y:

space  
left arrow  
right arrow  
down arrow  
up arrow

TIPP&SEE Worksheets

# No individual actions explained the results.



## Scratch Projects

### EVENTS OFRENDA (continued)

Circle what you learned:

4. Predict which block makes the sprite bigger.

`change size by +100` `say [I am Grandpa John.] for [2] seconds` `change size by -100`

5. Predict which block makes the sprite smaller.

`change size by +100` `say [I am Grandpa John.] for [2] seconds` `change size by -100`

6. Predict which block makes the sprite talk.

`change size by +100` `say [I am Grandpa John.] for [2] seconds` `change size by -100`

Tinker Time! Explore Left sprite's script. Circle the answers

 Change the number in the `change size by +100` block to 200. Bigger numbers make the sprite **BIGGER or SMALLER ?**

 Change the number in the `change size by -100` block to -300. Bigger numbers with a negative sign in front make the sprite **BIGGER or SMALLER ?**

## TIPP&SEE Worksheets



### Events and Sequence

Scratch Username: \_\_\_\_\_

The scripts below belong to a sprite named Cat:

`when [down arrow key pressed]`  
`say [How are you?] for [2] secs`

`when [green flag clicked]`  
`say [I like mice!]`

`when [red flag clicked]`  
`say [Hello!]`

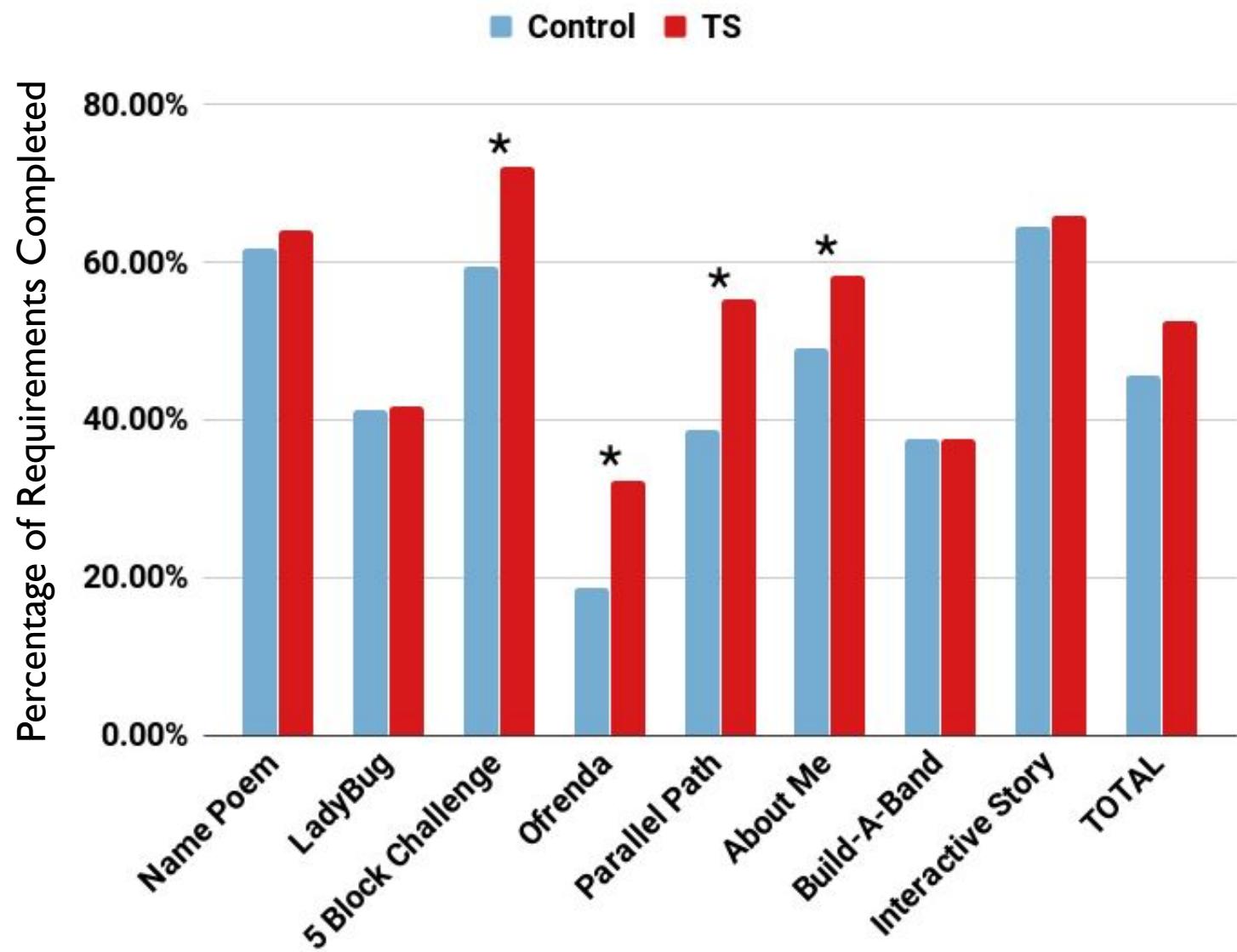
`when [space key pressed]`  
`think [hmm...] for [2] secs`

