OLPC LAPTOP USERS GUIDE

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Note : We offer no warranty if you follow this manual and something goes wrong. So be careful!

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1. INTRODUCTION

You may have heard of the One Laptop per Child project. The project's goal is to deliver rugged, low-cost, energy efficient laptops to children in the developing world.

The XO laptop is an educational tool designed to be put into the hands of every child. By using free and open source software and world-wide software development efforts, OLPC has championed XOs for delivery around the world in multiple languages.

In a classroom in Peru

The XO runs free and open software, called Sugar, which allows *anyone* to run, copy, distribute, study, change and improve the software. Many people contributing to OLPC believe that these freedoms are critical to fulfilling OLPC's educational goals.

After seeing stories about an affordable children's laptop or seeing pictures of a small computer in a child's hand, you may wonder about the XO's capabilities. But when you see this compact yet solid computer with its carrying handle and unique colors, you will realize the XO's great potential for children around the world.

When you open the XO, you will see the high-resolution, easy-to-read screen that works even in direct sunlight. You can also flip the XO into a book reader mode. The XO is designed to take outdoors and it even survives the rough-and-tumble daily lives that children lead.

We hope you learn more *about* the XO laptop by reading these pages, so that you can learn more *with* the XO laptop.

On a hike in Thailand

2. GETTING STARTED

Welcome to XO-land! You are about to start on a wonderful adventure of exploration and learning. The cute little green and white machine in the box is the tool that will enable you to travel the world via the Internet, compose and play music, create works of art, do science experiments, take photos and videos, communicate with friends and family via e-mail, and even learn to do a little computer programming.

But the XO represents a lot more than that. It is a symbol of your commitment to the education of the children of the world. OLPC is not a computer project, it is an education project. We hope you will proudly enjoy using your XO as children around the world do.

Before you get started, please read through this guide so you will have an idea of what to expect.

The first thing you need to do is carefully unpack your XO. Save everything! If you don't, you may accidentally throw away something important. Be sure to save the box, packing materials, and any paperwork that is in the box.

Before you use your XO for the first time, you should fully charge the battery. The Battery section later in this chapter shows you how to install the battery and connect the charger.

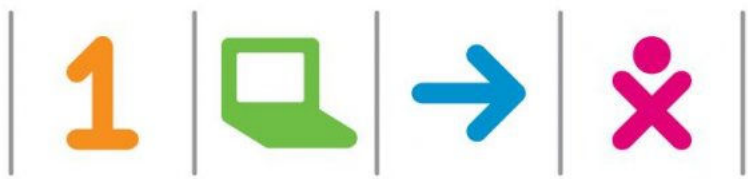
While you wait for it to charge, read through the rest of this guide and see what you can do!

3. ABOUT ONE LAPTOP PER CHILD

One Laptop per Child (OLPC) is a project started by Nicholas Negroponte at the Massachusetts Institute of Technology (MIT) with a core of MIT Media Lab personnel. The organization has grown to include passionate people creating software and hardware and sustainable community involvement to fulfill the educational mission of OLPC.

The mission for OLPC is simple yet compelling: To create educational opportunities for the world's poorest children by providing each child with a rugged, low-cost, energy efficient laptop with content and software designed for collaborative, joyful, and self-empowered learning.

You can learn more about OLPC at http://laptop.org and http://wiki.laptop.org -- everyone is welcome to participate.



4. VOLUNTEERING

Volunteer contribution is central to the educational spirit of OLPC, and there are many different ways to volunteer for the project. Consult the sections below to learn how to become a volunteer, based on your interests and background.

If learning matters to you, you will be welcome. To get involved directly, visit the web site http://wiki.laptop.org/go/Participate or email volunteer@laptop.org.

KIDS, SIBLINGS, AND PARENTS

The XO is meant for the entire family to use, so one of the best ways to get involved is to learn as much as you can--that way you can help others to learn in turn.

You can contribute to the wiki, a web site that anyone can edit, at http://wiki.laptop.org. Wiki contributors can share their knowledge and experience with the XO. To learn how to get started editing the wiki, go to http://wiki.laptop.org/go/Wiki_getting_started.

You can tell others about your projects and recruit others to join your efforts, and you might want to get involved in a regional group with other XO owners in your area. You can find many such vibrant communities at http://wiki.laptop.org/go/Regional_community_groups.

TEACHERS, STUDENTS, AND EDUCATORS

The OLPC project is an education project above all else, so the contributions of teachers, students, and educators are highly valued. You can contribute by testing, developing content, mentoring, or running group activities. You can start a University chapter of OLPC users--both formal informal clubs exist. Details may be found at wiki.laptop.org/go/University_program.

You can try to meet with other teachers and students within your region, or look up pre-existing groups within the list of regional groups here: wiki.laptop.org/go/Regional_community_groups.

SUPPORT GANG

If you enjoy personally helping others, and the challenge of solving problems with learners worldwide, you would be a perfect fit for the Support Gang. The Support Gang works together answering all kinds of questions about the XO, peripherals, software, volunteering, deployment, organizational development, and any other questions OLPC donors and XO users ask.

The Support Gang is an extremely friendly and supportive group, who come together from all around the world, and work together closely online. They also meet weekly with invited guest speakers by phone, and in person whenever possible.

You can join the Support Gang at http://wiki.laptop.org/go/Support_Gang. Fellow volunteers and OLPC will help you get started and assist you in finding answers to difficult or unusual questions. Bilingual volunteers are especially welcome.

DOCUMENTATION

If you would like to help others learn about the XO then you can help with the documentation. We have a dedicated team and we eagerly welcome new contributors! You don't need to be a expert on the technology to participate - you may wish to just spell check or check images. You may also be inspired to write a chapter or improve existing chapters. You can learn more on how to contribute by joining the OLPC Library mailing list http://lists.laptop.org/listinfo/library and the FLOSS Manuals mailing list http://lists.flossmanuals.net/listinfo.cgi/discuss-flossmanuals.net.

You may also want to look at the documentation tools at FLOSS Manuals : http://www.flossmanuals.net.

TRANSLATORS

OLPC is a world-wide program that tries to reach people in many countries, who speak many different languages. If you speak and write more than one language, you can help translate the wiki or the software. If you can help, please see http://wiki.laptop.org/go/Translation.

CONTENT CREATORS, WRITERS, ARTISTS, PHOTOGRAPHERS, VIDEOGRAPHERS

Everyone is a creator: by creating and sharing something, you come to understand it better. Writing about the XO can also be one of the greatest contributions to helping others.

Please consider offering your communications or media talents on the OLPC Wiki--whether by writing, designing, editing, storytelling, or simply organizing--anywhere within http://wiki.laptop.org.

If you want to create art for the XO, you can join other artists at the Art Community page at http://wiki.laptop.org/go/Community:Art.

You can upload photos to a worldwide archive at http://www.flickr.com/groups/olpc. One group of photos even shows those specially taken by XO laptops themselves, using the Record Activity.

HARDWARE DESIGNERS AND TESTERS

There are many ways to volunteer to assist with the hardware, from brainstorming about alternative power to developing peripherals to repairing XOs. You may want to develop peripherals for the XO that use its USB ports or other inputs, for health applications or beyond. One such way to get involved is found here: http://wiki.laptop.org/go/Health.

You can get involved with community repair centers or start your own, either as volunteers or as a business: http://wiki.laptop.org/go/Repair_center_locations.

You may want to work on power generation and firmware coding. To find out more about these types of hardware projects search for those keywords at http://wiki.laptop.org.

SOFTWARE

The XO's software is designed to be malleable because we want the help of all the people in the world who are capable of writing free software to help other people learn. To get involved, you can:

- Help maintain our upstream projects such as kernel.org, X.org, gnome.org and others.
- Help improve Fedora http://fedoraproject.org/en/join-fedora.
- Write activities http://wiki.laptop.org/go/Creating_an_activity.
- Fix, report, or triage bugs http://dev.laptop.org.
- Help test http://wiki.laptop.org/go/Friends_in_testing.
- Help improve Sugar and our OS http://wiki.laptop.org/go/Developers.

In short: "patches are welcome".

LOCAL OPPORTUNITIES

Help create changes in the community you live in - as well as ones you'd like to visit. Start or join a grassroots group: http://wiki.laptop.org/go/Regional_community_groups.

- Create a Community Repair Center: http://wiki.laptop.org/go/Repair_center_locations.
- Run, host, or attend an Event or Jam: http://wiki.laptop.org/go/XO_roadshows.
- Help out at a nearby Pilot deployment: http://wiki.laptop.org/go/Category:Pilot_site.

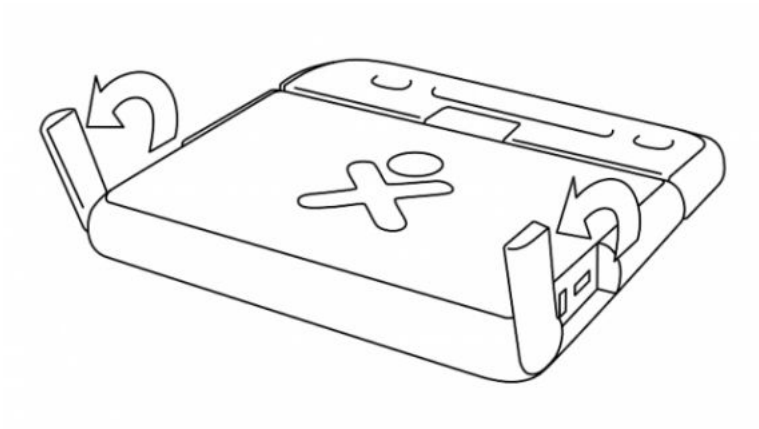
GETTING STARTED

5. OPENING THE XO

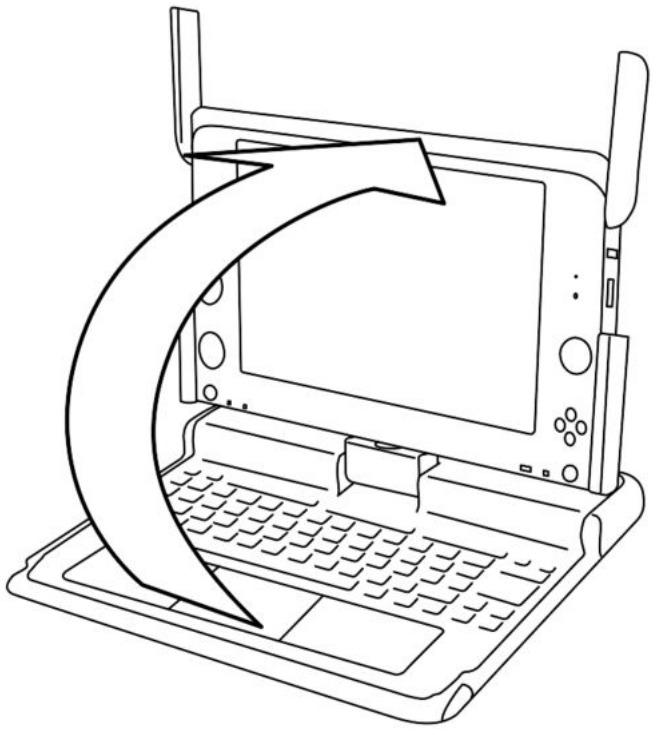
You can open, flip, and close the XO to position it in different ways.

TO OPEN THE XO

1. Position the laptop with the handle away from you, and then rotate both of the antennae towards you.



2. Lift the front edge of the top of laptop, and then move the top upward away from you. You can hear and feel a slight click as you first lift the top.

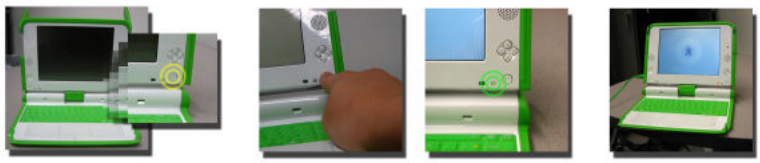


TO FLIP THE XO

You can switch the XO so that the screen lies flat and covers the keyboard. This lets you handle the gamepad buttons more easily or read electronic books (ebooks), using the arrow buttons to page forward and backward.

1. Bring the display up to a 90-degree angle and rotate the antennae down.
2. Rotate the display 180 degrees until it is facing backwards.
3. Fold the display down onto the keyboard.
4. Press the rotate key to orient the display.

6. STARTING THE XO



To start the XO, press the Power button, near the lower right corner of the screen. The XO takes about two minutes to start up.

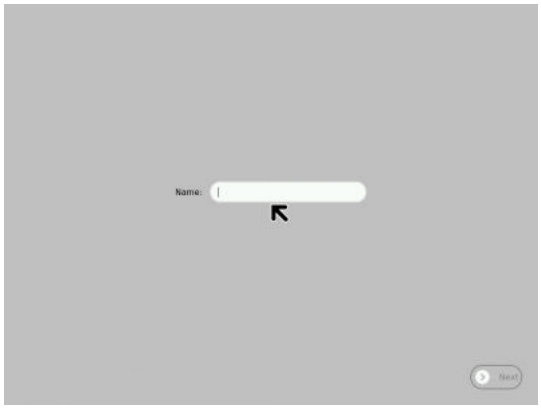
If the battery needs charging, the light next to the power button glows red. Plug the AC adaptor into the left side of the XO and plug the power cord into an outlet if you see a red light or if the XO does not start up.

If you have difficulty starting your XO, refer to the Repairing chapter for ideas.

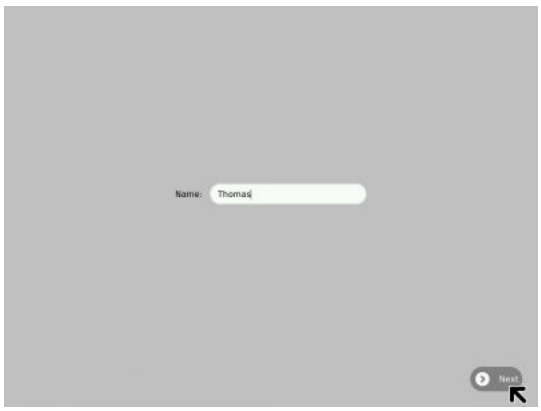
STARTING FOR THE FIRST TIME

After you press the power button and the XO initially starts up, the XO screen asks for your first name. The next time you start it, it remembers your name and goes directly to the Home View. Later on you can learn how to change to a nickname of your choosing.

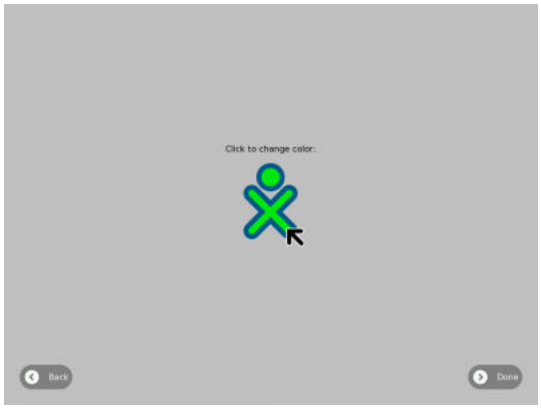
1. Type your name.



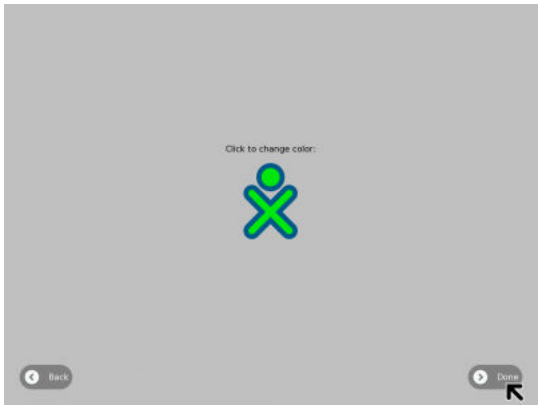
2. After you enter your name, click Next.
   (Use a finger on the touchpad below the keyboard to move the arrow over the word "Next". Press the key below the touchpad on the left with an "X" on it to "click".)



3. Next, you will a small O on top of an X. This symbol represents you when you use your XO. Use your finger on the touchpad to move the arrow over the person symbol. "Click" this symbol by pressing the key with an "X" on the left below the touchpad to choose colors that you like.

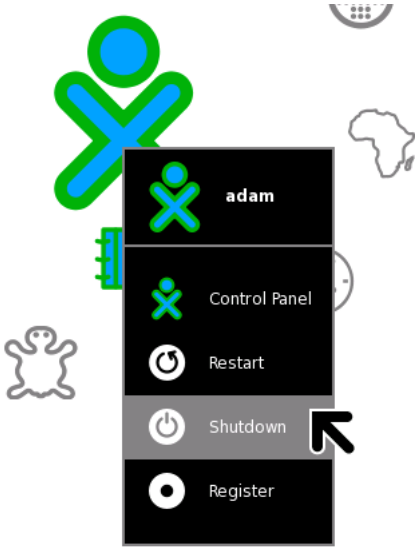


4. After you choose your colors, click "Done."



SHUTTING DOWN THE XO

1. When you have finished using the computer, go to the Home View by pressing the key with a single dot in a black circle, in the top row on the left.
2. Click the middle XO icon to view a menu.
3. On the menu, click Shutdown to ensure that your laptop stops properly.



You should always follow this Shutdown procedure, because it allows your XO to tidy up its internal files before it turns itself off. This helps the XO know where to find things when you start up again. However, if something bad happens and you can't move the pointer or you can't click, you can make an emergency shutdown by pressing and holding the power button for a few seconds. Be careful that your power button does not get stuck in the down position. If it does get stuck, the XO does not detect the depression of the power button, and does not turn on. If this happens, refer to the Repairing chapter for information on how to repair it.

7. ABOUT COMPUTERS

The XO from OLPC

What is a computer?

A computer contains information and responds to instructions. Computers are used as tools to access and exchange information. They can be like a classroom or like a toy, and they offer a way to communicate with others.

Because computers take instructions and may be programmed, a computer can be whatever you want it to be. Many people use computers to write, to perform mathematics, to create art, to play games, to record sound and images, to communicate with others, to read, and to learn. The uses of your XO are limited only by the Activities you use and your imagination.

What can your XO do?

Your XO can store an entire library of written stories, videos, and pictures. It can make and play music. It contains Activities that you can use to learn math, play games, create pictures, and communicate with others. You interact with your XO using the touchpad, keyboard, microphone, or camera.

How does it do it?

Computers are built of component parts that work together to carry out tasks that you give to the computer by interacting with it. See wiki.laptop.org/go/Disassembly for pictures of the parts of the XO.

You can use your XO to figure out how computers work by reading about computers and learning their basic functions, and then learning about hardware and software and how it all works.

