

Lesson Plan

Teaching Programming to Young Children with Tommy the Turtle – Learn to Code

DESCRIPTION:

Tommy the Turtle is a free App that can be used to introduce young children to the basic logic behind computer programming. The objective of this lesson plan is to teach young students the basics of programming using the Tommy the Turtle – Learn to Code App.

SUBJECT: Computer Science

LESSON: Programming for Beginners

LESSON DESCRIPTION:

1. Students will begin by completing the Tommy the Turtle Tutorial Mode. This is a tutorial that provides the students with hints on how to use commands to make Tommy the Turtle move.
2. Using the Free Play Mode, the teacher will assign students 3 tasks for Tommy the Turtle to complete based on what they learned from the tutorial.
 - Task 1: Make Tommy the Turtle Move Forward, Turn, Grow, and then Move forward.
 - Task 2: Make Tommy the Turtle Move Forward to the end of the screen and then Jump.
 - Task 3: Complete task 2, and have it repeat 3 times.
3. After finishing the free play mode, the teacher will assign students to complete the challenge tasks. Beginner students should be asked to complete the *Tommy Moves* and *Tommy Does It Again* challenge levels found under Challenges. For more advanced students, the teacher may have them complete all 4 of the available challenge levels.
4. Finally, the students will each come up with a task for Tommy the Turtle to complete. Afterwards, they will share their tasks with a partner and take turns trying to make Tommy the Turtle complete them.

HOW WILL THE APP(S) BE USED?

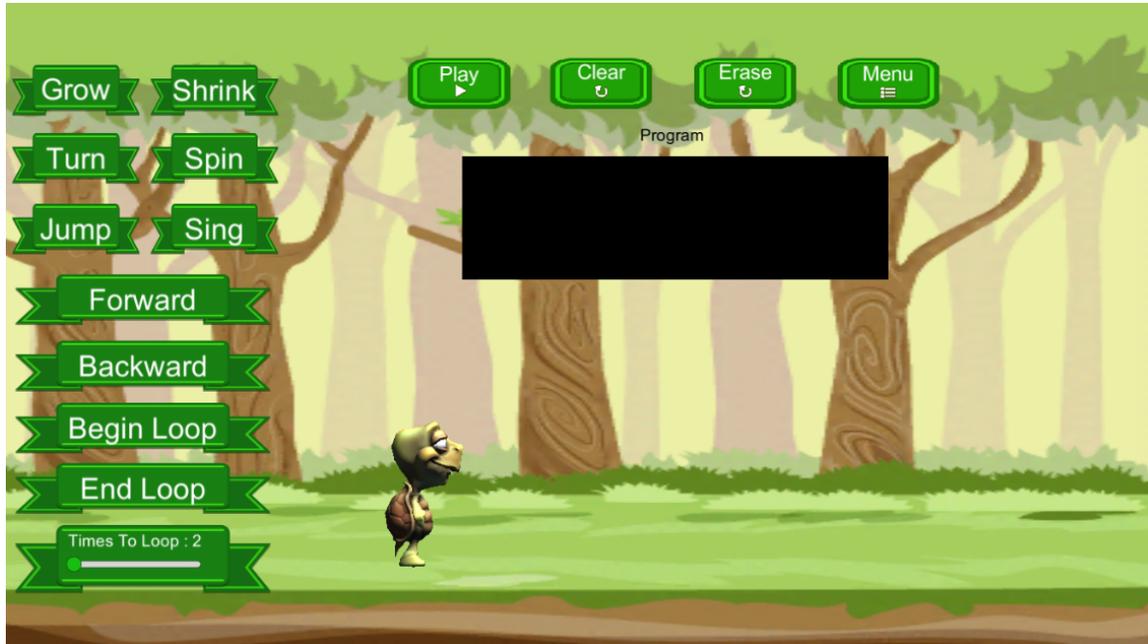
Tommy the Turtle will be used to introduce students to basic computer programming logic.

WHY/HOW DOES THIS APP SUPPORT THE LESSON?