1. Circle: What should you do to make Cat say "Hello!"?

- A. Press the space key
- B. Click the green flag
- C. Press the down arrow
- D. Click the sprite

## Assessments

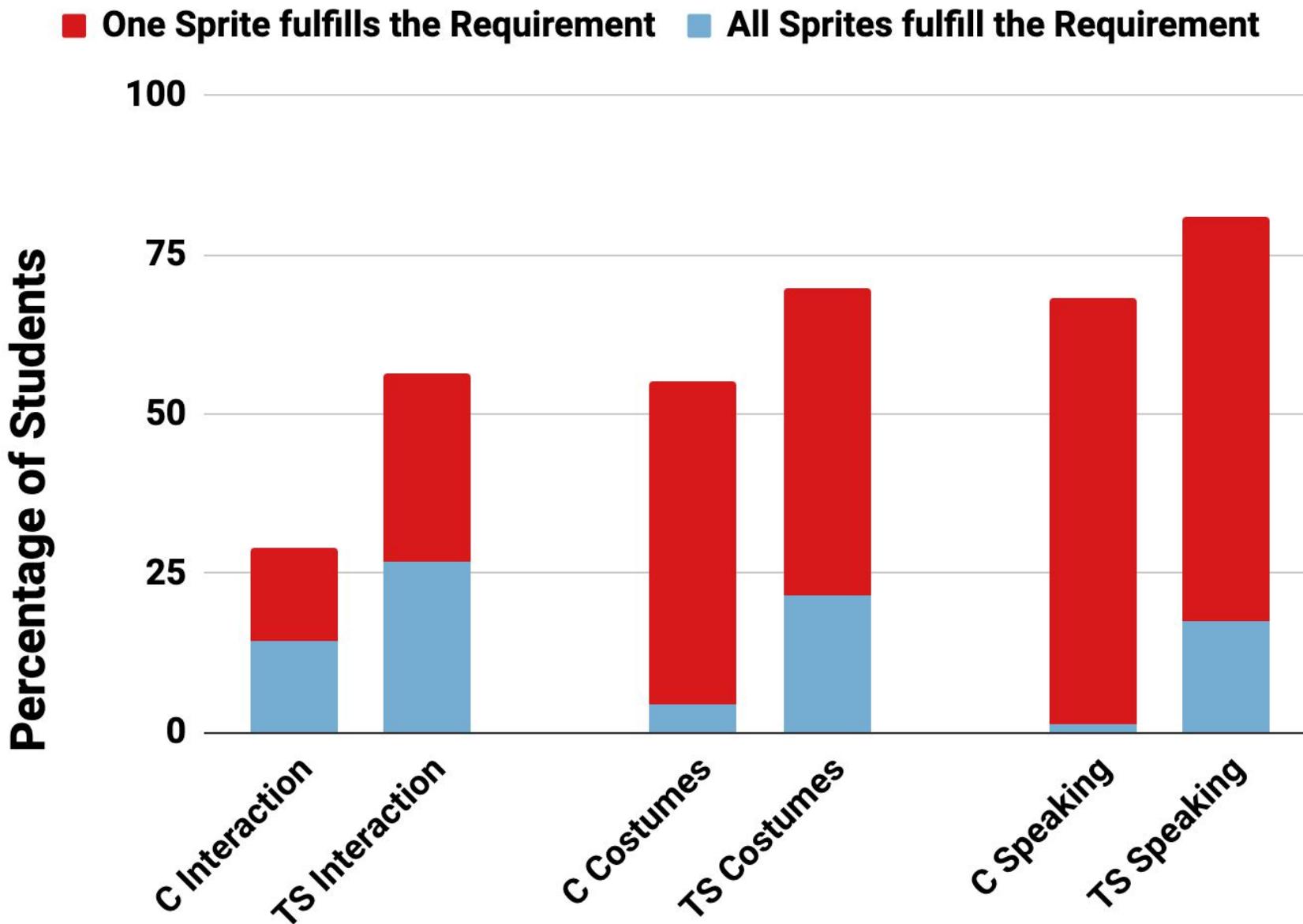
# TIPP&SEE students had equal or higher project completion.