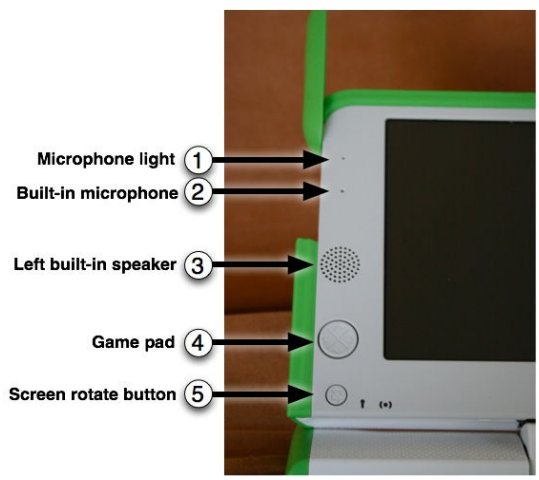
8. FEATURES AND PORTS

The XO laptop has many built-in features. These include a camera, microphone, speakers and wireless antennae. In addition, the laptop allows for the attachment of other external devices. This is often done by plugging the devices into connectors (some are more commonly referred to as ports, jacks or slots).

PHYSICAL FEATURES

Backlit screen

The display functions in a full-color mode similar to other laptop displays and in an ultra-low-power, ultra-high-resolution, black-and-white mode that is readable in direct sunlight.



1, 2 - Built-in microphone

There is both a built-in microphone (and an external microphone jack, which supports both AC and DC sources.) As a privacy measure, an LED above the microphone (1) lights up whenever the microphone is in use.

3, 8 - Built-in speakers

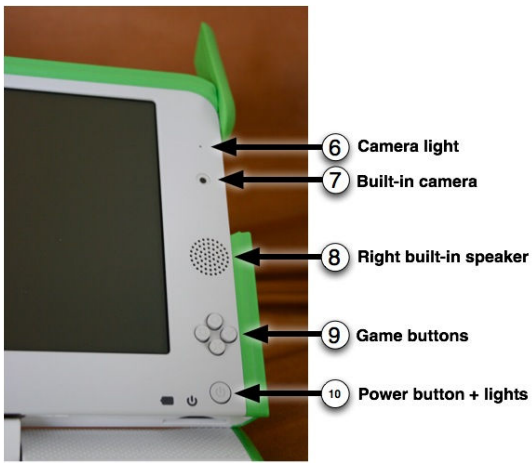
Internal stereo speakers and an amplifier provide a way to play music, videos, and anything you have recorded yourself. There's also a jack for external headphones or speakers.

4 - Game pad

Two sets of four-direction cursor-control keys can be game controllers. Since they still function when the screen is folded down into e-book mode, the XO creates a self-contained game playing pad including a controller.

5 - Screen rotate button

A button on the XO laptop's display frame changes the orientation of the screen, so it can be viewed right-side-up from any direction.



6, 7 - Built-in camera

The XO laptop has a built-in color camera, enabling still photography and video recording. As a privacy measure, an LED above the camera (6) lights up whenever the camera is on.

9 - Game buttons

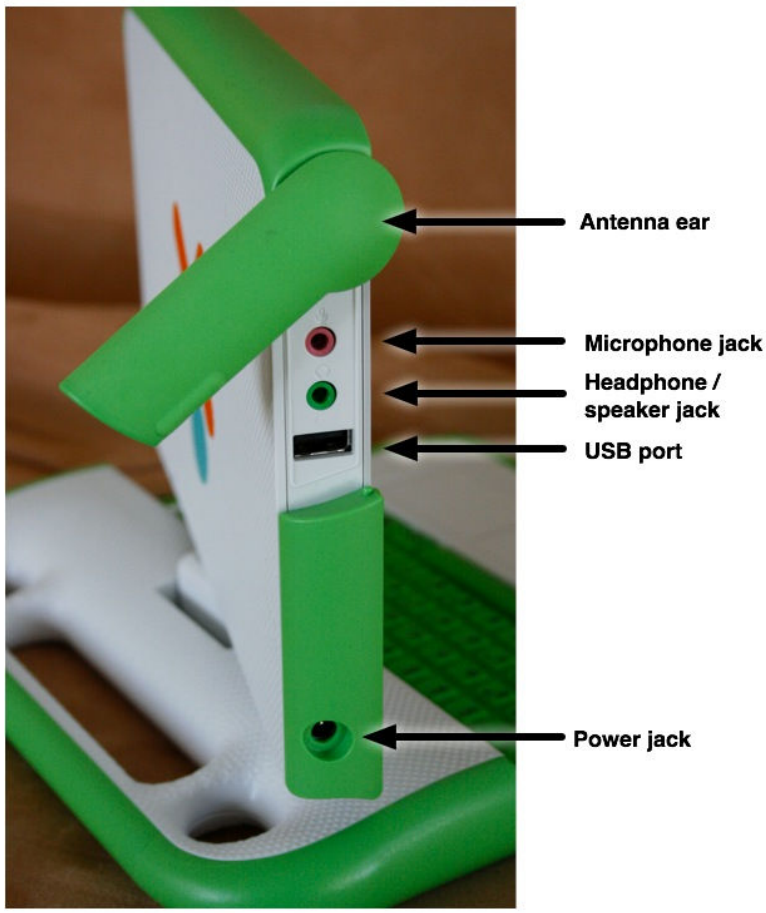
The game buttons can be used when the screen is folded down into e-book mode, creating a self-contained game player. The buttons are labeled with a circle, a square, a check, and an ×. These buttons are often used by Activities. For example, the circle button can be used as the shutter for the camera in the Record Activity.

10 - Power button, indicators

From left to right: the battery-level indicator; the power indicator; and the power button.

PORTS

Along with offering unique connectivity options, the XO laptop can work with a wide range of external devices.



Antennae ears

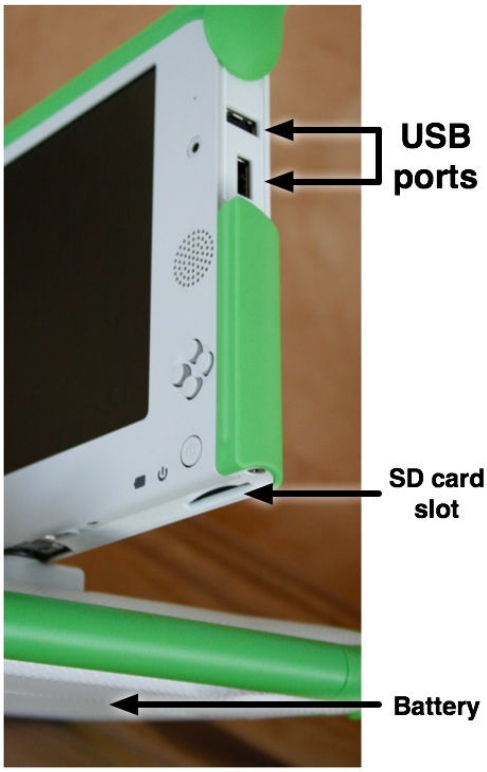
When the wireless antennae "ears" are rotated up, they provide the XO with a connection range vastly superior to those of conventional laptops. When down, they keep dirt out of the connectors and act as a latch.

External headphones and microphone jacks

Along with built-in speakers and microphone, the XO laptop features jacks for external headphones and an external microphone.

USB/memory ports

The XO laptop features three external USB ports to support a variety of plug-in peripherals (one seen in the photo above, and two others under the other "ear").



Power jack

The XO comes with a power cord that can be plugged into any 110-to-240-volt AC outlet for charging. The power jack also accepts DC power from a solar panel for charging the XO laptop's battery.

SD memory card slot

There is a slot underneath the display that accepts SD memory cards for photos, video, and other content. Rotate the display so that the left-hand edge is over the keyboard—the slot is then accessible from below.

Rechargeable battery

Since many children in the developing world live "off the grid" (in places with poor or non-existent power infrastructure), the XO laptop is designed to be extremely power efficient.

9. POWER FOR YOUR XO

While your XO typically runs on battery power with charging required for a certain number of hours of use, you can look for sources of power beyond the AC adapter included with your laptop. Or look for ways to modify the AC adapter to accept different ways of charging the battery. This chapter discusses some of those advanced power modification ideas.

Note: Early prototypes of an OLPC laptop shown with hand cranks on the side were not developed fully due to concerns about mechanical stress on the case and the lack of an efficient ratio for the amount of time spent generating electricity physically compared to using the laptop. Read more discussion about kinetic energy converting to electric power at http://wiki.laptop.org/go/Battery_and_power.

REPLACEMENT CHARGERS

If you misplace or damage your power adapter, you can replace it, by ordering from one of several vendors and community groups here at http://wiki.laptop.org/go/Spare_parts.

Any charger whose jack fits into the XO's power port and outputs the right polarity between 11 and 18 volts will work.

DC jack measurements:

- *1.67mm* center pin diameter
- *5.5mm* outer barrel diameter
- *11mm* contact length

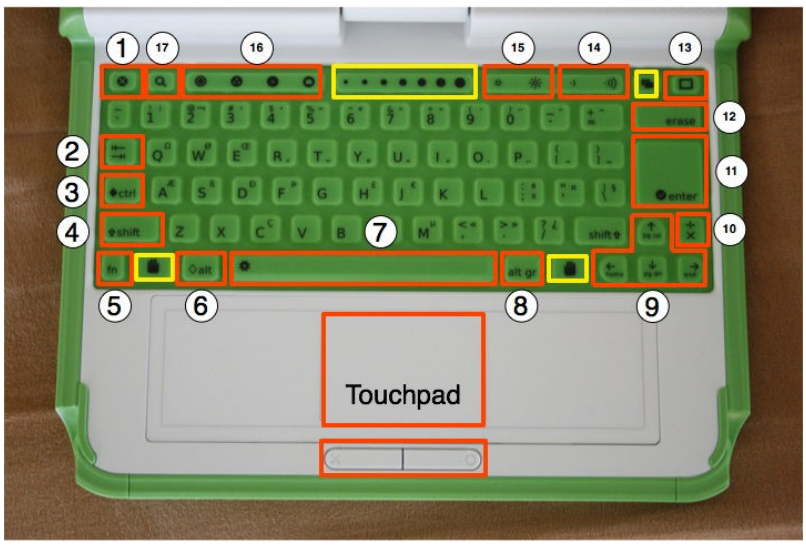
For a thorough discussion of electrical specifications and evolving battery updates, read http://wiki.laptop.org/go/Battery_and_power.

Charging using a solar panel or car battery adapter

With the right connector that fits your XO's DC input on the left side of the XO, you can connect to alternative power peripherals such as a solar panel, foot pedal, or car adapter to charge your XO battery. The specifications above for the DC jack size and voltage output requirements should drive your decision.

Several specific options for solar panels and car battery adapters are available at http://wiki.laptop.org/go/Product_News.

10. THE KEYBOARD AND TOUCHPAD



The dust- and water-resistant keyboard and touchpad have special keys for more functionality. For each deployment, keyboards are localized to the primary language of that country, so your keyboard may not match the one in this figure exactly. Keys outlined in **yellow** are reserved for future features.

1. **Escape key**
   The escape key is labeled with an × symbol on a black circle. The escape key is most commonly used in combination with the control key to quit activities (**ctrl + esc**).
2. **Tab key**
   The tab key is labeled with arrows pointing right and left and creates an indentation in a paragraph. Also, use it in combination with the control, shift and alt keys to display open Activities. For example, **alt + tab** displays running Activities one after the other.
3. **Control key**
   The control key is used in combination with other keys to issue commands. For example, **ctrl + c** copies to

the clipboard; **ctrl + v** pastes from the clipboard.

4. **Shift key**
   The shift key is used in combination with other keys as a modifier, most commonly to shift between lowercase and uppercase in Latin-based alphabets.
5. **Fn key**
   The function key is used in combination with other keys as a modifier. For example, **fn + erase** is delete; **fn + up arrow** is page up.
6. **Alt key**
   The alt key is used in combination with other keys to issue commands. For example, **alt + enter** toggles full-screen mode; **alt + spacebar** toggles the tray visibility. This example works in the Browse Activity but not in the Record Activity.
7. **Spacebar**
   The spacebar key types a space. In the future, when used in conjunction with the function key (**fn**), it will display the source code for the currently running Activity.
8. **Alt Gr key**
   The alt graphics key is used in combination with other keys as a modifier, most commonly to select an alternative letter or generate an accented character. For example, on the US keyboard, **alt gr + j** creates a euro sign □; **a** + **alt gr + 4** creates á.
9. **Arrow keys**
   The arrow keys are used for navigation; combined with the function key (**fn**), they are used for page up, page down, home, and end.
10. **Language key**
    The language key is found on keyboard layouts that combine Latin and non-Latin scripts, going between scripts so that you can switch between typing in English and Hindi by pressing it. On Latin-only keyboards, the language key has been replaced by a × and ÷ key.
11. **Enter key**
    The enter key—in addition to its standard use—is used in combination with modifier keys. For example, **alt + enter** toggles full-screen mode.
12. **Erase key**
    The erase key deletes the character behind the cursor (backspace). **fn + erase** deletes the key in front of (or on) the cursor.
13. **Frame key**
    The Frame key toggles the presence of the Frame on the screen. The Frame is the black border around the screen that holds the Activity taskbar, clipboard, wireless connections, battery level, and so on.
14. **Volume controls**
    The volume keys lower and raise the audio level.
15. **Brightness controls**
    The brightness keys lower and raise the brightness of the screen backlight. To turn the backlight off completely may take 7 to 8 button presses.

16. **View keys**

    The four view keys, from left to right, take you to the Neighborhood view, the Group view, the Home view, and the Activity view.

17. **Search key**

    The search key takes you directly to the Journal and places the text cursor in the search box.

11. SCREEN AND SPEAKERS

The top row of the XO keyboard has three long buttons.

The long button on the far right controls the lighting on the screen and the volume of the speakers.

The left two keys control the lighting.

- Press the key with the small sun to dim the light on the screen. Press this key repeatedly to put the screen into a greyscale mode, which saves power.
- Press the key with the large sun to increase the brightness of the light. Press this key repeatedly to go to a color mode.

The two keys on the right of this long button control the sound.

- Press the key with the small audio icon to decrease the speaker volume, which also saves power.
- Press the key with the large audio icon to increase the speaker volume.
- While starting the XO, press the small audio icon to decrease the volume startup sound. The next time you start the XO, it remembers that you silenced the startup sound previously, so it will not make the sound again until you press the large audio icon while starting up.

ROTATING THE SCREEN'S DISPLAY

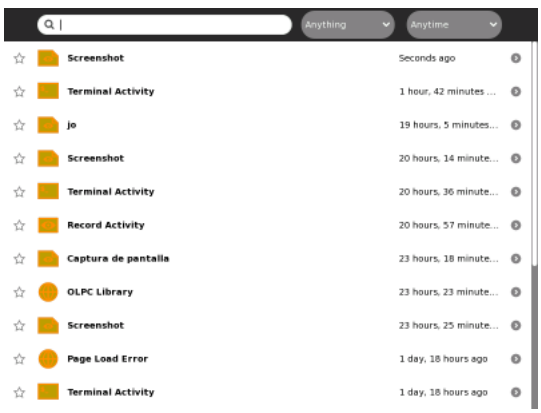
You can press the small rotate button with two arrows on the bottom left of the XO screen to rotate the display by 90 degrees with each button press. Use this button when you flip the XO into a flat book reader configuration.

12. STORAGE

The Journal Activity offers file storage and retrieval through the Sugar user interface. To view the Journal, click the Journal icon in the Frame, shown next to the View icons below.

INTERNAL STORAGE

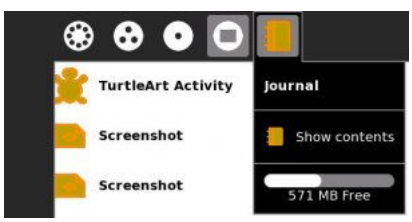
Your XO can store a limited number of files on its 1 GB flash disk drive. You should maintain your XO so that it does not run out of storage space for new files. You can delete some items by using the Journal Activity.



To clear out space for more files:

1. On the Frame, click the Journal icon.

2. Hover the pointer over the Journal icon to see the amount of free space.

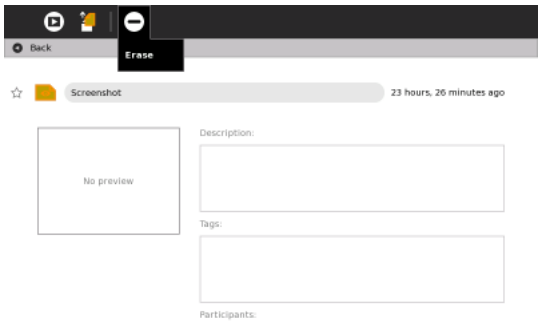


3. Look for files that you can delete, such as old files or large files that you have copied to another location.

- In general, video and audio media files and some PDF files or e-books are larger than individual Write Activity files or still photographs. The upper limit for a PDF file that the XO can read is about 36 MB.

- The Browse Activity may download more than one copy of a PDF or media file if you do not realize you have already downloaded it. Delete duplicates to save space.

4. Select a file to delete by right-clicking its icon and clicking Erase.
   Or, click the small arrow button to go to a preview of the Activity or file. Once you are previewing the item, click the Erase icon (minus sign at the top of the screen).



If you want to resume using the file, click the icon for the file to launch the Activity.

EXTERNAL STORAGE

You can use either an SD card or a USB storage device or drive to save and retrieve files externally.

An SD card (Secure Digital card) is a flat, rectangular plastic device about 3.2 cm by 2.4 cm (1 1/4" by 5/8"). They are also used in many digital cameras for photo storage. The XO has one SD card slot.

The easiest to use are USB storage Flash Drives (memory sticks). These are about the size of a pack of chewing gum. Certain brands have an onboard indicator light, showing when data is moving to or from the computer.

There are 3 ports on the XO that you can use with a USB flash drive. One is on the left of the screen, two are on the right. All are protected by the antennae when the XO is closed.

To start access to a storage device

1. Insert the USB drive or SD card.
2. Go to the Journal view to see the USB or SD icon in the lower left of the Frame.

To save a file from the journal to the USB drive or SD card

- Click the Journal item's icon and drag it to the USB/SD icon.

To retrieve a file from the USB drive or SD card

- Click the USB/SD icon first.
- Drag the item from the USB drive or SD card to the journal icon.

To remove the USB drive

Move the pointer over the USB icon at the bottom of the Journal and click Unmount.

When the USB icon disappears, it is safe to remove the USB drive.

To insert an SD card

The SD card slot is underneath the screen, below the power button. You will need to rotate the screen counterclockwise to access this slot.

To remove an SD card

Move the pointer over the SD icon at the bottom of the Journal and click Unmount.