By using this app, students will be able to see the relationship between the basic computer commands they use and the movements of Tommy the Turtle.

Tommy the Turtle – Learn to Code

Tommy the Turtle teaches basic programming skills by animating a cartoon Turtle. It uses basic command to introduce students in preK-3 the basic logic behind computer programming. A list of commands is provided to the student. When the commands are selected, they then appear in the program box. Once all the commands are selected, students can run their code by hitting *Play* and Tommy the Turtle will move per the programmed directions. This app is designed to be accessible to children of all abilities as it incorporates visual learning, voice guidance, and switch-access.



LESSON 1

Students will begin by completing the Tommy the Turtle Tutorial Mode. This is a tutorial that provides the students with hints on how to use commands to make Tommy the Turtle move.

STEP 1: Open the App. On the Main Menu, have students select the **Tutorial** option and then **Continue** on the next screen.



STEP 2: Once on the tutorial screen, students will go through a 4-step tutorial

1. *Learning how to enter single commands* – Commands highlighted are Forward, then Play. Students will view Tommy the Turtle moving forward after which the Clear command is to be selected.
2. *Learning how to enter multiple commands* – Commands highlighted are Forward, Backward, then Play. After Tommy the Turtle moves, the Clear command is to be selected.
3. *Learning how to loop* – Commands highlighted are Begin Loop, Jump, End Loop, then Play. After Tommy the Turtle moves, the Clear command is to be selected.
4. *Learning how to erase commands* – Commands highlighted are Jump, Spin, Erase, then Play. After Tommy the Turtle moves, the Clear command is to be selected.
5. The Menu option is to be selected to exit the Tutorial mode.

LESSON 2

Using the Free Play Mode, the teacher will assign students 3 tasks for Tommy the Turtle to complete based on what they learned from the tutorial.

- Task 1: Make Tommy the Turtle Move Forward, Turn, Grow, and then Move forward.
- Task 2: Make Tommy the Turtle Move Forward to the end of the screen and then Jump.
- Task 3: Complete task 1, and have it repeat 2 times.

STEP 1: Open the App. On the Main Menu, have students select the *Free Play* option.



STEP 2: Once on the free play screen, students are asked to complete Task 1: Make Tommy the Turtle Move Forward, Turn, Grow, and then Move forward.

SOLUTION: Commands entered should be Forward, Turn, Grow, then Forward. Solution on student's screen should look as follows:



STEP 3: Students are asked to complete Task 2: Make Tommy the Turtle Move Forward to the end of the screen and then Jump.

SOLUTION: There are two possible solutions. If using single commands, students should enter approximately 9 Forwards and then Jump. If using looping, students should enter the commands Begin Loop, Forward, End Loop, Jump, and enter a looping value of at least 9.

Single Command Solution:



Looping Solution:



STEP 4: Students are asked to complete Task 3: Complete task 1, and have it repeat 2 times.

SOLUTION: Commands entered should be Begin Loop, Forward, Turn, Grow, Forward, End Loop and a looping value of 2. Solution on student's screen should look as follows:



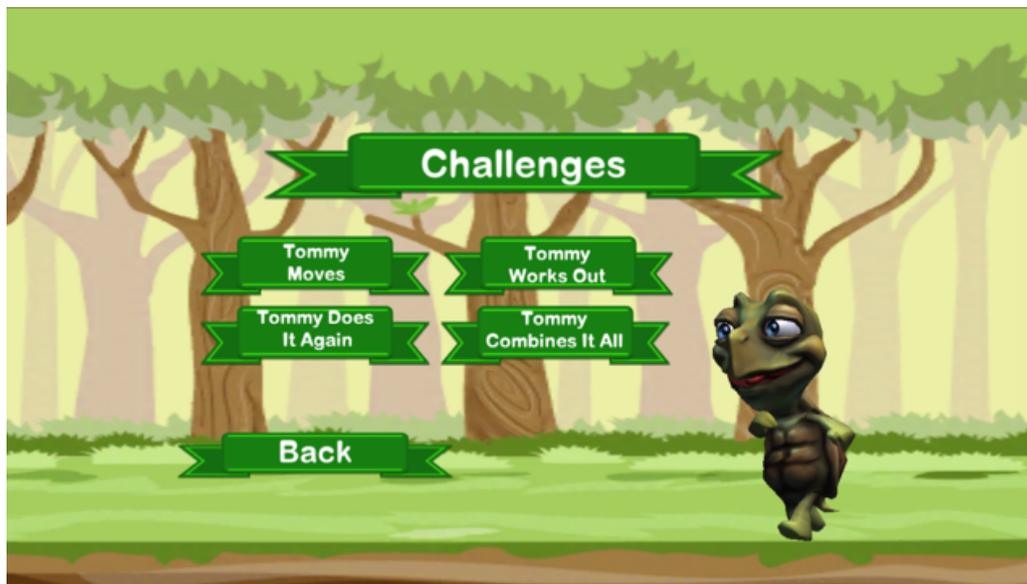
LESSON 3

After finishing lesson 2, the teacher will assign students to complete the challenge tasks.

STEP 1: Open the App. On the Main Menu, have students select the **Challenge** option.



STEP 2: Beginner students should be asked to complete the *Tommy Works Out* and *Tommy Does It Again* challenge levels found under the Challenge option. For more advanced students, the teacher may have them complete all 4 of the available challenge levels.



Following is a description and solution associated with the various challenges:

- Tommy Works Out Challenges – Students must complete 4 challenges.
 - Tommy's friend can fly high. Can you Jump just as high?
 - Solution: Jump, Play
 - Don't get dizzy spinning like your friend! Spin 3 times, again and again!

- Solution: Spin, Spin, Spin, Play
 - Grow big then Shrink small! It's the most fun of all!
 - Solution: Grow, Shrink, Play
 - Try coding in this order! Grow, Spin, Turn, Jump, Sing, Shrink
 - Solution: Grow, Spin, Turn, Jump, Sing, Shrink, Play
- Tommy Moves Challenges - Students must complete 3 challenges.
- Help Tommy say hello to Cat. Walk Forward until close enough to chat.
 - Solution: 4 Forwards, Play
 - Oh No! Tommy passed his friend Cat! Walk Backwards until close enough to chat.
 - Solution: 4 Backwards, Play
 - Tommy wants to have a face-to-face chat. Move Forward to Dog and then Backwards to Cat.
 - Solution: 2 Forwards, 6 Backwards, Play
 - Solution: 3 Forwards, 7 Backwards, Play
- Tommy Does It Again Challenges - Students must complete 2 challenges.
- Tommy wants to Grow. Put Grow inside a Loop and see him go.
 - Solution: Begin Loop, Grow, End Loop, Play
 - Tommy wants a Loop with a Spin and Grow. Increase Times to Loop and see him go.
 - Solution: Begin Loop, Spin, Grow, End Loop, Play; looping value should be greater than the default value of 2
- Tommy Combines It All Challenges - Students must complete 3 challenges.
- Owl and Cat can Jump, and Spin! Enter the contest, can you win?
 - Solution: Jump, Spin, Play
 - Join the fun! Stand between Owl and Cat and Sing as one!
 - Solution: 7-9 Forwards, Sing, then Play
 - Turn towards Cat and show him you can Grow too! Jump for joy after you do!
 - Solution: Turn, Grow, Jump, then Play

LESSON 4

Students must each come up with a task for Tommy the Turtle to complete by programming Tommy in Free Play mode. Afterwards, they will share their tasks with a partner and take turns trying to make Tommy the Turtle complete them.

Solution: Encourage the students to explore all available commands. Require students to use at least 5 different commands, in addition to the loop command. The teacher may provide an example to show students a complex sequence of tasks. An example program is: Grow, Grow, Forward, Sing, Sing, Forward, Begin Loop, Jump, End Loop, then Play.