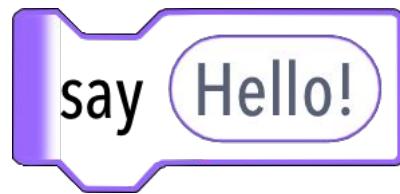
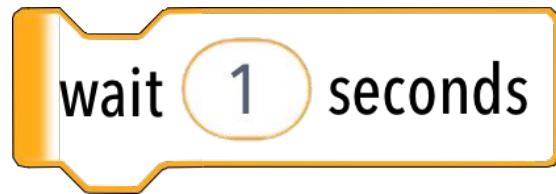
# Events Ofrenda: Make Sprites Interactive



# TIPP&SEE students completed requirements on $\geq 1$ sprites.



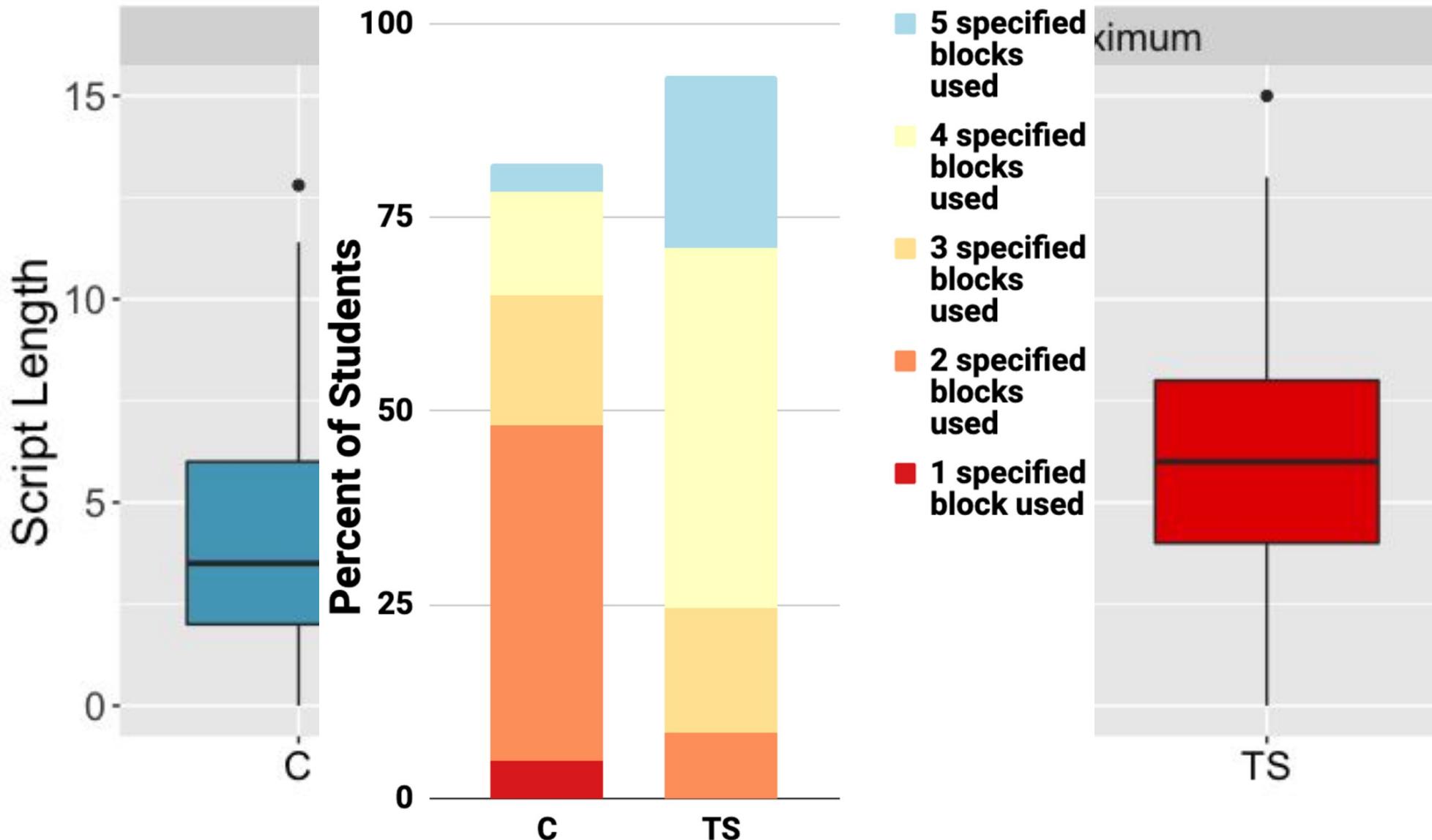
# 5-Block Challenge: New Blocks & Long Scripts