When the SD icon disappears, it is safe to remove the SD card. Push upwards on the card with your thumb and release to spring it from the slot.

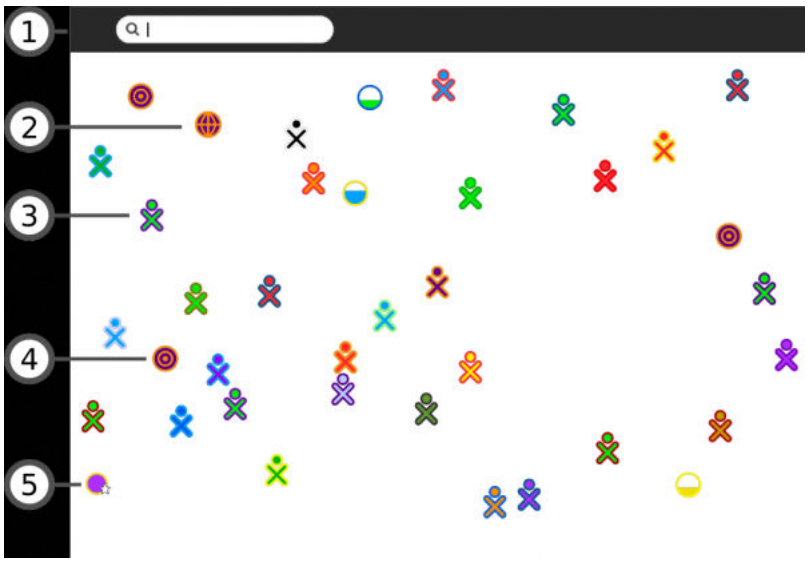
INTERFACE

13. Neighborhood View
14. Group View
15. Home View
16. Activity View
17. The Frame
18. The Journal
19. Personalizing

13. NEIGHBORHOOD VIEW

You can use the Neighborhood View to connect to the Internet and to collaborate with others.

To see the Neighborhood View, click the Neighborhood icon on the Frame. You can also use the Neighborhood button for this purpose if your keyboard has one, or press the **F1** key.



1. Search menu

   You can find find people, Activities, or access points using the search menu.

2. Shared Activities

   You can join an Activity by clicking the Activity's icon. Shared Activities appear as icons in the Neighborhood View.

3. XO icon

Other Sugar users appear in the Neighborhood View. By hovering over an XO icon, you can discover the nickname of that person and can add them as a friend or invite them to join you in a shared Activity.

4. Mesh icon

A mesh icon lets you connect to a school server or other computers on a mesh (802.11s) network. The OLPC XO has three mesh network channels. By clicking a mesh icon you join that particular mesh network, and disconnect from an access point network. The other XO icons shown change according to who is on that network.

5. Access point

WiFi hot spots (Internet access points) appear as circles in the Neighborhood view. If you hover over a circle, the name of the access point (the ESSID it broadcasts) appears.

- To connect to a hot spot, click the circle. If the circle shows a lock symbol, expect to be prompted to enter a key or password. The inside of the circle blinks while your system tries to connect. Once connected, the icon is surrounded by parentheses. An icon for the connection appears at the bottom right of the Frame. By clicking an access point icon you are indicating that you do not want to collaborate through a mesh network – which other XO icons are shown may change accordingly.
- To disconnect, hover over the circle, and choose Disconnect on the menu. Or hover over the icon in the Frame, and choose Disconnect on the menu.

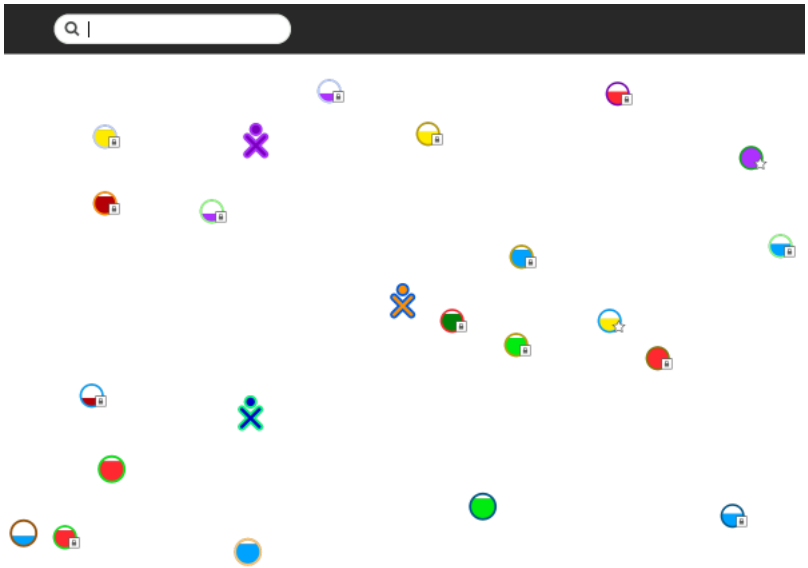
Once a connection is made, the icon changes.

14. GROUP VIEW

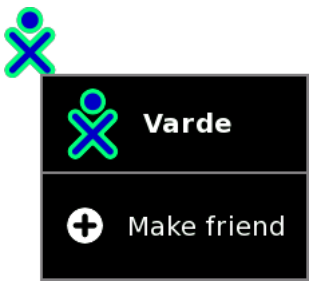
The Group View shows you your friends. (XO icons that are dimmed represent friends who are currently offline.)

To show the Group View, click the Group icon on the Frame or press the **F2** key.

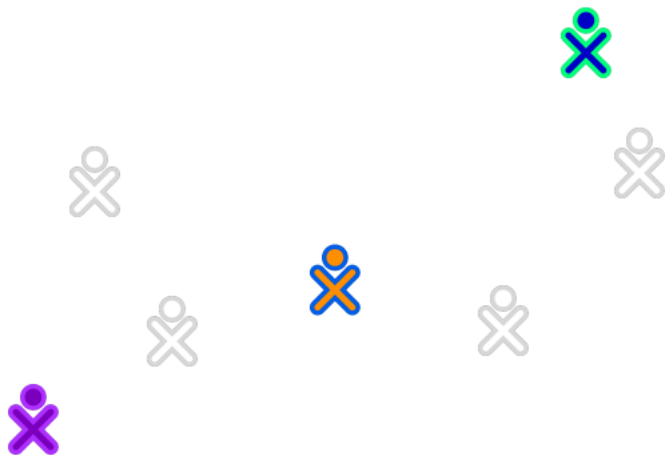
ADDING A FRIEND



You add friends to the Group View from the Neighborhood View.

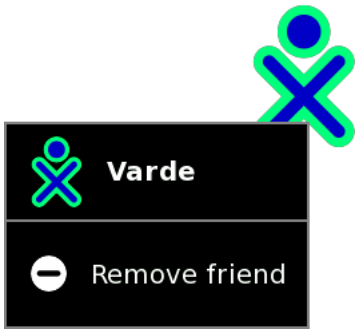


When you hover over an XO icon, the *Make friend* menu option appears. Click this option to add that person as a friend.



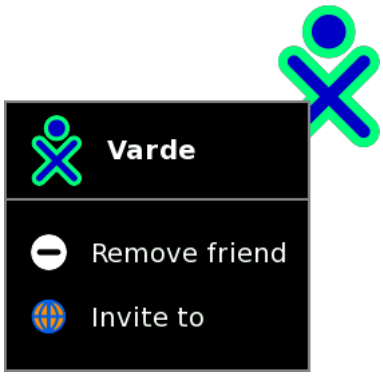
Your new friend's icon then appears in the Group View.

REMOVING A FRIEND



You can remove a friend from the Group View using the hover menu. Click *Remove friend*. That person's icon disappears from the Group View.

INVITING A FRIEND



From the hover menu, you can also invite friends to join your current Actvity. There is more information about invitations and sharing in the Collaborating chapter.

15. HOME VIEW

Use the Home View to begin new Activities.

Note: When you have clicked on an Activity's icon, please wait for that Activity to start. If you get impatient and happen to click again on the Activity's icon, you may end up with that Activity being started twice.

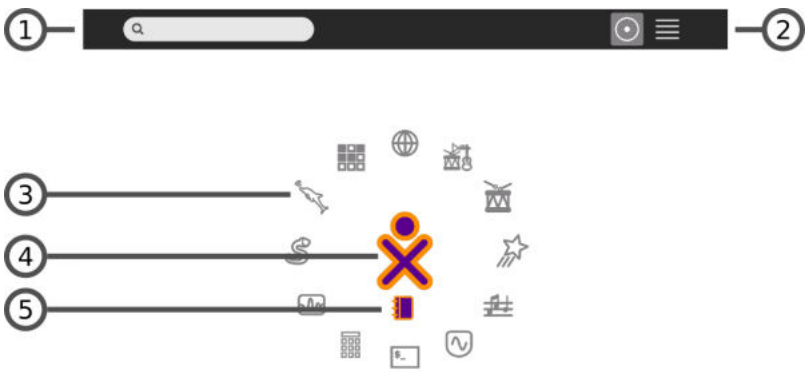
When you click an Activity's icon, you see a start-up view while that Activity initializes. Once the Activity is running, you are placed into its Activity View. If the Activity fails to start, you are instead returned to the Home View.

To get to the Home View, click the Home icon on the Frame or press the **F3** key.

The Home View has several modes. Each mode has a different arrangement of Activities:

- Your favorite Activities in a ring (Ring mode)
- Your installed Activities in a list (List view)
- Your favorite Activities arranged freeform (Freeform mode)

FAVORITES VIEW



1. Search box

   Use the search box to find Activities. **Note:** If in List view you see fewer Activities than expected, you may need to click the small X at the right end of the search box to undo an unintended search request.

2. View modes

   Click an icon to switch to a different view. Hover over the Favorites icon to see a menu that lets you pick Ring mode or Freeform mode.

3. Activity icon

   Click an Activity icon to launch that Activity (which causes it to appear on the Frame). Only Activities that have been "starred" as favorites appear in this view. (Please see the List View below for more details.)

4. XO icon

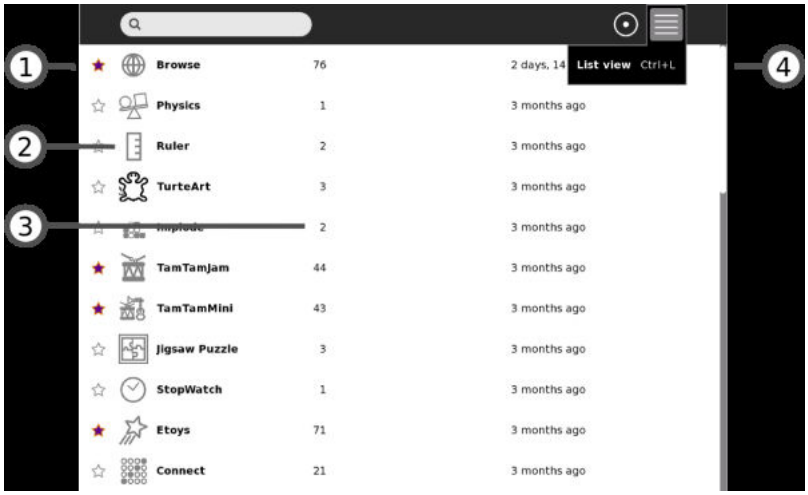
   Hover the pointer over the "XO" in the center of the Home View to bring up a menu and to access the Sugar Control Panel. (Please see the chapter on Customizing Sugar.)

5. Active-Activity icon

   The icon of the currently active Activity appears under the XO icon.

LIST VIEW

Use the List view to manage all of your Activities and to choose which Activity icons appear on the Favorites view.



1. Activity entry

    Each entry in the list has:

- a star, which is colored for favorite Activities, which appear in Ring mode or Freeform mode. Click a star to color or clear it.
- an icon
- a title
- a version number
- how long ago it was installed

2. Icon

    Click the icon to launch the Activity. **Caution:** By clicking Erase in the icon's hover menu, you can uninstall that Activity from your system.

3. Version number

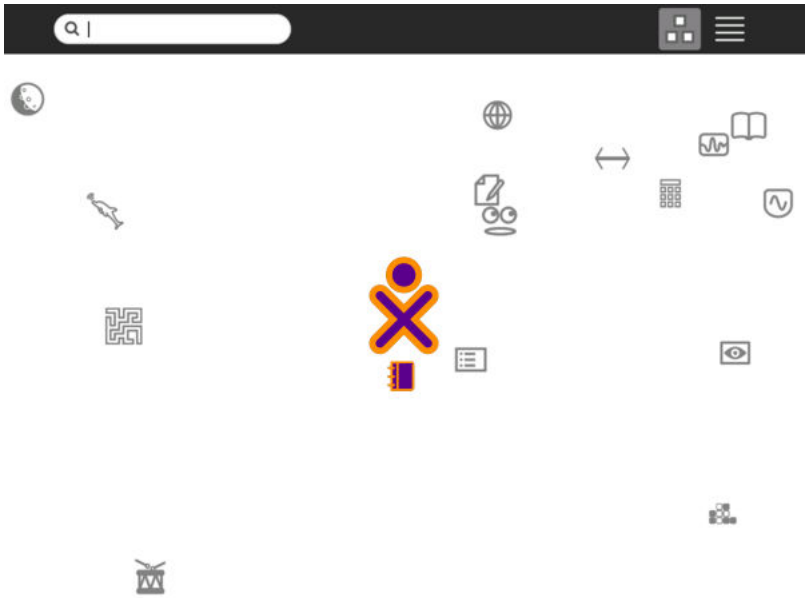
    Lets you compare your version against an availability list such as wiki.laptop.org/go/Activities to see if it is up to date.

4. Scroll bar

    The Activity list may extend beyond the screen. Use the scroll bar to move through the list.

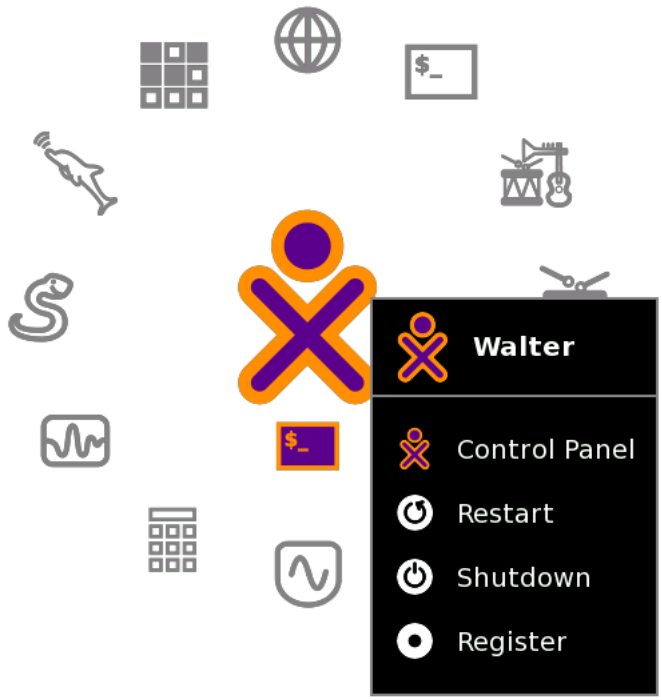
FAVORITES VIEW IN FREEFORM MODE

The Freeform mode of the Home View works the same as the Ring mode, but the icons are arranged arbitrarily instead of in a circle. You can drag the icons in this View to visually group them in a way that makes sense to you.



XO MENU

Use the hover menu that appears over the XO icon to access the Sugar Control Panel and to shutdown or restart the computer.


Walter
Control Panel
Restart
Shutdown
Register

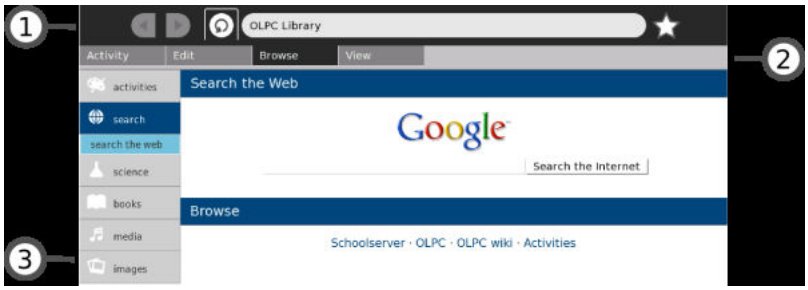
16. ACTIVITY VIEW

When you play with an Activity you are using the Activity View. Return to the most recently used Activity that is still running by clicking the Activity View icon at the top left of the Frame (shown below).

You can also use the Activity button for this purpose if your keyboard has one. Use the **F4** key if you are using a keyboard that does not have an Activity button.

Use the appropriate Activity icon in the top right of the Frame, from any View, to return to the Activity View for any running Activity.

Sugar Activites always use the full screen. This figure shows the Activity View for the Browse Activity.



1. Activity menus

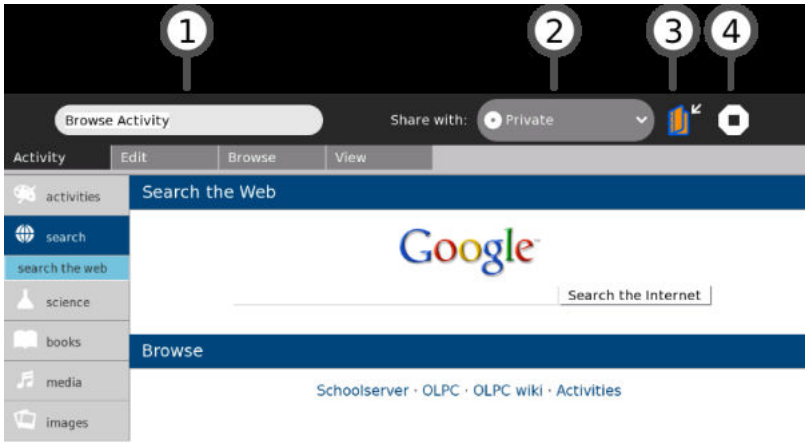
   Activities have one or more menus that appear at the top of the screen.

2. Menu tabs

   Click the tabs found just below the Activity menu to switch between the menus for an Activity.

3. Activity workspace

   The rest of the screen is used by the Activity itself, in this example, Browse.



All Activities have an Activities menu.

1. Activity name

   The content of the Activity name field is how this specific Activity session entry appears in the Journal. *Be sure* to enter a unique name here, if you want to make it easy to later find this session among the other instances of this same Activity shown in the Journal.

