



LEAP MOTION



Acknowledgements

These Maker Modules were prepared for the Literacy Link South Central project “Using Technology to Facilitate Connections between Literacy and the Broader Community” (2014).

Maker Modules available in this series include:

Augmented Reality

Bluetooth

Dropbox

Evernote

Leap Motion

Macrophotography

MaKey MaKey

Portable Podcasting

QR Codes

Tiny Scan

Word Lens

The World of 3D

Literacy Link South Central (LLSC) wishes to acknowledge the valuable contributions made by the following consultants, project staff and partners:

Beth Compton, MakerBus

Danielle Carr, Literacy-Technology Liaison

Herta Taylor, Literacy-Technology Liaison

James Graham, MakerBus

Kim Martin, MakerBus

Ryan Hunt, MakerBus

Summer Burton, LLSC

Titus Ferguson, UnLondon Digital Media Association

Tony Mejia, Literacy-Technology Liaison

The staff and learners of Nokee Kwe Native Education Centre, Collège Boréal London, Literacy London, ATN Access Inc., WIL Employment Connections and Youth Opportunities Unlimited for testing the Maker Modules and providing their feedback.



www.makerbus.ca/
dhmakerbus@gmail.com



www.llsc.on.ca
literacylink@bellnet.ca

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This *Employment Ontario* project is funded in part by the Government of Canada.

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Introduction

To successfully complete this MakerBus Module, you will need:

1. Notes to the Literacy Practitioners
2. Leap Motion Pre Visit
 - estimated time 10 minutes
3. Leap Motion MakerBus Module
 - estimated time is 30 minutes
4. Leap Motion Post Visit
 - estimated time is 10 minutes
5. Evaluation Forms (optional)
 - learners' feedback is done on the bus
 - practitioners' feedback to be submitted at a later date
6. Equipment List:
 - smartphones
 - tablets
 - Leap Motion Controllers complete with the software downloaded from:
<https://www.leapmotion.com/setup>
 - applications (apps) needed include: Cyber Science 3D Motion, Airspace, Flocking



All instructional materials are available on the Literacy Link South Central (LLSC) website, should you need additional copies. Please visit: <http://www.llsc.on.ca/>.

Notes to Literacy Practitioners

Learning Objectives:

1. Understand how Leap Motion works
2. Use Leap Motion through the visualizer application (app)
3. Open Airspace and use the Tutorial and Flocking apps
4. Take apart a human skull replica with Cyber Science 3D Motion app

Notes to the Practitioners:

The optional Pre Visit for Leap Motion, while not essential, will help learners to connect this new technology to something they may already be familiar with. A learner handout is provided, and there is a suggestion for class discussion. This is expected to take 10 minutes. Competencies include: A1.2; and B1.2

While on the MakerBus, learners will have the opportunity to interact with LeapMotion, controlling a computer merely by waving their hands.

The time on the MakerBus focuses on competencies A2.2 and D2.

The optional Post Visit will give learners an opportunity to talk about what they experience on the bus, hopefully sharing their excitement about this technology. It is intended to spark creative thinking and allows them to brainstorm potential applications. It is expected to take 10 minutes. Competencies for the Post Visit are: B2.1 and F.



Leap Motion Pre Task

Learner Handout

According to the advertising, a Wii controller “seems to be completely intuitive, meaning that anyone can use it almost immediately”.¹ It is also described as fast and accurate, but most importantly it allows you to use the controller in the way you would use the real thing. That is, you can swing it like a tennis racket, baseball bat or a sword, and it handles in much the same way.

As a class, discuss Nintendo Wii, the game console that allows you to play using a single controller to interact with the game, rather than the more typical joystick.

1. Have you used a Wii? If so, how is it different from using a traditional controller or joystick?



2. Like Wii, Leap Motion is intuitive and uses the natural motion of your hands to interact with the screen in an entirely new way. Think about how it would feel to be able to use a keyboard without touching it. What advantages does this have?



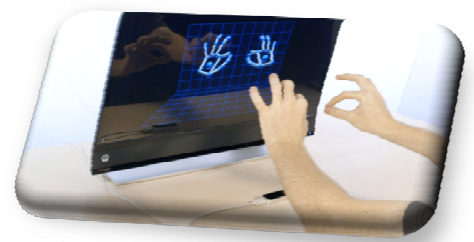
3. Can you think of any movies or TV shows that show hands free technology?
Ironman is one example. CSI and Hawaii Five-O both use screens that characters can interact with that do not use a keyboard. Can you think of more?



¹ Marshall Brain, *How the Wii Works*, retrieved on July 22, 2014 from <http://electronics.howstuffworks.com/wii.htm>

Leap Motion MakerBus Module

“In just one hand, you have 29 bones, 29 joints, 123 ligaments, 48 nerves and 30 arteries. That’s sophisticated, complicated and amazing technology (times two). Yet it feels effortless.”



The Leap Motion controller allows you to use your hands like a computer mouse and more. Change the way you interact with your computer!