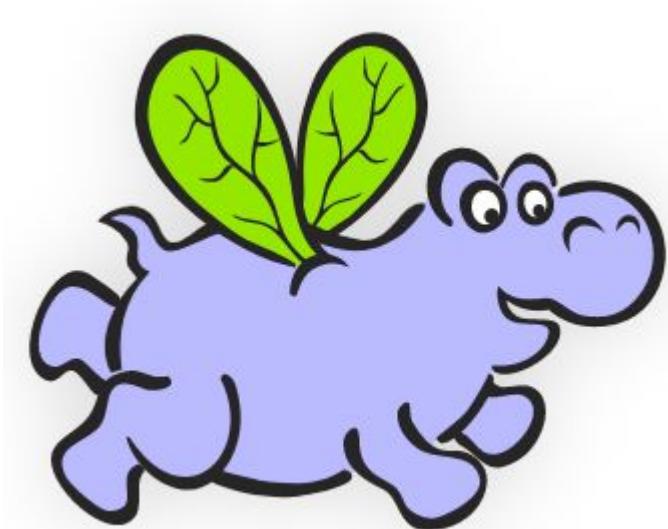
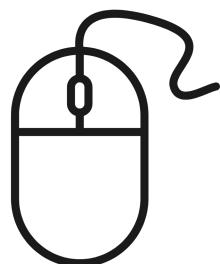
Encourage students to build:

1. with blocks they haven't learned
2. longer scripts with more action blocks

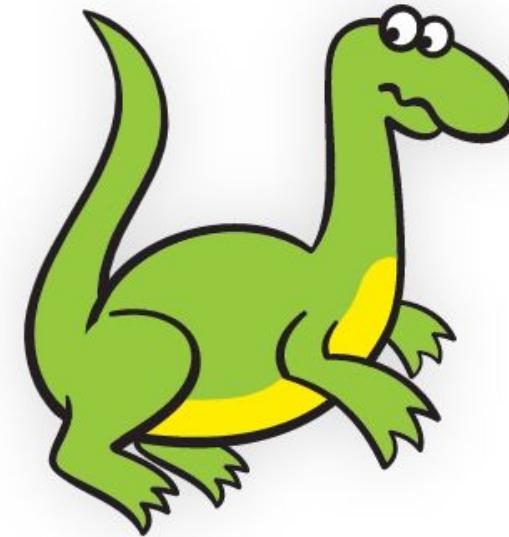
# TIPP&SEE students made longer & more varied scripts.