2. Share with menu

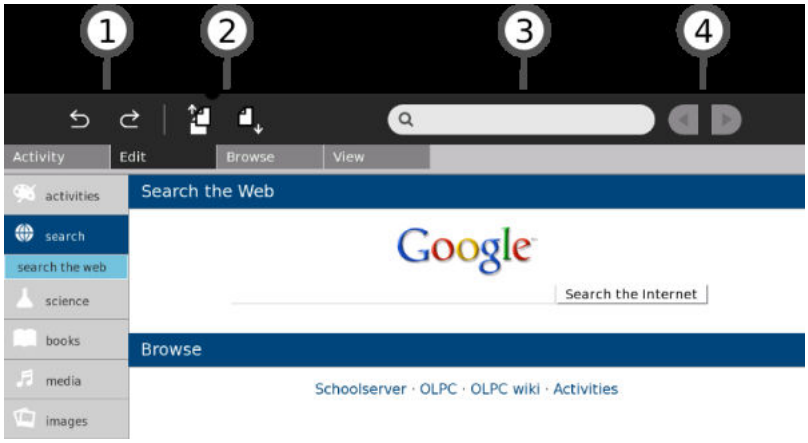
   Use the "Share with" pull-down menu to share an Activity with your neighbors. Many Activities support sharing.

3. Keep button

   Click the Keep button to force an Activity to save its current state in the Journal.

4. Stop button

   Use the Stop button or press **ctrl + esc** to save the Activity in the Journal and close it.



Many Activities have an Edit menu.

1. Undo/Redo

   The undo and redo buttons are application specific but usually refer to undoing or redoing your most recent edits.

2. Copy/Paste

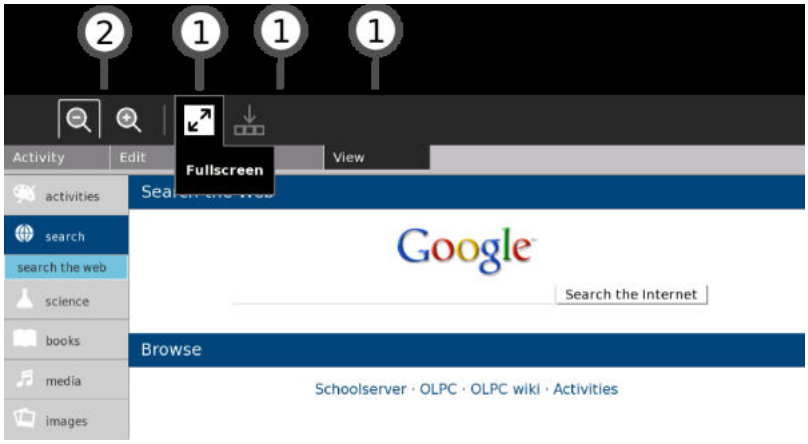
   There are buttons for copy and paste. You can also use the keyboard shortcuts **ctrl + c** and **ctrl + v** for copy and paste respectively. Items you copy end up on the clipboard, which is found in the left edge of the Frame. Items you paste come from the clipboard.

3. Search

   Many Activities support search: you can find text within the Activity by entering it into the search box.

4. Next/Previous

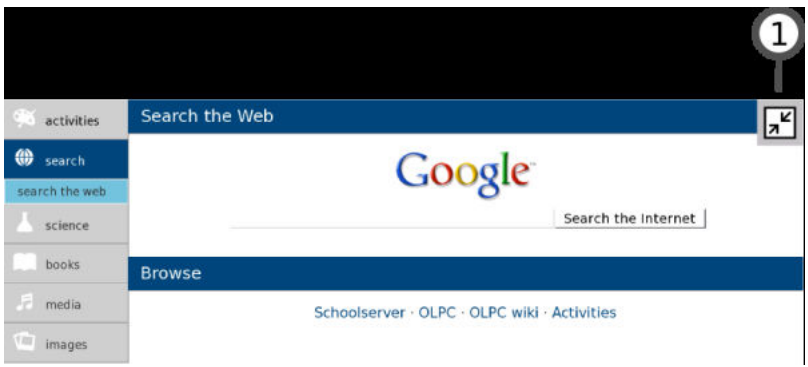
   On the Edit menu, a pair of buttons allows you to find the next or previous occurrence of the text in the search box.



Many Activities also have a View menu.

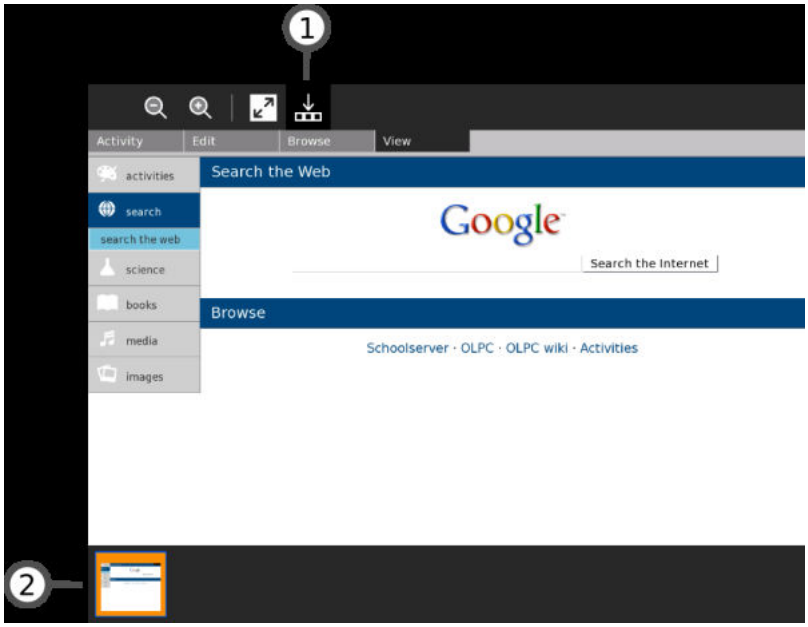
1. The Full-screen button
   Click the Full-screen button to make the Activity use 100% of the display, hiding the menu.

2. Shrink/Grow
   Use the Shrink and Grow buttons to scale the display if the Activity supports this feature.



Leaving full-screen mode:

1. Full-screen button
   Use the Full-screen button to view the menus again.



Many Activities use trays at the bottom of the screen to hold collections.

1. Tray button

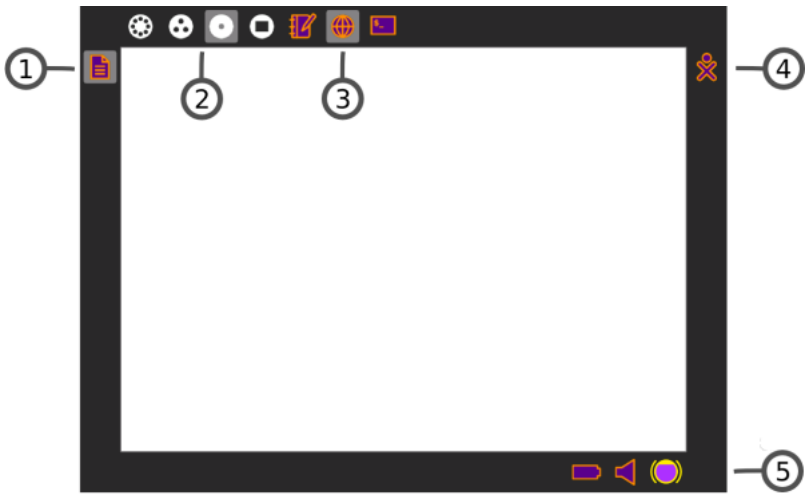
   Click the Tray button to toggle the appearance of the tray.

2. The tray

   The tray typically appears at the bottom of the screen. The Tray contains objects associated with the Activity. In the Browse Activity, bookmarks appear in the tray. In the Record Activity, the media objects you create are placed in the Tray. Retrieve objects by clicking their thumbnails in the tray.

17. THE FRAME

The Frame, which you can get to from any view, contains a clipboard, incoming invitations and notifications, buddies, open Activities, and global information that is used across all Views.



1. Clipboard

   The left-hand edge of the Frame serves as a clipboard. You can drag objects such as images and text to and from the clipboard, and from and to Activities.

2. Zoom menu

   The Zoom menu is on the upper-left edge of the Frame. Use it to move between the four Sugar views: Neighborhood, Group, Home, and Activity.

3. Open Activity list

   The list of currently open Activities appears on the top edge of the Frame. The active Activity is highlighted. (The Journal always appears here.)

   Sometimes an unlabeled circle appears here --- it usually represents an additional full-screen session started by an Activity whose icon already appears in the top edge of the Frame.

   Invitations also appear on this portion of the Frame. They appear as icons in the color of the person who sent them.

4. Active buddy list

People you are currently collaborating with appear on the right edge of the Frame.

5. System status

Battery, speaker, and network status appear on the lower edge of the Frame.

THE CLIPBOARD

You can drag items on the clipboard into Activities. A hover menu also lets you remove them from the clipboard, open them in an Activity, or save (keep) them in your Journal.

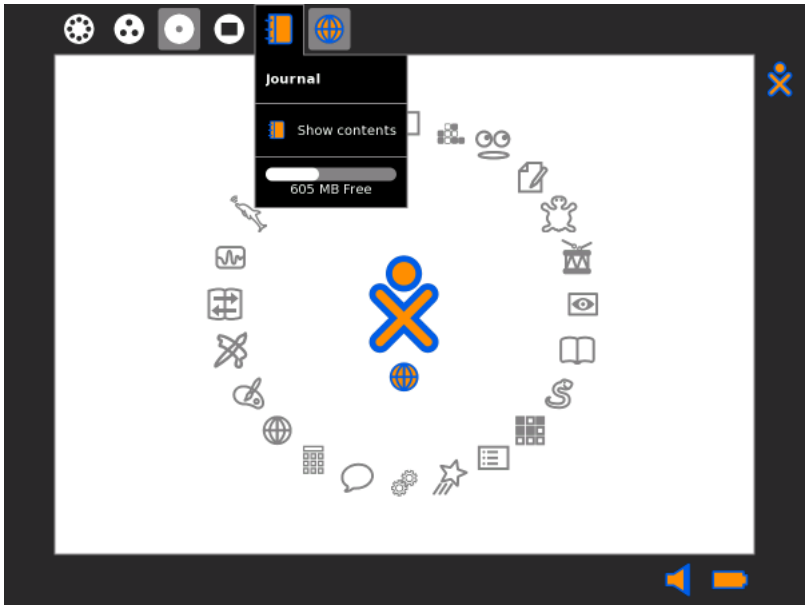
18. THE JOURNAL

The Journal Activity is an automated diary of everything you do within Sugar. Sugar Activities use the Journal as a place to save your work. You can use the Journal as a place to revisit old work, to resume incomplete work, to organize your completed work, and to reflect upon your progress as a learner.

The Journal keeps a record of what you do and the things your create such as photos, drawings, and writings. You can search for items in the Journal or sort entries by type or date. You can also click an entry to get a detailed view. You can resume an Activity by clicking the icon for that entry.

The Journal also supports external storage media such as a USB device or SD card. When you plug a USB device into the XO, you can access the contents of the USB device using the Journal. Click the USB icon to see the content on an attached USB storage device. You can also copy information from the Journal onto removable media—such as a USB device—as a means of backing it up. If you are connected to a school server, you can access its backup system.

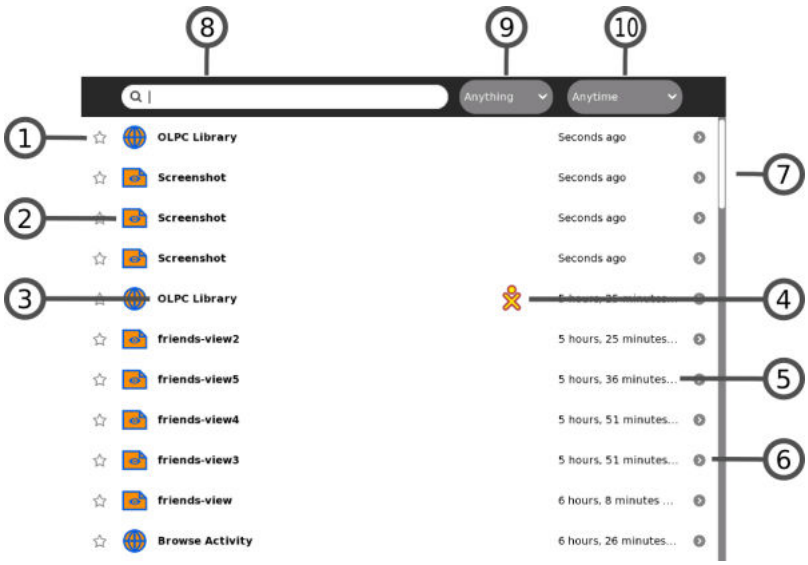
SHOWING THE JOURNAL



To show the Journal, click the Journal icon on the Frame.

On an XO laptop, you can press the magnifying glass key in the top row of the keyboard to immediately open the Journal and search.

JOURNAL FEATURES



The Journal View contains a menu and a list of journal entries:

1. Star

   You can mark important entries to help them stand out in the list by clicking the star icon for that entry. When you click the star icon, the star is colored in.

2. Icon

   Each Journal entry has an icon. The color of the icon shows who created the entry. For example, if you copy a photo from a friend, the photo's icon has your friend's colors.

   You can launch the Activity for the entry by clicking the icon.

   A hover menu may reveal additional options. In particular, "Erase" deletes that entry from your Journal.

   Caution: "Erase" deletes any data associated with the entry shown. For example, if you delete an entry that shows that you installed an Activity, you delete the Activity as well.

3. Entry name

   Each entry has a name. You can edit the name by clicking it. If the Journal view is showing the contents of a removable storage device, the Linux file name is shown here, with the path and the file name extension stripped off.

4. Buddy icons

   If other participants joined you in this Activity, icons in their colors appear here.

5. Elapsed time

The Journal displays the time since the most recent change to the entry.

6. Detail view button

Click this button to see detailed information about the entry. See "Journal detail view", below.

7. Scroll bar

When there are more entries in the Journal than can fit on the screen, you can use the scroll bar to scroll through them.

8. Search box

Type words in the box to search for entries that match those words. Entries are displayed when they contain *all* of the typed words. Comparison will be against all of:

- the entry name field
- the description field (see "Journal detail view")
- the tag field (see "Journal detail view")

Note: the small x button at the right of the box shows that searching is being applied. To cancel your search, click on that x.

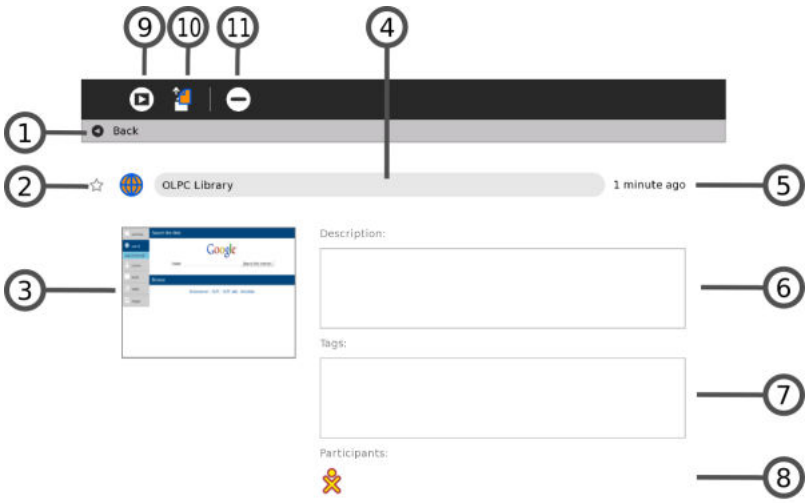
9. Select by type

Choose an entry type to display only entries of that type. Types include the Activity that created an entry, or the object type, such as, picture, sound, text, and so on.

10. Filter by date

You can limit the Journal View to entries made within the past day, week, or month.

JOURNAL DETAIL VIEW



The Detail view appears when you click the Detail view button for an entry. This view lets you examine and annotate the entry.

1. Back icon line

   You can click anywhere in this line to return to the main Journal View.

2. Star and Icon

   These items duplicate their functions on the main Journal view—a star represents a special, never-deleted Journal entry and the icon color indicates who created it originally.

3. Thumbnail image

   Each entry has a thumbnail image that is created automatically. The image shows the Activity screen when the last change to the Journal entry was saved.

4. Entry name

   You can change the name of the entry by clicking it and typing in a new name.

5. Elapsed time

   Displays the time since the most recent change to the entry.

6. Description field

   You can type a description of the entry, which you can use to find this entry later using the Search box in the main Journal view. Use a description to remind you of what you did. For example: "Flowers I saw on

the hike to the waterfall".

7. Tag field

You can enter search tags. Use keywords to describe a journal entry so that you can find it later using the Search box in the main Journal view. You can use keywords to help you "group" this entry, for instance by origin or context.

8. Participants

Displays the XO icons of each person who participated in a shared Activity.

9. Resume button

You can click the Resume button to resume an Activity. A hover menu may show additional options. For example, you can resume working with an image using either the Browser or the Paint Activity.

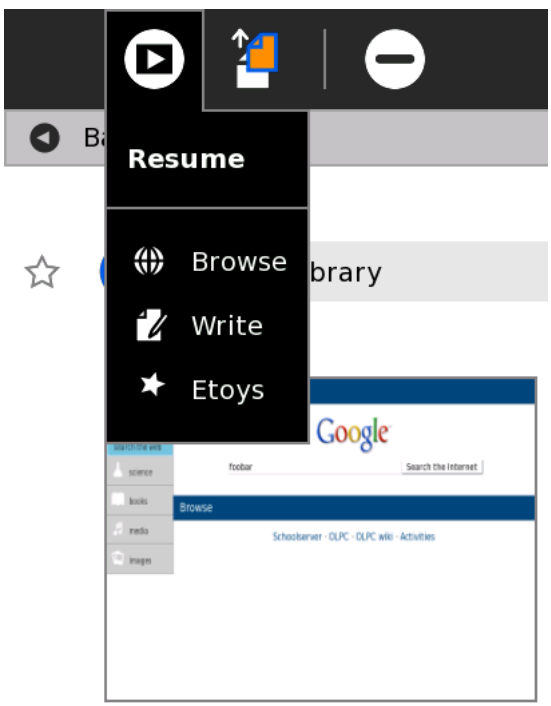
10. Copy button

You can copy a Journal entry to the clipboard (or to one of the removable storage devices shown on the bottom edge of the Journal screen) by clicking the Copy button.