You will learn how:

1. Leap Motion works
2. to use Leap Motion through the visualizer application (app)
3. to open Airspace and use the Tutorial and Flocking apps
4. to take apart a human skull replica with Cyber Science 3D Motion app

Part 1: How Leap Motion Works

Leap Motion is a bit bigger than a pack of Wrigley's Doublemint chewing gum. Inside, there are 2 cameras and 3 infrared LEDs which connect directly to your computer through a Universal Serial Bus (USB) cable.

There is software that needs to be downloaded for Leap Motion. Their website has quick and easy instructions on how to do that: <https://www.leapmotion.com/setup>

Leap Motion creates an infrared “point cloud”. When your hands hover over the infrared point cloud, the Leap Motion controller senses almost every move your hand makes. The cameras are taking snapshots of your hand positions around 290 times per second. The snapshots are sent to the computer and the software interprets those pictures and reacts to your movements. The Leap Motion’s point cloud space is close to 8 cubic feet.

Part 2: Use Leap Motion Visualizer

Before you start, make sure Leap Motion:

1. is in front of you
2. is plugged in to the computer by USB
3. is placed shiny side up, with the green light facing you
4. isn't placed in direct light

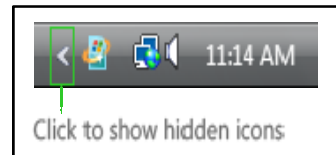


Please remove jewelry or gloves if you are wearing any. These items may interfere with your hands while using the Leap Motion.

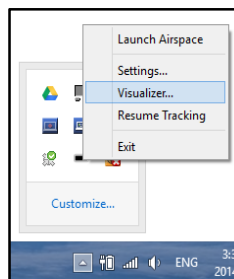
Note: In a group, you'll need to take turns trying the following instructions. Please note the instructions are for Windows 7 and 8 computers, and will change if you use another operating system.

Once the Leap Motion software is installed, you can launch the Visualizer from your computer taskbar, in the show hidden icon section:

1. Left click to show hidden icon



2. Right click the Leap Motion Icon (looks like the Leap Motion controller)



3. left click Visualizer

You are now seeing the visualizer on the computer screen. The visualizer helps you see how your hand and Leap Motion are working together.

Hover your hand 6 inches or more over the Leap Motion. Try these hand gestures:

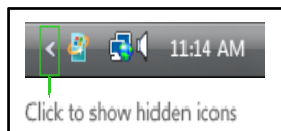
1. Open hand gesture -- stretch and separate your fingers
2. Closed fingers gesture -- close your fingers together, like a fist
3. Pointer finger gesture -- close your fist, stick out your pointer finger and tuck your thumb in your fist

Once you are ready for the next activity, minimize the Visualizer window.

Part 3: Open Airspace and use the Flocking app

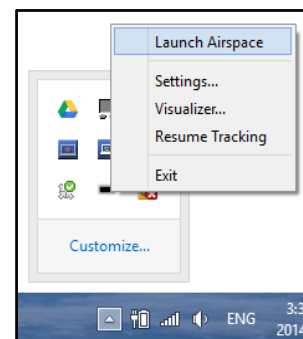
Leap Motion has a number of application (apps) that can help you reimagine how you interact with your computer. Airspace is software that is downloaded when you install Leap Motion. Airspace is where you are able to access and download apps for the Leap Motion.

Open Airspace, located on your computer taskbar, in the show hidden icon section:



1. Left click on the arrow that shows hidden icons
2. Right click the Leap Motion icon
3. Left click Launch Airspace

You are able to see Airspace on the computer.

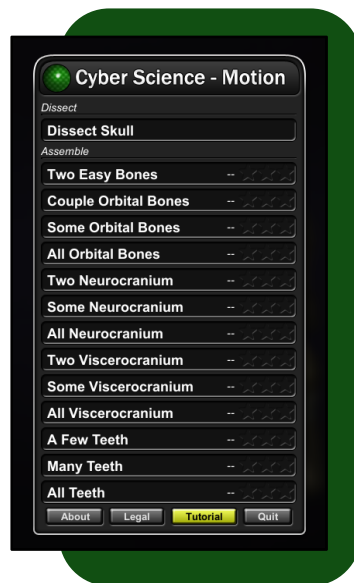


To begin using Flocking, left click Flocking to open the application (app). This app lets you play with a 3D school of fish. Once you have taken a turn playing with the Flocking app move on to Activity 4.

Part 4: Use Cyber Science 3D Motion

To begin using Cyber Science 3D Motion:

1. Left click Cyber Science 3D in Airspace to open the app



2. Left click the Tutorial button at the bottom of the menu screen

This tutorial will help you learn how to interact with Cyber Science 3D with Leap Motion through Navigation, Pointing, Peeling and Assembling.

Complete the tutorial, and then if time allows, play with the human skull replica.

Leap Motion Post Visit Activity

Learner Handout



1. Take a moment to think about some possible uses for leap motion. Jot down some ideas.

2. Brainstorm as a class to list as many possible uses as you can. Then, evaluate them in terms of practicality and how much modification would be required to the current controller. Can you all agree on what might be the most realistic application of this technology?

3. Are there any changes you would make to the Leap Motion? Why?

4. Are there apps you wish someone would develop? What are they, and how would you use them?

5. Discuss your notes with your classmates.