# Parallel Path: Parallelism within & across Sprites



action 1 || action 2



action 1 || action 2

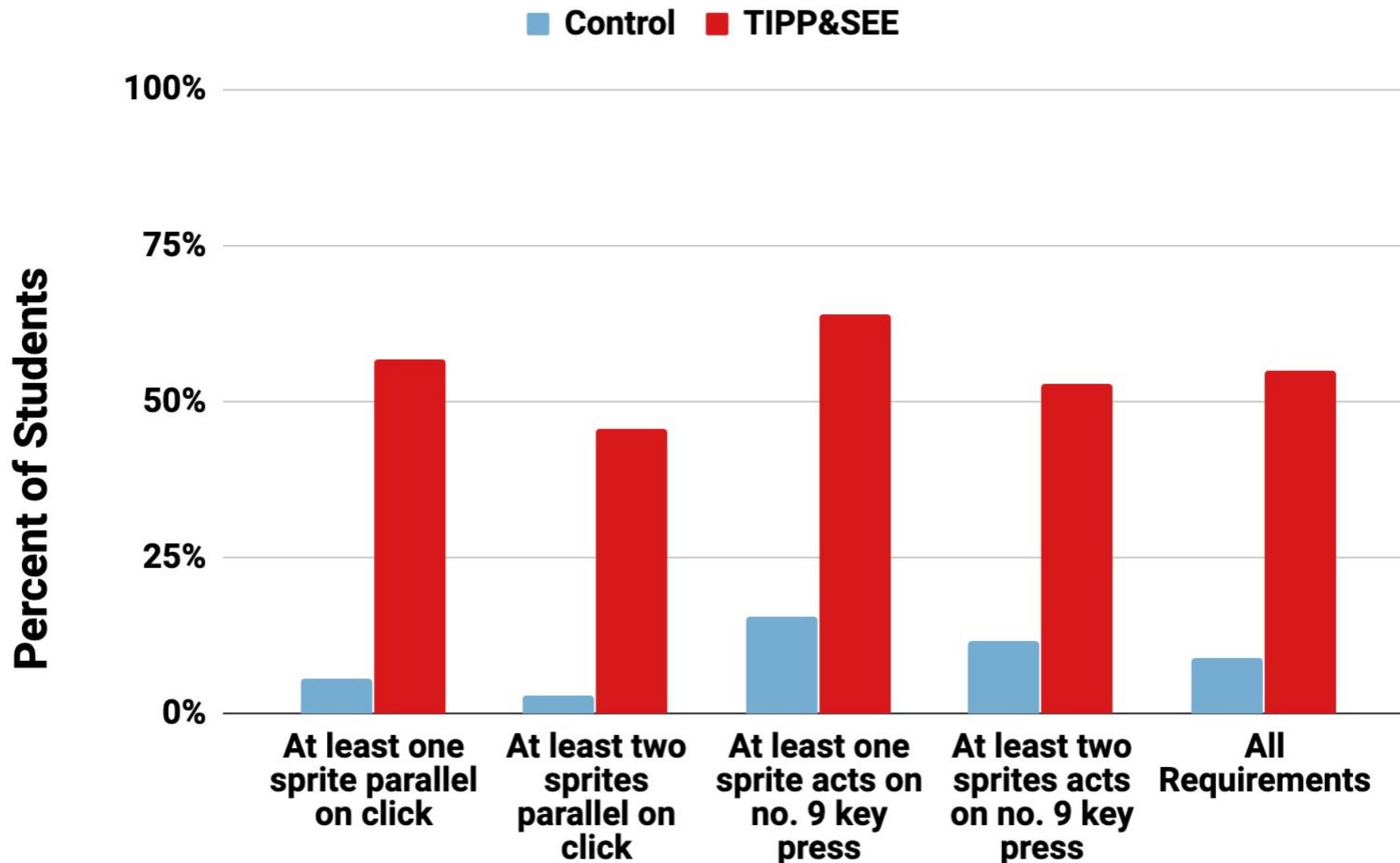


Hippo's action

||

Dino's action

# TIPP&SEE students often completed requirements.



# TIPP&SEE Worksheets: Observe, Predict & Explore Questions

Observe

1. Who talks when I click  ?