11. Erase button

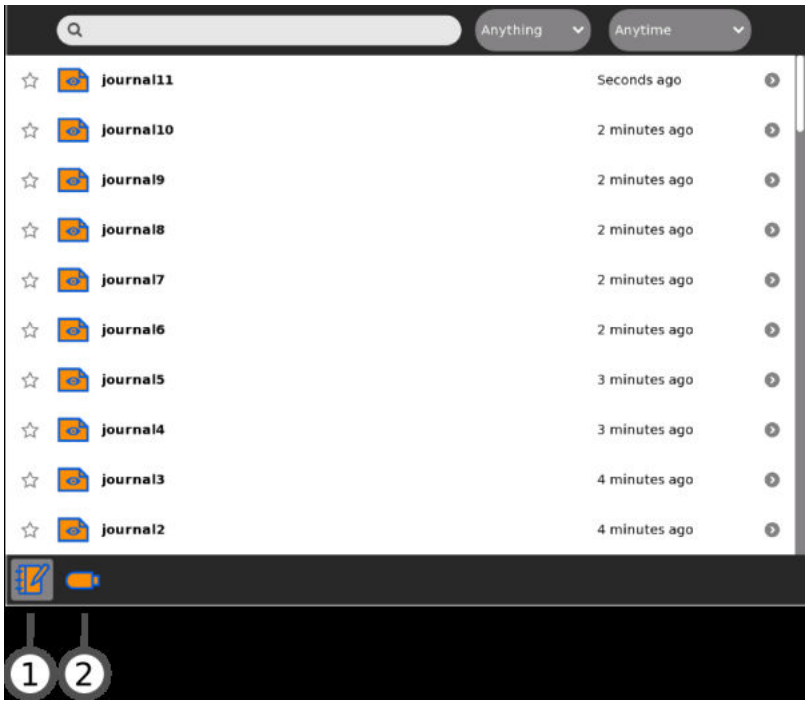
You can erase an entry by clicking the Erase button.

Caution: Once you erase an entry, it cannot be restored unless you have backed up your Journal.



When resuming from the Detail View, you can choose among different Activities.

USING REMOVABLE MEDIA



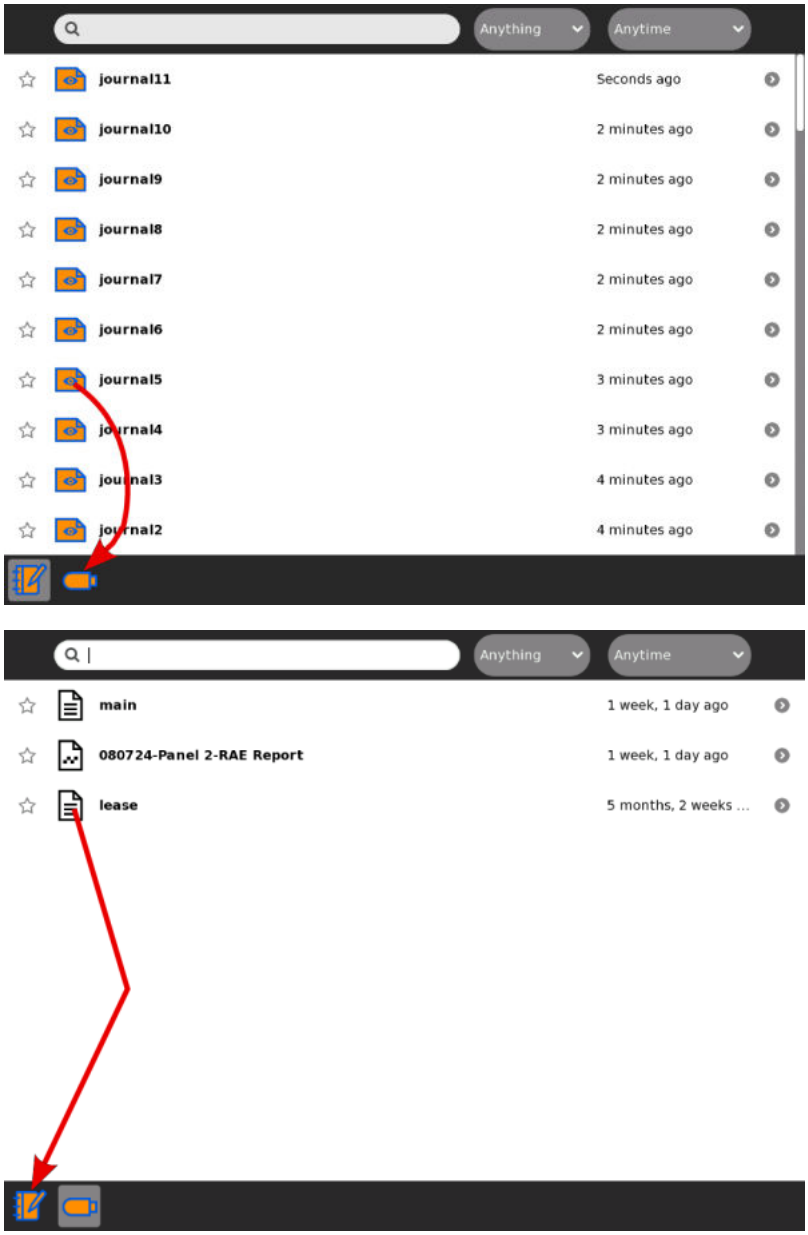
When you insert removable media—such as a USB device or SD card—it appears as an icon on the bottom edge of the mail Journal view.

1. Journal

   Click the Journal icon to show the Journal View.

2. USB device

   Click the USB icon (or SD icon) to show the removable-media file system.



You can drag Journal entries onto the USB device. You can also drag entries from the USB device to the Journal.

To remove (unmount) the external file system, choose *Unmount* on the hover menu.

Caution: It may take time for the hover menu to appear. It is easy to make a mistake and click the icon itself when you intended to click *Unmount*.

Caution: If you have a Terminal running you may inadvertently have your removable media locked. The safest way to remove media is after powering off your computer.

NOTE TO PARENTS AND TEACHERS

The Journal keeps a record of everything a child does within Sugar: which Activities they use and what content they create. It also keeps a record of group Activities, such as participation in a shared Write or Browse session.

The Journal encourages reflection. You can refer to it to assess a child's progress, much in the spirit of "portfolio" assessment. You can also use it as a catalyst for discussion with your child or student. We encourage the use of the description field within the detail view of Journal entries as a place to annotate or comment up entries.

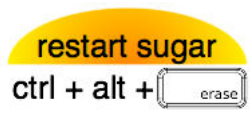
19. PERSONALIZING SUGAR

You can customize Sugar to meet your needs. You can change options such as:

- the color of your XO icon
- your nickname
- the language used in the interface
- the power-saving features

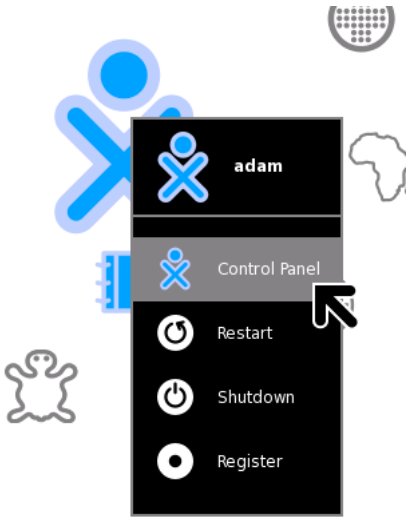
The Sugar *Control Panel* is the place to configure your system.

Note: Many of the changes described in this chapter require that you restart Sugar (**ctrl+alt+erase**) for them to take effect.



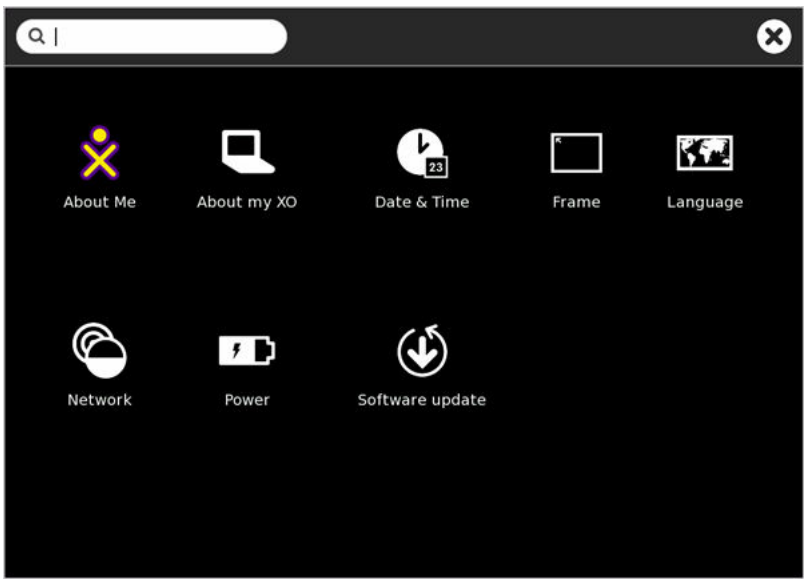
OPENING THE SUGAR CONTROL PANEL

Hover over the XO icon in the center of the Home View and a menu appears. Select *Control Panel*.



MAIN PANEL

The *Main Panel* has eight categories of options.



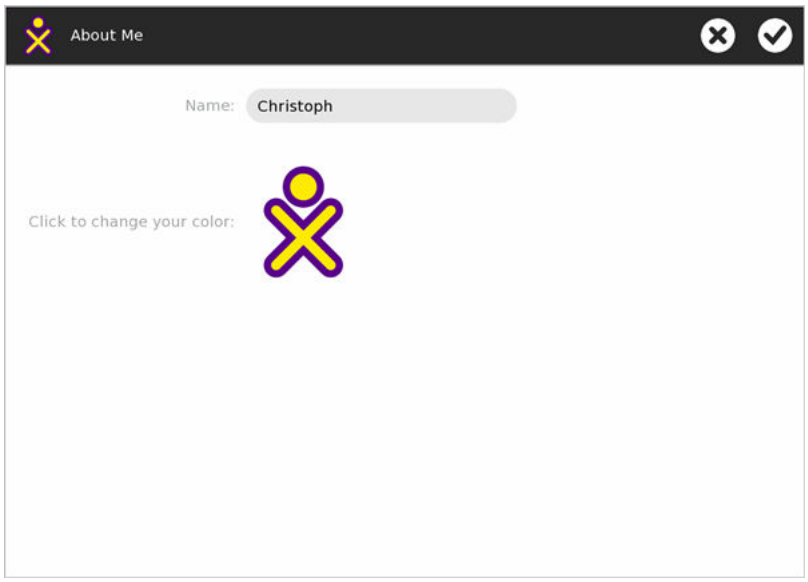
You can use the text box at the top of the window to search the available options. Options that don't match the search text are dimmed.

You accept changes made on the category panels by clicking the "OK" button in the top right corner. Clicking the "Cancel" button discards the changes and returns you to the main panel.

You can quit the control panel by clicking the "X" in the top right corner of the panel.

ABOUT ME

Note: If you make changes on this panel, you must restart Sugar (**ctrl+alt+erase**) for them to take effect.
Caution: You may lose any work you have open.



Name

You can change your user name in this box. The user name appears when you start Sugar.

Color

Click the XO icon to cycle through the colors for it. These colors show up in the Neighborhood View, Group View, Home View, on your Frame and when sharing with other Sugar users. There are almost 400 different color combinations available, which consist of a combination of six base-colors (red, orange, yellow, green, blue, purple) used as stroke-color and fill-color and three shades (light, medium, dark).

Please see wiki.laptop.org/images/0/05/Buddy-Icon-Color-Matrix.pdf for an overview of all the available color combinations.

ABOUT MY XO

Identity

Some computers, such as the XO laptop, report the serial number here. You might need the serial number for repair service or to request a developer key.

Software

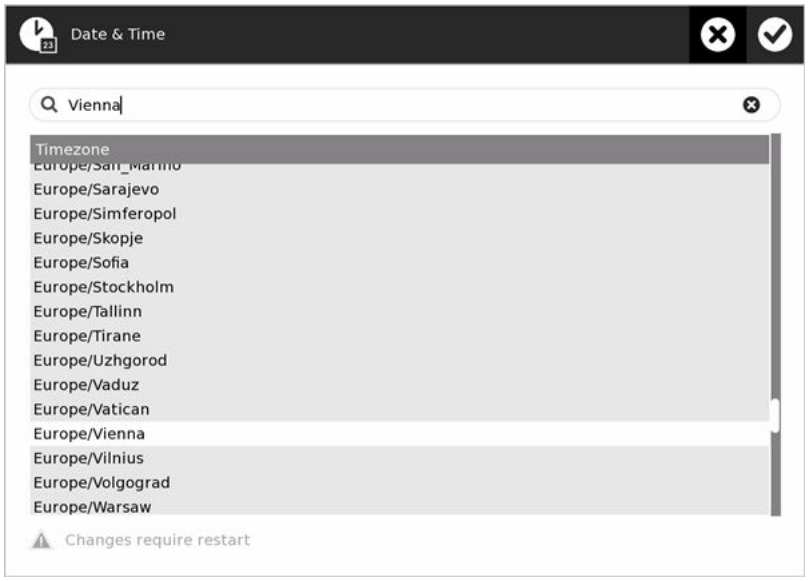
Here you can see which software and firmware version is currently installed on your system.

DATE & TIME

Note: If you make changes on this panel, you must restart Sugar (**ctrl+alt+erase**) for them to take effect.
Caution: You may lose any work you have open.

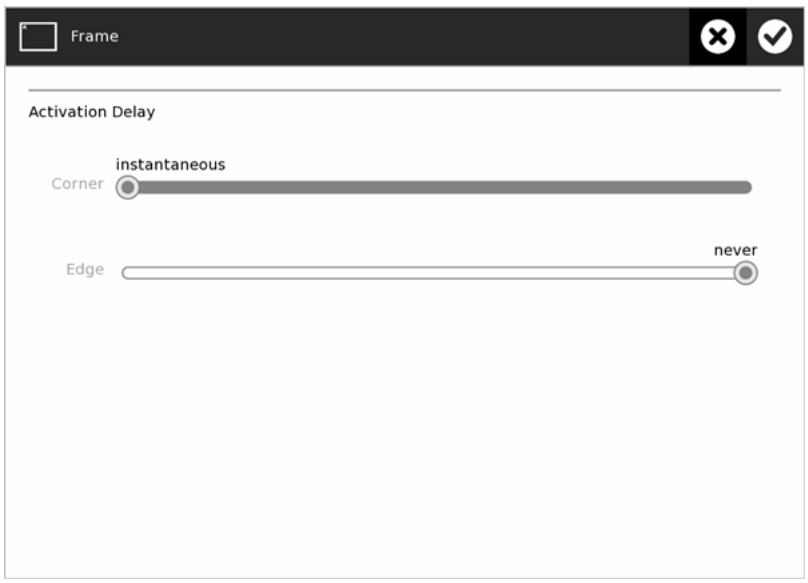
You can set your time zone in multiple ways:

- Select a location such as *Europe/Vienna*.
- Enter an offset to Greenwich Mean Time (GMT) or Coordinated Universal Time (UTC), for example: *GMT+2*



FRAME

Note: If you make changes on this panel, you must restart Sugar (**ctrl+alt+erase**) for them to take effect.
Caution: You may lose any work you have open.



Activation Delay

You can change the delay for activating the Frame. You can set the delay separately for the corners and edges.

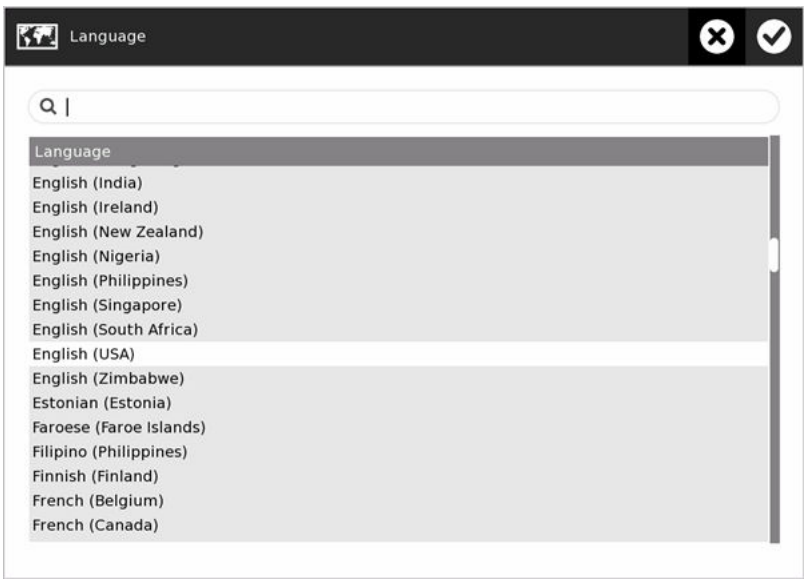
- "instantaneous" means that the Frame appears immediately when you move the pointer to that position (corner or edge).
- "never" means that moving the pointer to that position never activates the Frame.
- Values in the middle of the range indicate what fraction of a second the pointer must remain in the position before the Frame activates. The range is from 0.001 to 0.999 seconds.

In the default configuration the Frame is instantly shown when the pointer is moved into one of the corners of the screen.

LANGUAGE

Note: If you make changes on this panel, you must restart Sugar (**ctrl+alt+erase**) for them to take effect.
Caution: You may lose any work you have open.

You can select your system's default language. Even though your language might be included in the list, the translation might not be complete or available.



NETWORK

Wireless

This checkbox allows you to turn the system's wireless radio on or off. For example, if you use the system on an airplane, you must turn the radio off.

Mesh

Note: If you make changes to this setting, you must restart Sugar (**ctrl+alt+erase**) for them to take effect.
Caution: You may lose any work you have open.

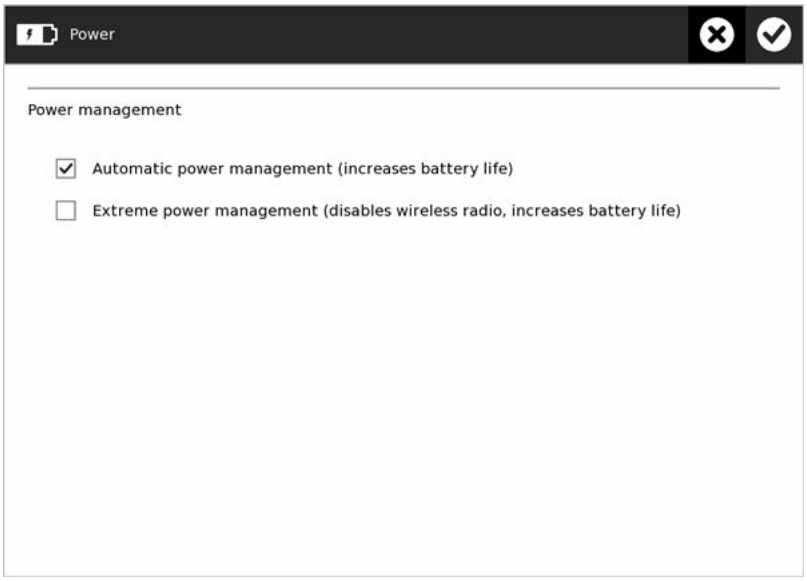
Here you can enter the name of a collaboration server based on jabber. This lets you to share Activities with other people connected to the same server, even when they're located half-way around the world.

Please note that some local OLPC user clubs and universities run their own collaboration server so it is worth checking wiki.laptop.org for relevant information.

POWER

You can configure the power-saving features of your system.

Please note that these settings are always used, even when the computer is plugged into a power outlet.



Click the check boxes to enable or disable the following options.

Automatic power management

This mode dims the brightness of the display and turns off the CPU after one minute when there is no input via the touchpad or keyboard and no Activities that make heavy use of the CPU.

Extreme power management (disables wireless radio, increases battery life)

Enabling this mode turns off your wireless radio. This significantly increases your system's battery life. Enabling this option turns off the two LEDs on the left side of the laptop. You won't be able to see any other networks or XOs on your Neighborhood View. Enable this mode for maximum battery life.

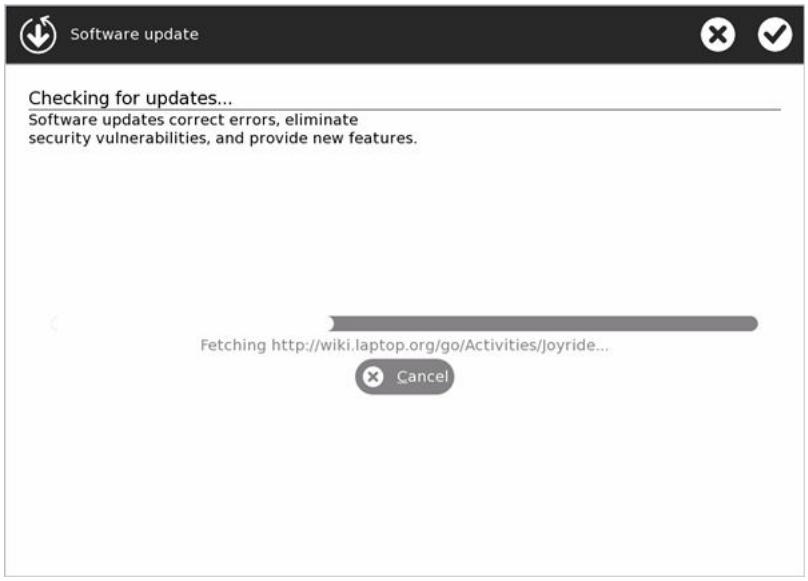
SOFTWARE UPDATES

You can select, install, and update Activities on your system.

Checking for updates

If your system is connected to the Internet, it tries to fetch a list of all the available Activities.

If your system isn't connected, the message "*Could not access the network to check for updates*" appears.



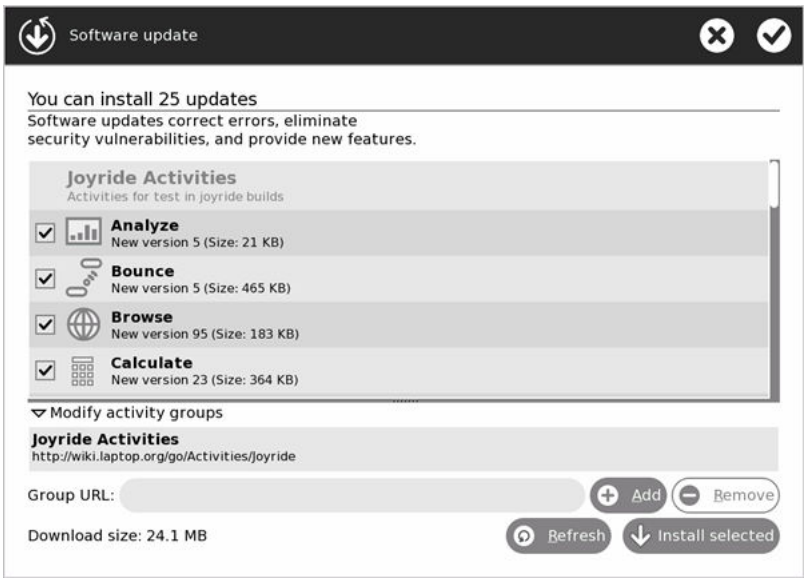
Selecting updates

The panel shows a list of new or updated Activities that are available. The overview also contains information about the Activity's version and size. An Activity is selected if its check box contains a check mark.

1. Select the Activities that you want to install on your system, and clear the checkboxes for the ones you don't want to install.
2. Click "Install selected".

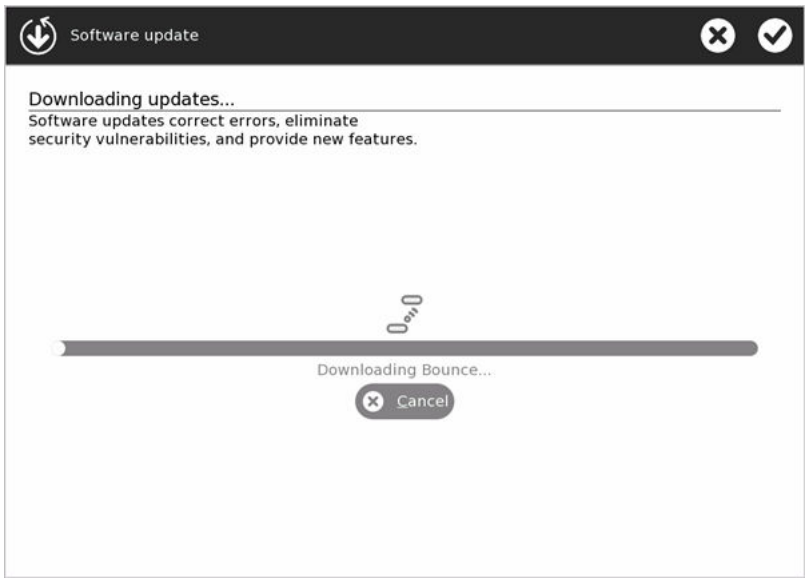
Modifying Activity groups

You can click on *Modify activity groups* to enter alternative activity groups.



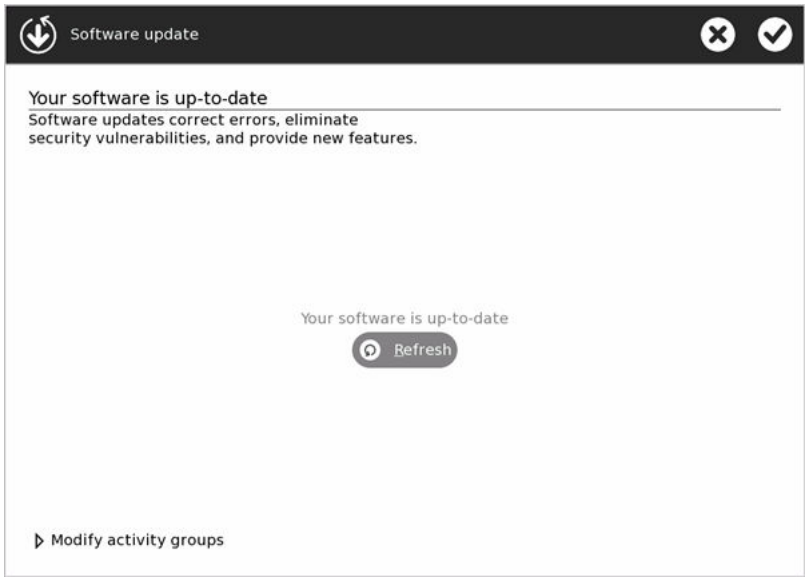
Downloading updates

A status view informs you of the download and installation progress.



Software is up-to-date

If all your Activities are up-to-date, you see the following message.


Software update
Your software is up-to-date
Software updates correct errors, eliminate
security vulnerabilities, and provide new features.
Your software is up-to-date
Refresh
Modify activity groups

ACTIVITIES

20. WHAT IS AN ACTIVITY?

Sugar applications are called "Activities". Activities include an application as well as sharing and collaboration capabilities, a built-in interface to the Journal, and other features such as the clipboard.

The Journal Activity is pre-installed. Other Activities can be distributed as part of an Activity Pack. There are many, many others you can install yourself.

Activities you have specified as favorites appear as a ring of icons around the XO icon in the center of the Home View. All the Activities you have installed are shown in the List mode of the Home View.

Some Activities allow Sugar users to work and learn cooperatively. For example, Write allows several users to collaboratively create a document. Read allows several users to read the same document or a teacher to share a book with an entire classroom. Memorize allows a group of users to play a game together.

Another class of Activities allow users to write software. A variety of computer languages such as Logo, SmallTalk, CSound, and Python are supported within the TurtleArt, Etoys, TamTam, and Pippy Activities.

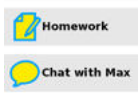
21. WHAT IS SUGAR?

"We like to think that a child's play is unconstrained—but when children appear to feel joyous and free, this may merely hide from their minds their purposefulness; you can see this more clearly when you attempt to drag them away from their chosen tasks. For they are exploring their worlds to see what's there, making explanations of what those things are, and imagining what else could be; exploring, explaining and learning are among a child's most purposeful urges and goals. *The playfulness of childhood is the most demanding teacher we have.* Never again in those children's lives will anything drive them to work so hard." —Marvin Minsky, *The Emotion Machine*

Sugar is a learning platform that reinvents how computers are used for education. Collaboration, reflection, and discovery are integrated directly into the user interface. Sugar promotes "studio thinking [1]" and "reflective practice [2]". Through Sugar's clarity of design, children and teachers have the opportunity to use computers on their own terms. Students can reshape, reinvent, and reapply both software and content into powerful learning activities. Sugar's focus on sharing, criticism, and exploration is grounded in the culture of free software (FLOSS).

Sugar facilitates sharing and collaboration.
Children can write documents, share books and pictures, or make music together with ease.

There are no files, folders, or applications.
Children interact with Activities. Activities includes an application, data, and history of the interaction that can be used to resume and reflect on the child's work
.



Everything is saved automatically.
It is our goal that you will never lose your work. Documents will eventually by synced with a network server, adding additional protection.

A Journal is used for accessing data.
The Journal is a diary of things that you make and actions you take. It is a place to reflect upon your work.

Sugar is free and open-source software.
Sugar is licensed under the GNU GPL; updates will always respect the freedom of its users.

NOTE TO PARENTS AND TEACHERS

The Sugar Philosophy

Information is about nouns. Learning is about verbs. The Sugar user interface differs from traditional user interfaces in that it is based on both cognitive and social constructivism. We believe that learners should engage in exploration and collaboration. The Sugar platform is based on three defining human principles. These are the pillars of user experience for learning:

- Everyone is a teacher and a learner.
- Humans are social beings.
- Humans are expressive.

Two principles define the Sugar platform:

- You learn through doing, so if you want to learn more, you want to do more.
- Love is a better master than duty—you want people to engage in things that are authentic to them, things that they love. Internal motivation almost always trumps external motivations.

Three experiences characterize the Sugar platform:

- **Sharing**: The Sugar interface always shows the presence of other learners. Collaboration is a first-order experience. Students and teachers dialog with each other, support each other, critique each other, and share ideas.
- **Reflecting**: Sugar uses a "Journal" to record each learner's activity. The Journal serves as a place for reflection and assessment of progress.
- **Discovering**: Sugar can accommodate a wide variety of users, with different levels of skill in terms of reading, language, and different levels of experience with computing. It is easy to approach, yet it doesn't put an upper bound on personal expression. One can peel away layers and go deeper and deeper, with no restrictions.

Sugar is written in Python, an easy-to-learn interpreted language [3]. This allows the direct appropriation of ideas in whatever realm the learner is exploring: music, browsing, reading, writing, programming, or graphics. The student can go further. They are not going to hit a wall. They can, at every level, engage with and affect the very tools they are using for their personal expression.

Throughout this manual we have added brief "Note to parents and teachers" sections which explain the philosophy behind the Sugar platform. We hope these sections help you guide your children and students through the learning process.

SUGAR LABS

Sugar was originally designed for One Laptop per Child (OLPC), as part of an effort to provide an opportunity for a quality education to every child through the distribution of connected laptop computers, our most powerful tools for expression. Sugar is the user interface used on the OLPC XO laptop.It is now available on many GNU/Linux distributions, including Fedora, Debian, and Ubuntu. Anywhere you run Linux, you can probably run Sugar.

Sugar Labs is a non-profit foundation whose mission is to produce, distribute, and support the use of the Sugar learning platform. Sugar Labs supports the community of educators and software developers who want to extend the platform and who have been creating Sugar Activities. Sugar is a community project. It is available under the open-source GNU General Public License (GPL) and free to anyone who wants to use or extend it.

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[1] Studio thinking is a term used to describe how visual arts teachers teach and what visual arts students learn. The term is detailed in *Studio Thinking: The Real Benefits of Visual Arts Education*. Studio thinking includes "studio structures": demonstrations, projects, and critiques; as well as "studio habits of mind": develop craft, engage and persist, envision, express, observe, reflect, stretch and explore, and understand the art world. In the context of Sugar, studio thinking is applied not just to the arts, but to all disciplines.

[2] Reflective practice is a concept introduced by Donald Schön in his book *The Reflective Practitioner*. Reflective practice involves students applying their own experiences to practice while being mentored by domain experts. In the context of Sugar, the expert could be a teacher, a parent, a community member, or a fellow student.

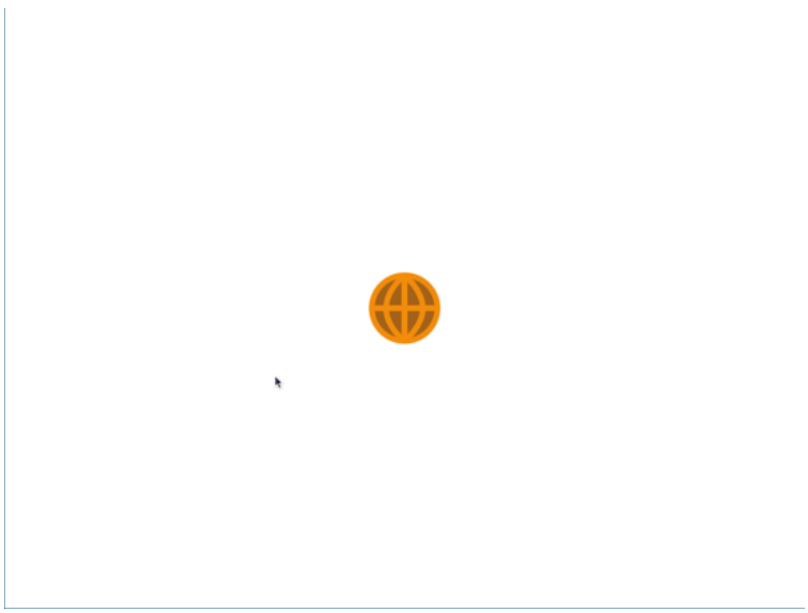
[3] An interpreted language is a programming language whose instructions are interpreted "on the fly" (or compiled to a virtual machine code) as opposed to precompiled. The significance of interpreted languages to the Sugar platform include: platform independence, ease of debugging, ready access to source code, and small program size. Python is a general-purpose, high-level programming language. It emphasizes code readability and features a minimalist syntax and comprehensive standard library.

22. LAUNCHING ACTIVITIES

You can launch an Activity in four different ways:

- Click the Activity icon in the Home View.
- Resume an Activity from the Journal View.
- Join a shared Activity from the Neighborhood View.
- Accept an invitation by clicking the invitation icon on the Frame.

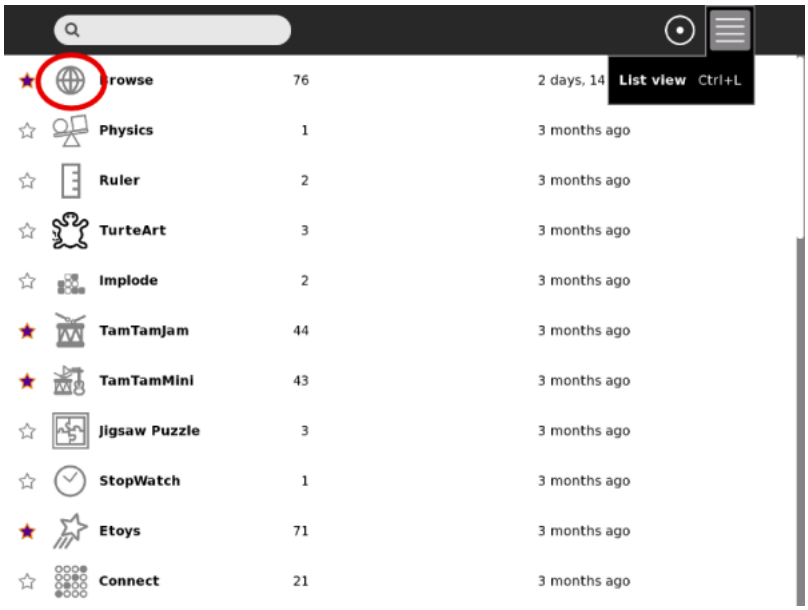
When you launch an Activity, its icon flashes in the middle of the screen while the Activity loads.



LAUNCHING FROM THE RING VIEW

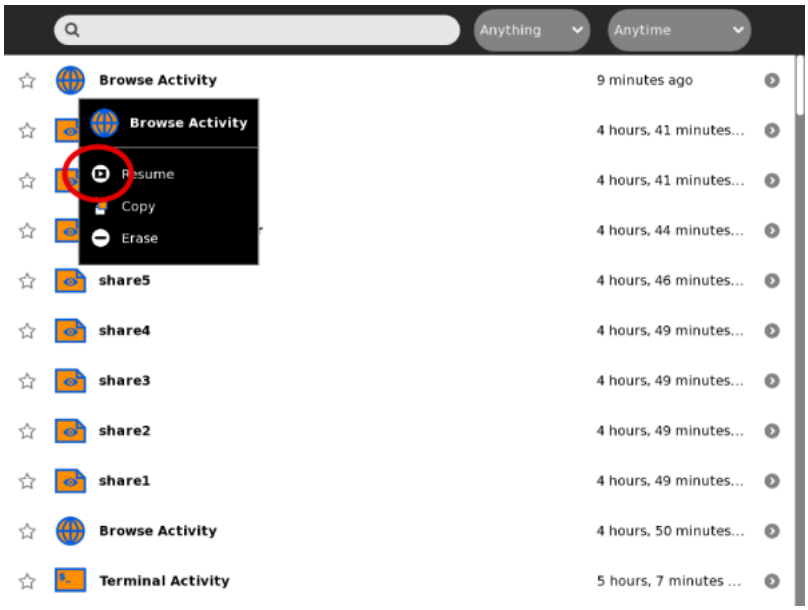
Click the icon or click an option on the hover menu.