Predict

4. Which block makes the sprite bigger?



Explore

Tinker Time! **Explore** Left sprite's script. Circle the answers



Change the number in the

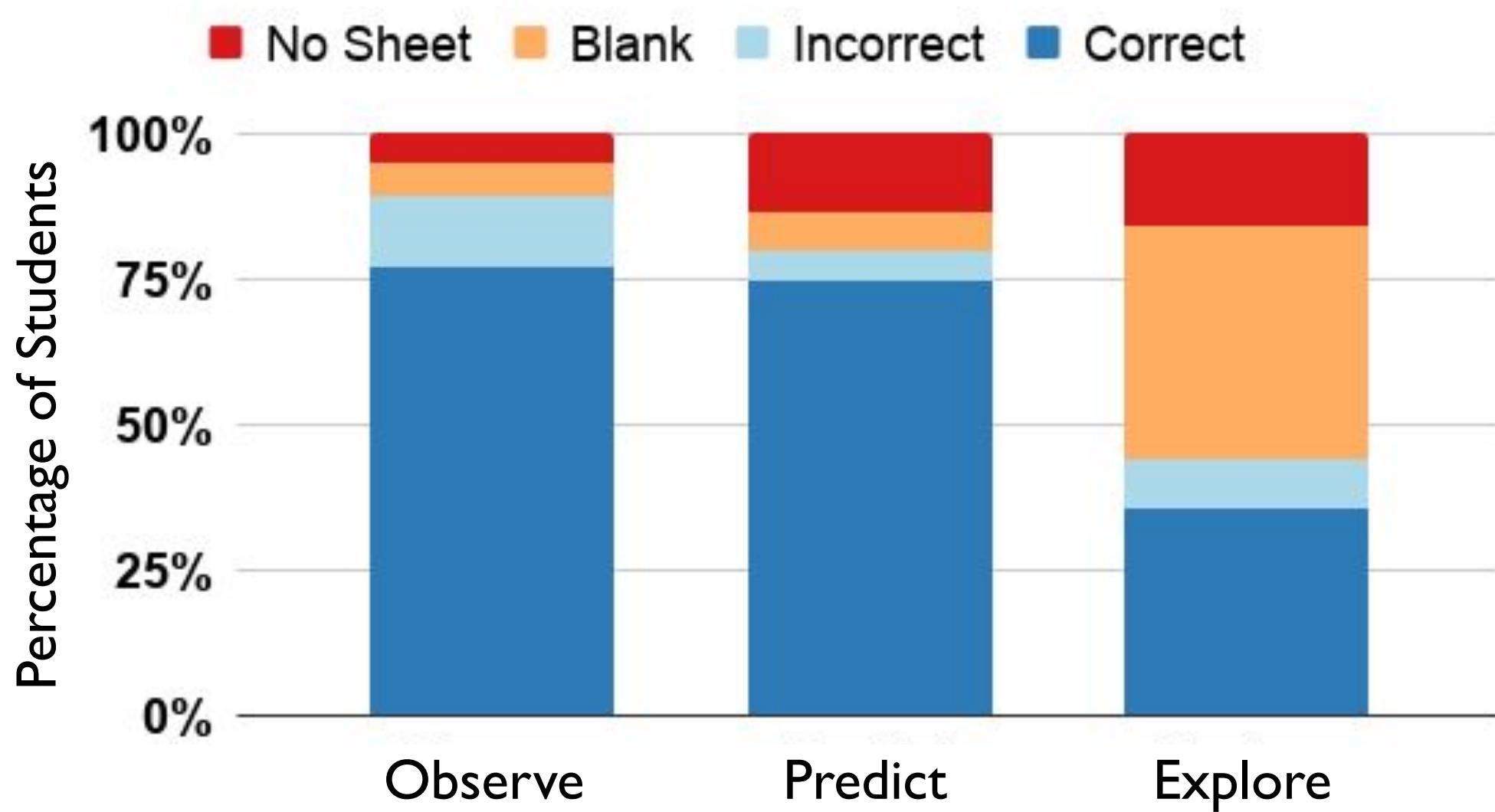


block to 200. Bigger numbers make the sprite

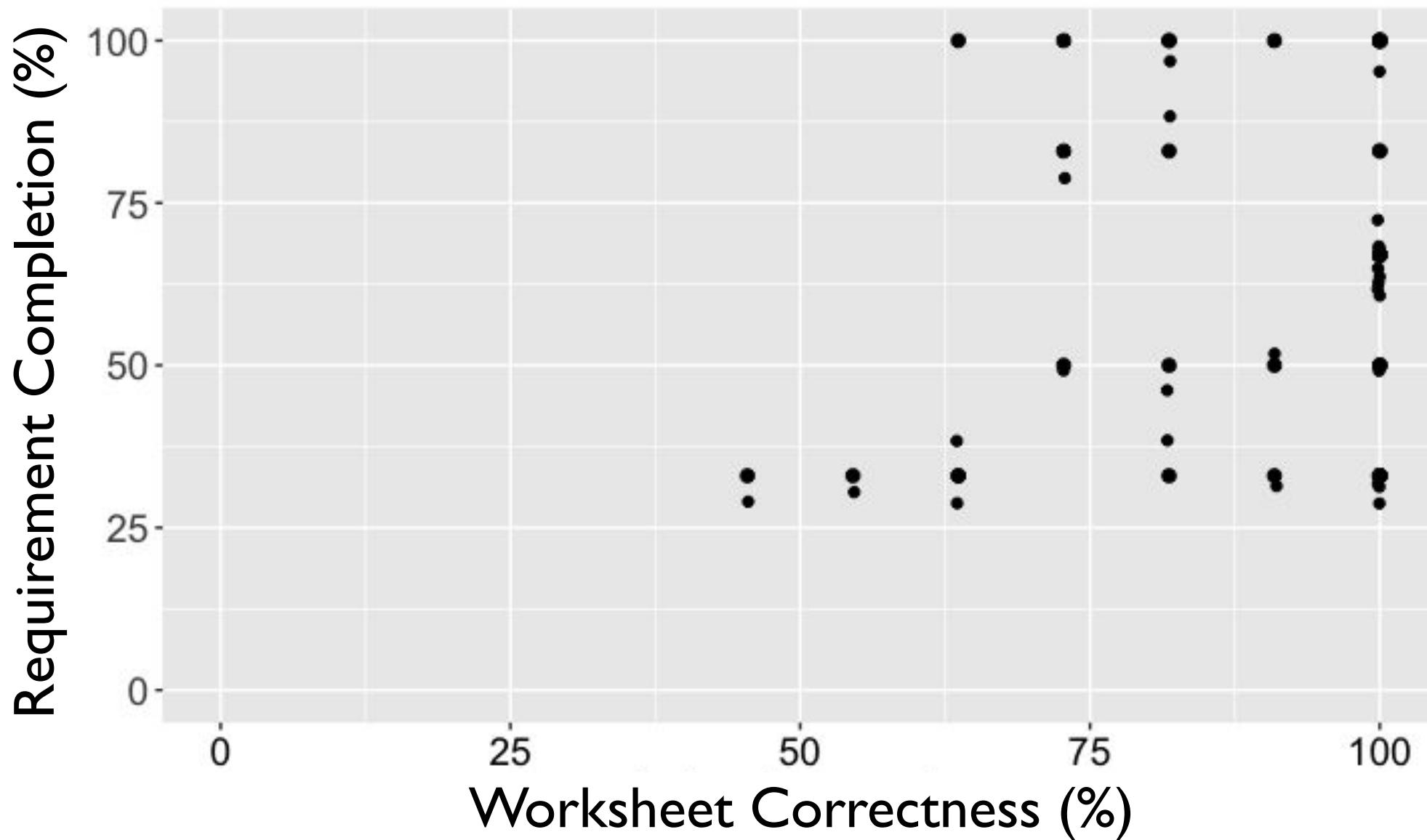
**BIGGER or SMALLER ?**

or

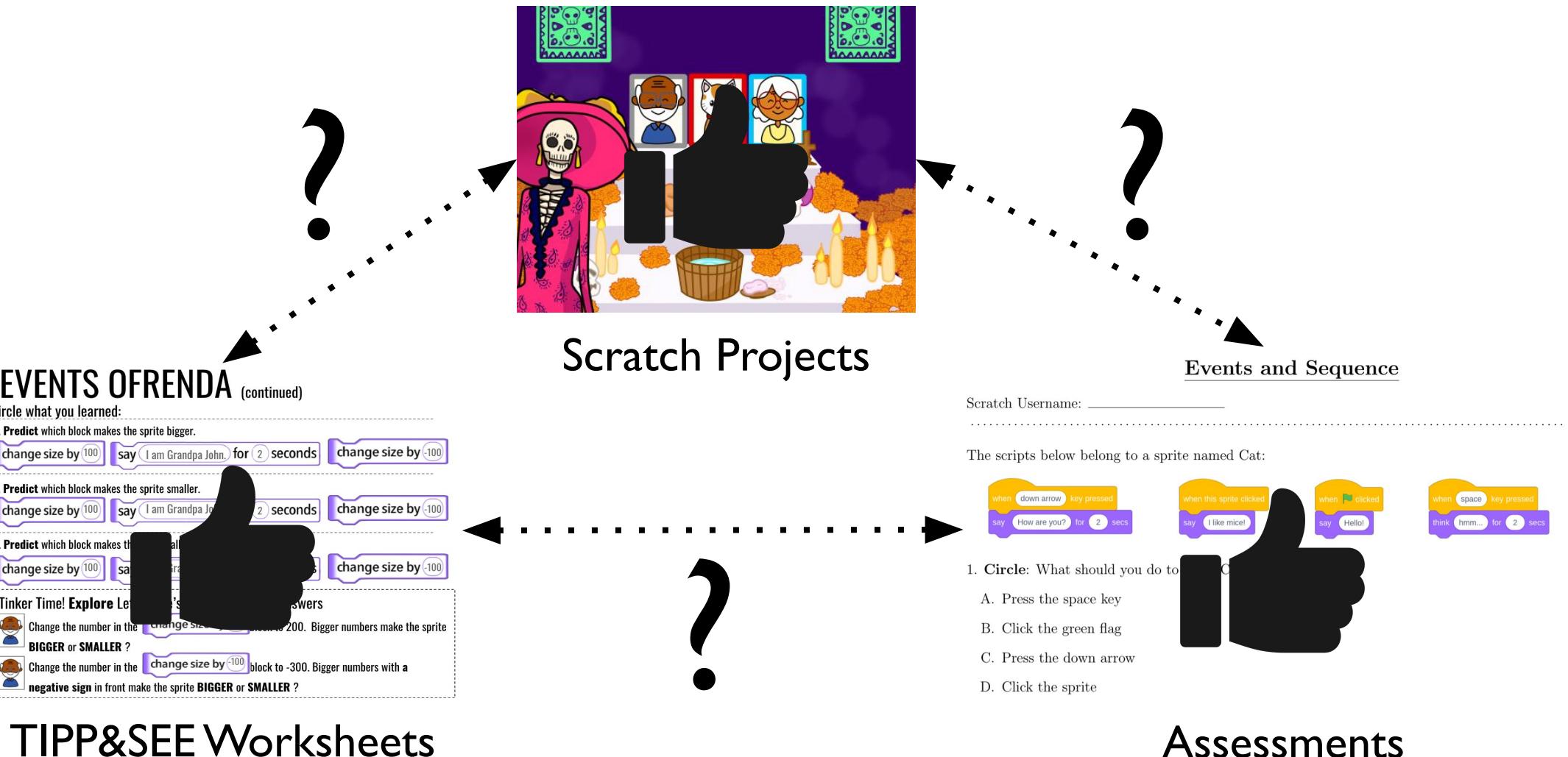
# Most students completed Observe & Predict, not Explore.



# Few Correlations between Projects, Worksheets, & Assessments



# TIPP&SEE's Value May Lie in Metacognition



# Metacognitive Strategies can help support all learners in CS.



# Exploring Student Behavior Using the TIPP&SEE Learning Strategy

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## Key Contributions:

Value of TIPP&SEE may lie in metacognition not directly observable.

Students using TIPP&SEE complete equal or more project requirements.

Most students complete Observe & Predict questions, but not Explore.

Few correlations between Projects, Worksheets, & Assessments.