LAUNCHING FROM THE LIST VIEW



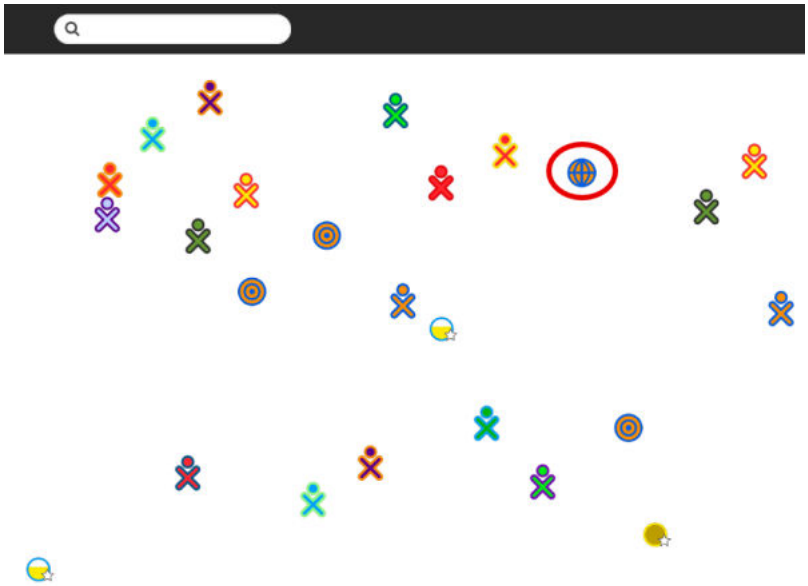
Click the icon or click an option on the hover menu.

RESUMING FROM THE JOURNAL



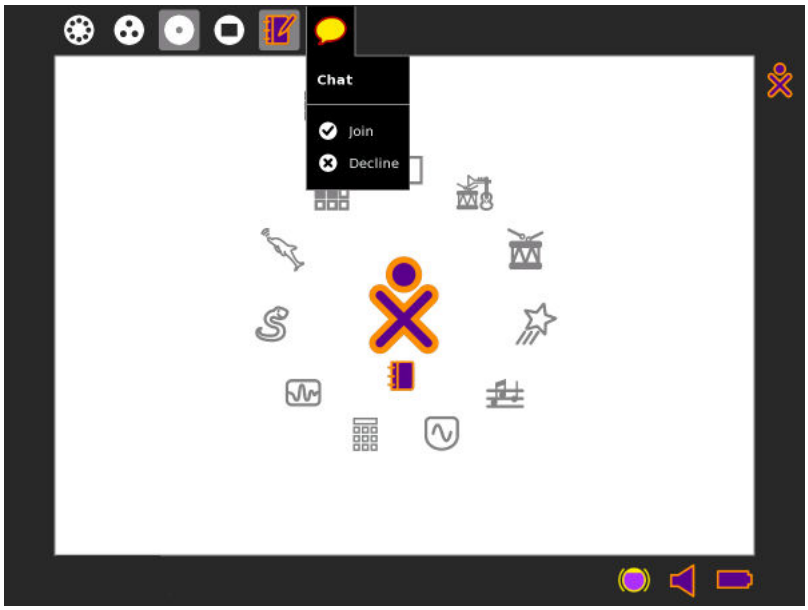
Click the icon or click *Resume* on the hover menu.

JOINING A SHARED ACTIVITY



Click the icon or click an option on the hover menu.

JOINING AN ACTIVITY BY ACCEPTING AN INVITATION



Click *Join* in the hover menu on the Frame.

23. COLLABORATING

There are two similar but different modes of collaborating within Sugar:

- Send an invitation to collaborate on an Activity.
- Share an Activity in the Neighborhood View.

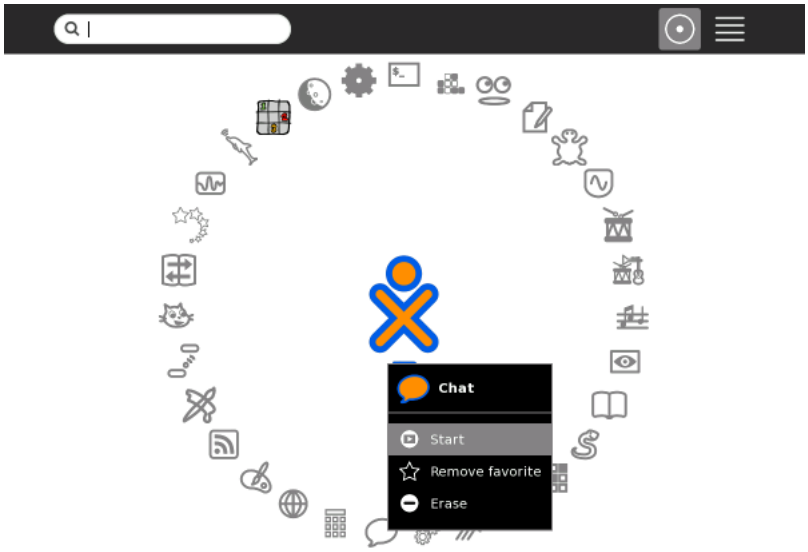
The difference between the two modes is subtle but important. When you send an invitation, you have specific control over who joins you. When you share with the neighborhood, you are opening your Activity up to anyone who is visible in the Neighborhood View.

SENDING AN INVITATION

If you want a friend to join you in an Activity, send them an invitation. You can invite as many friends as you'd like by following the steps outlined below. The steps use the example of inviting someone to talk in the Chat Activity.

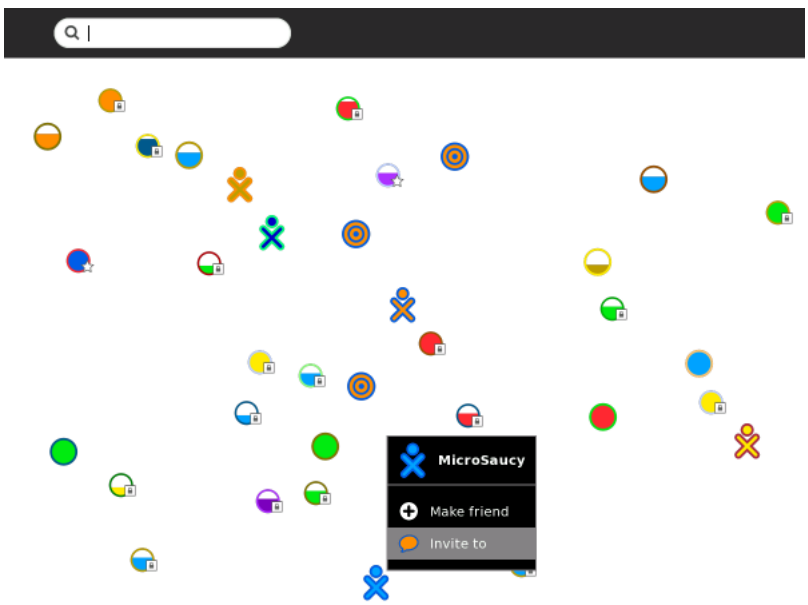
Step 1: Start the Activity.

You must be running an Activity in order to send an invitation. For example, open Chat from the Home View.



Step 2: Go to the Neighborhood View or the Group View.

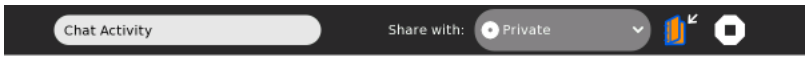
Step 3: Hover over the icon of the friend you'd like to invite, and click *Invite to*.



Your friend receives the invitation.

Step 4: Return to your Activity and start collaborating.

For example, switch back to the Chat Activity.

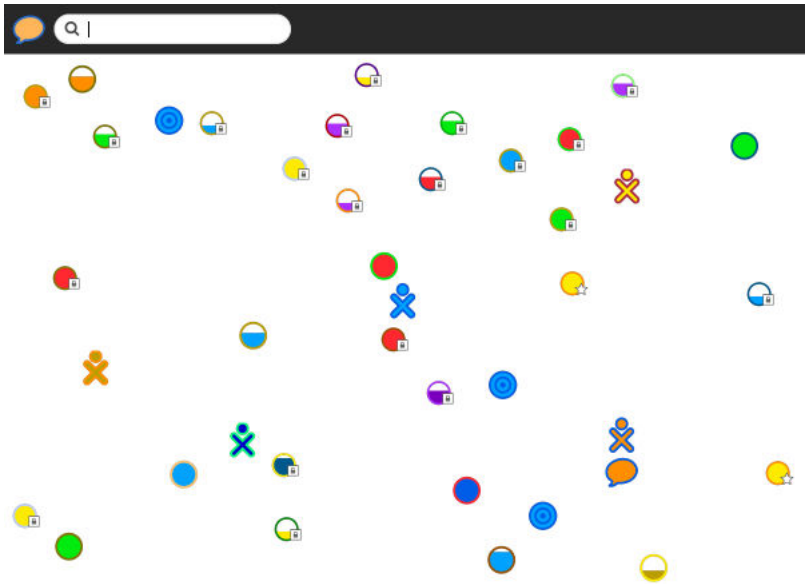


RECEIVING AND ACCEPTING AN INVITATION

Step 1: Notice that you have an invitation.

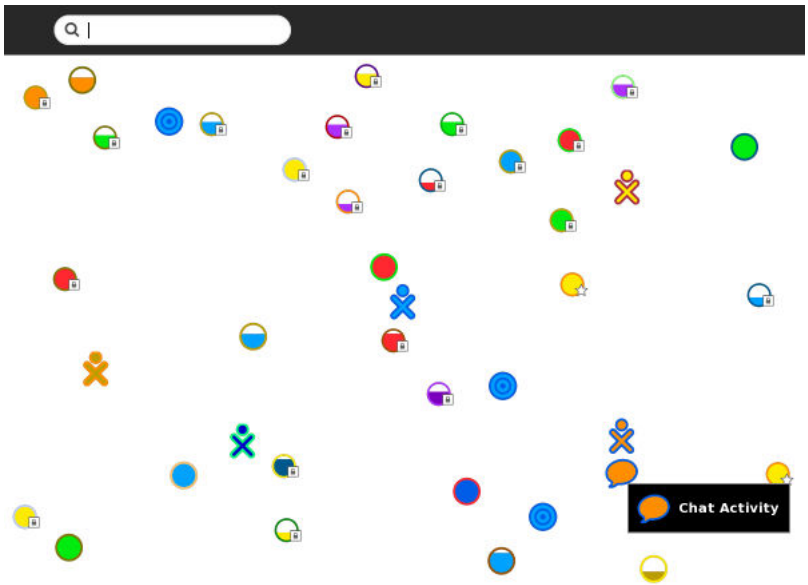
The notification of an invitation appears in the upper-left corner of the screen and on the Frame.

The invitation is an Activity icon. The icon is the color of the person who sent the invitation.

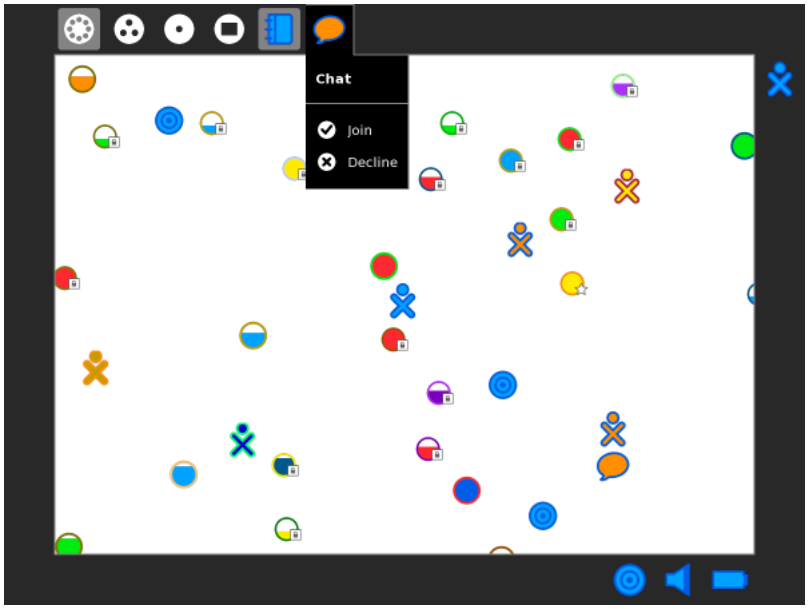


Step 2: Click the icon to accept the invitation.

You can accept the invitation from the Neighborhood View or the Frame.



In the Neighborhood View, click the other user's icon.

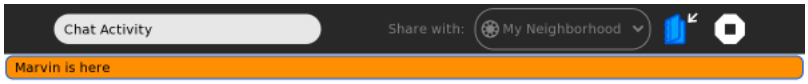


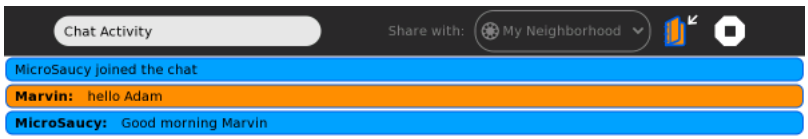
On the Frame, click the invitation icon, or click *Join* on the icon's hover menu.

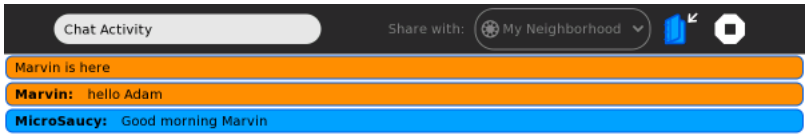
Note: You do not have to accept an invitation. Just ignore it or click *Decline* on the invitation icon's hover menu.

Step 3: Start collaborating.

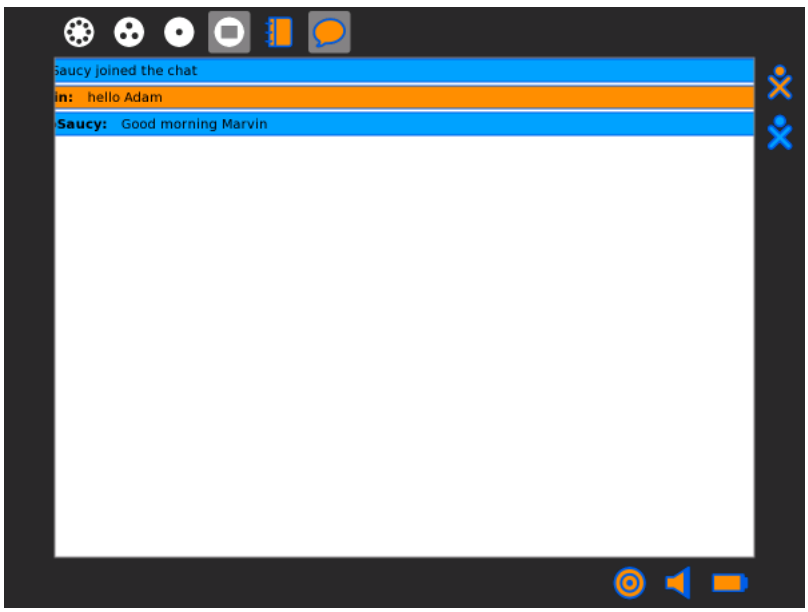
As soon as you accept an invitation, you switch to the Activity.

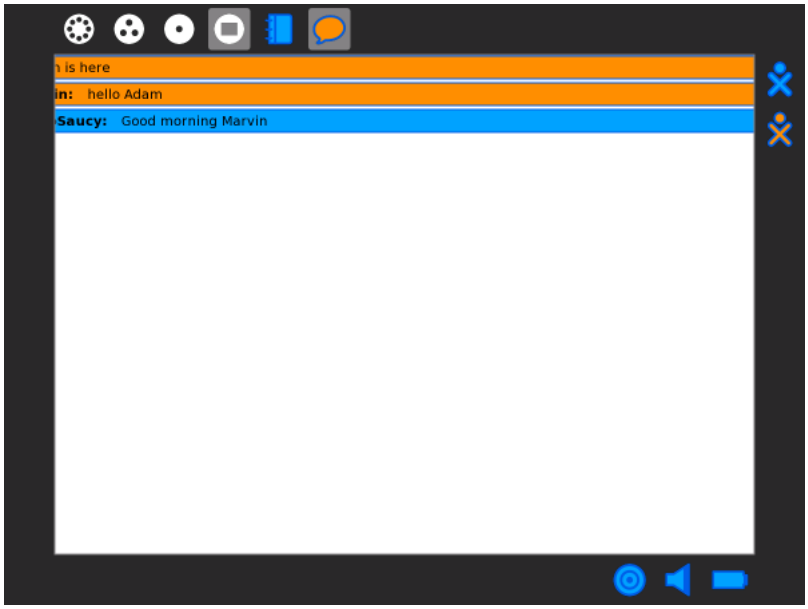

Chat Activity
Share with:
My Neighborhood
Marvin is here


Chat Activity
Share with:
My Neighborhood
MicroSaucy joined the chat
Marvin: hello Adam
MicroSaucy: Good morning Marvin

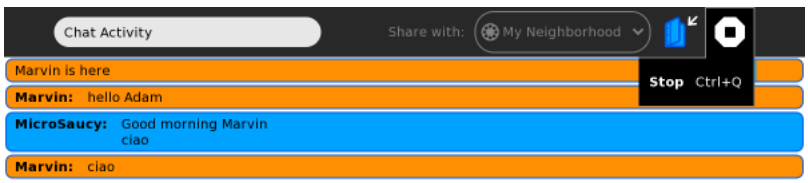


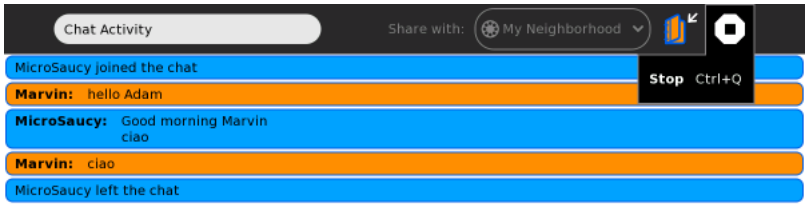
While you are collaborating, your collaborators' icons appear on the Frame.





When you leave the Activity, you end the collaboration.





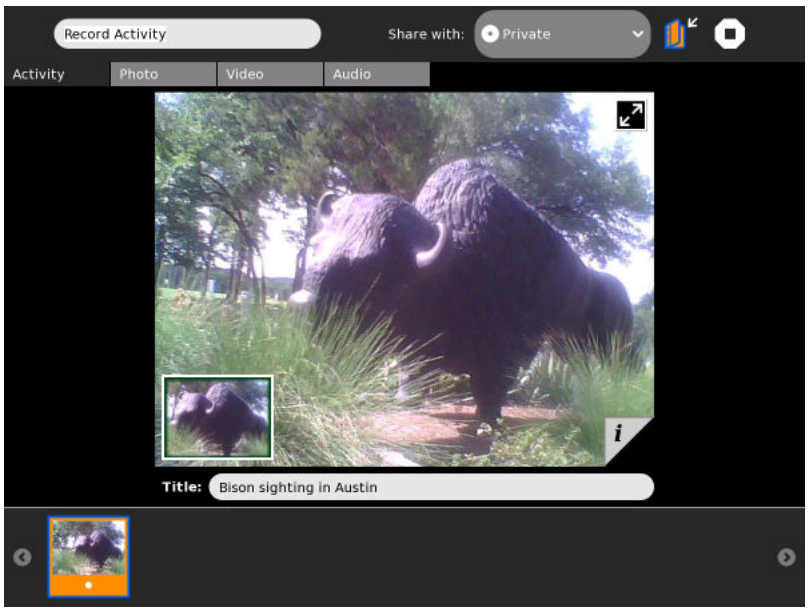
SHARING AN ACTIVITY

You can share an Activity if you want anyone from your Neighborhood View to join you.

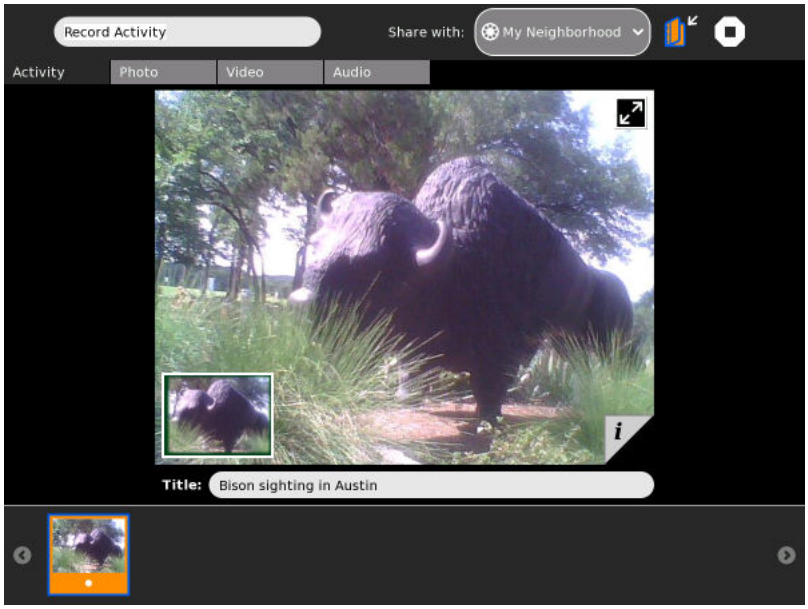
Step 1: Start the Activity.

You must be running an Activity in order to share it. For example, open Record from the Home View.

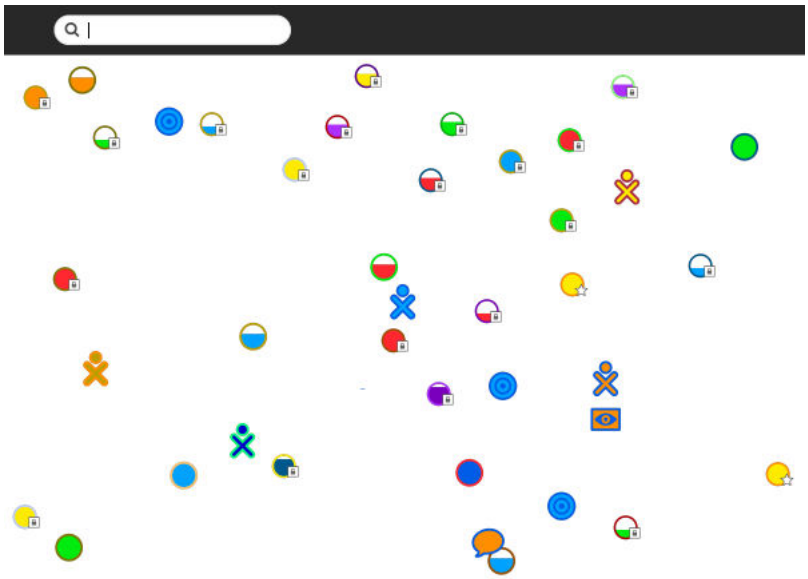
Step 2: Once the Activity is running, select the Activity tab.



Step 3: On the *Share with* **menu, click** *My Neighborhood*.



An icon representing your shared Activity appears in the Neighborhood View.

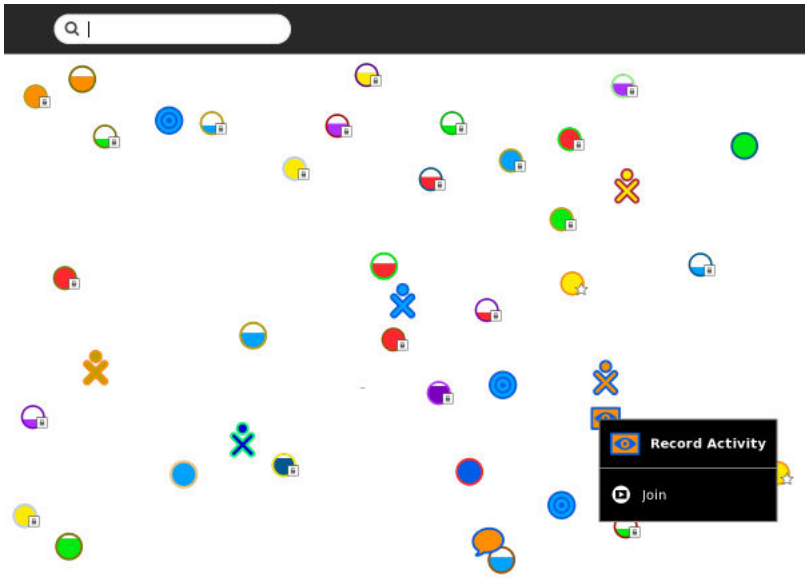


Your XO icon appears above the Activity icon in the Neighborhood View.

JOINING A SHARED ACTIVITY

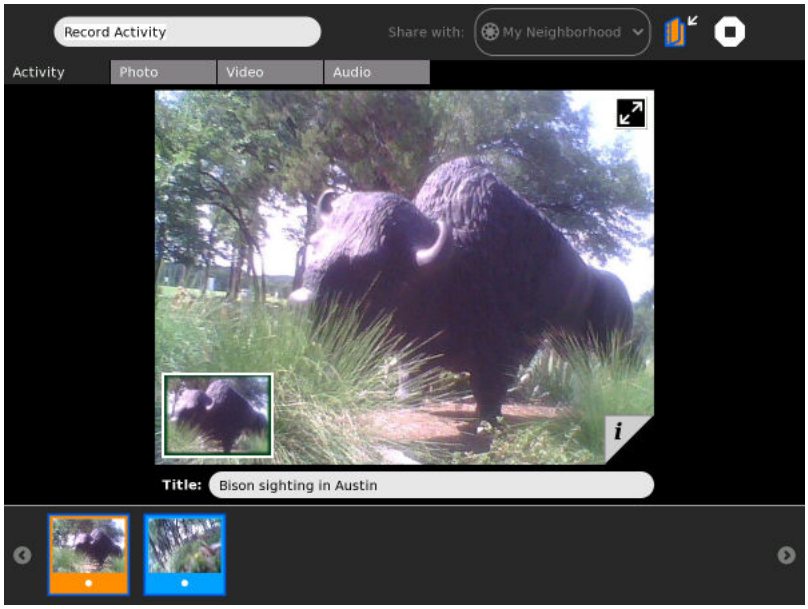
You can join any Activity that appears in the Neighborhood View.

Step 1: From the Neighborhood View, click the icon representing the shared Activity you would like to join.



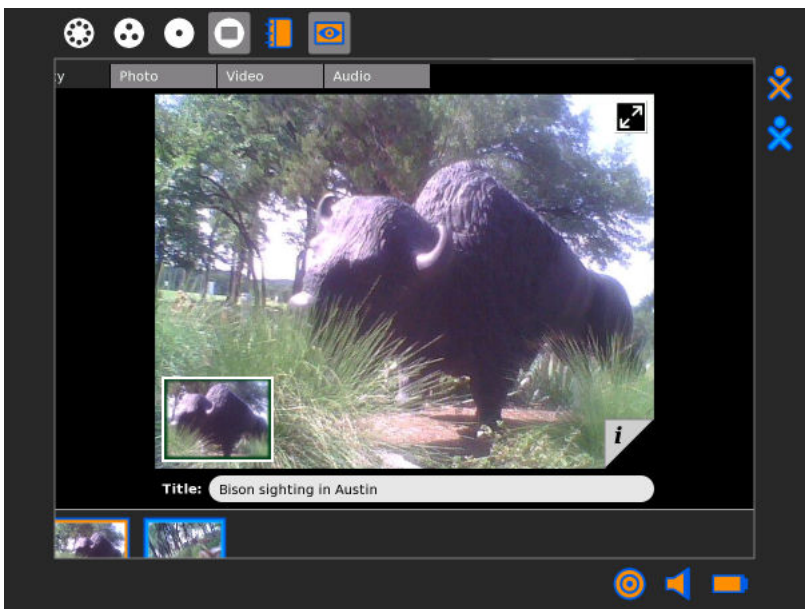
Step 2: Start collaborating.

The Activity opens as soon as you click the Activity's icon.



The approach to collaboration varies from Activity to Activity. In the Record Activity, thumbnails of photographs are shared. The photograph's frame is in the same colors as the XO icon of the person who took the photo.

On your Frame, you can see the icons of all of the people you are collaborating with.



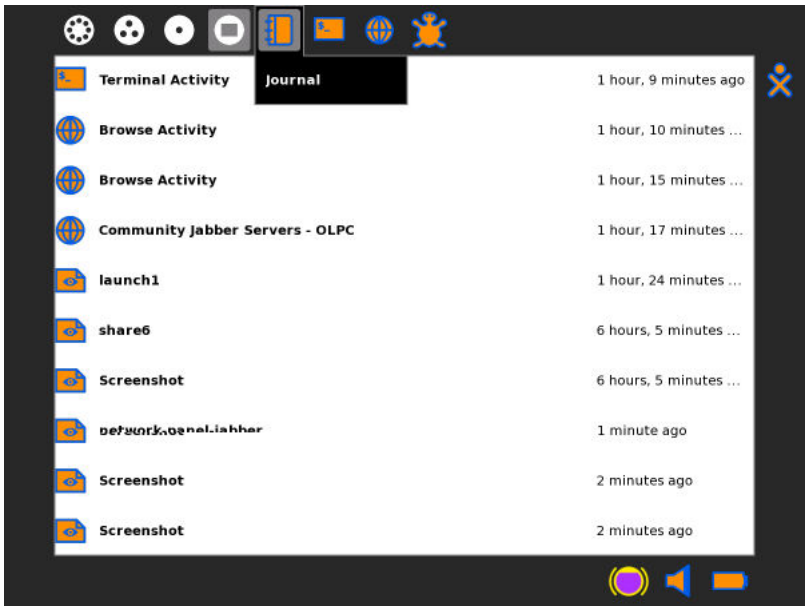
You can exit a shared Activity at any time by clicking the Activity tab and clicking the Stop icon.

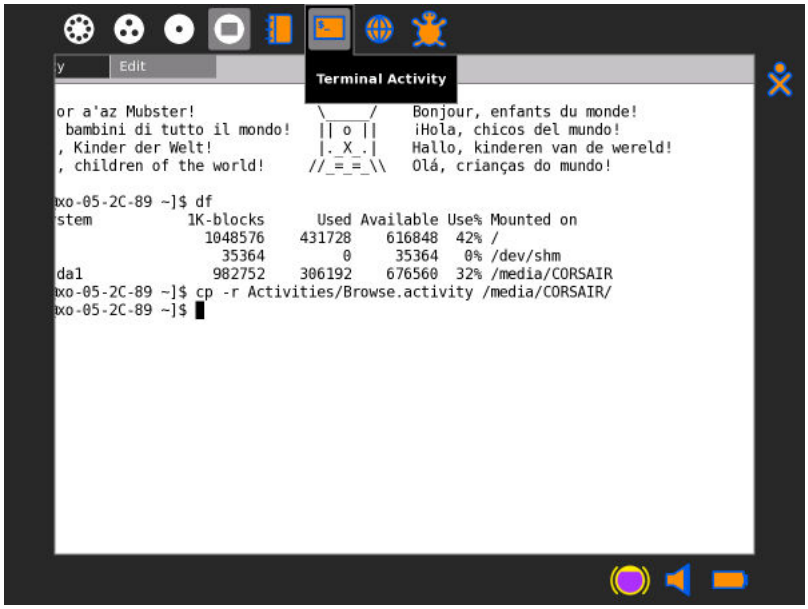
24. SWITCHING ACTIVITIES

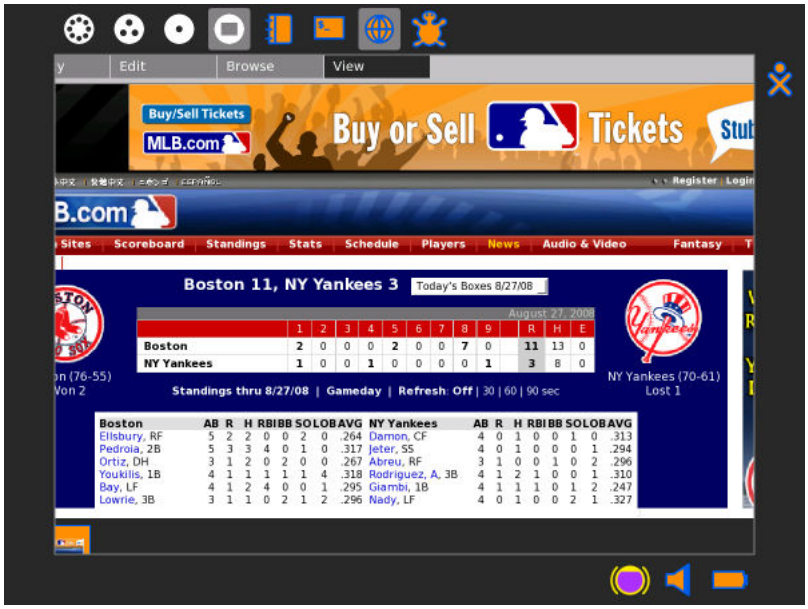
You can switch between Activities in two ways:

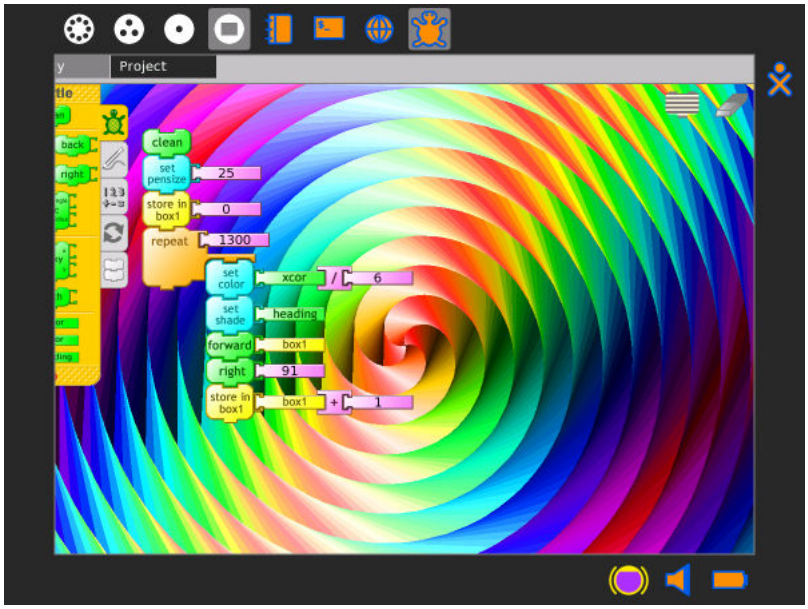
- In the Frame, click the icon of the Activity you want to switch to.
- Press **alt + tab** to cycle through your open Activities until you reach the one you want.

SWITCHING USING THE FRAME




Edit
Terminal Activity
or a'az Mubster!
bambini di tutto il mondo!
, Kinder der Welt!
, children of the world!
Bonjour, enfants du monde!
¡Hola, chicos del mundo!
Hallo, kinderen van de wereld!
Olá, crianças do mundo!
xo-05-2C-89 ~]$ df
stem 1K-blocks Used Available Use% Mounted on
1048576 431728 616848 42% /
35364 0 35364 0% /dev/shm
da1 982752 306192 676560 32% /media/CORSAIR
xo-05-2C-89 ~]$ cp -r Activities/Browse.activity /media/CORSAIR/
xo-05-2C-89 ~]$


Edit
Browse
View
Buy/Sell Tickets
MLB.com
Buy or Sell Tickets
Sites
Scoreboard
Standings
Stats
Schedule
Players
News
Audio & Video
Fantasy
Boston 11, NY Yankees 3
Today's Boxes 8/27/08
Boston
NY Yankees
Standings thru 8/27/08 | Gameday | Refresh: Off | 30 | 60 | 90 sec
NY Yankees (70-61)
Lost 1



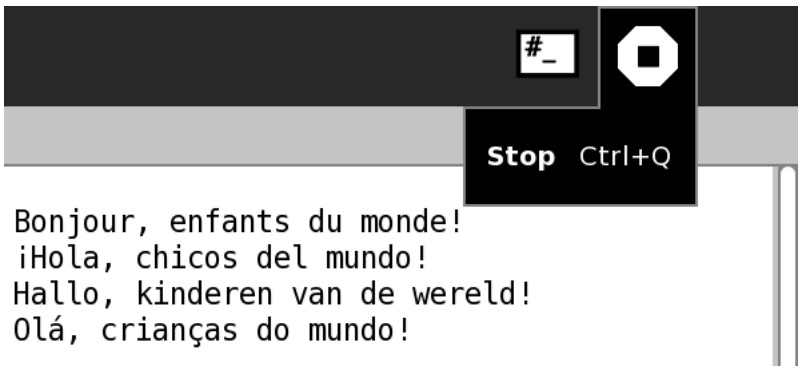
Note: You can use the Clipboard and the Journal to copy data between Activities.

25. EXITING ACTIVITIES

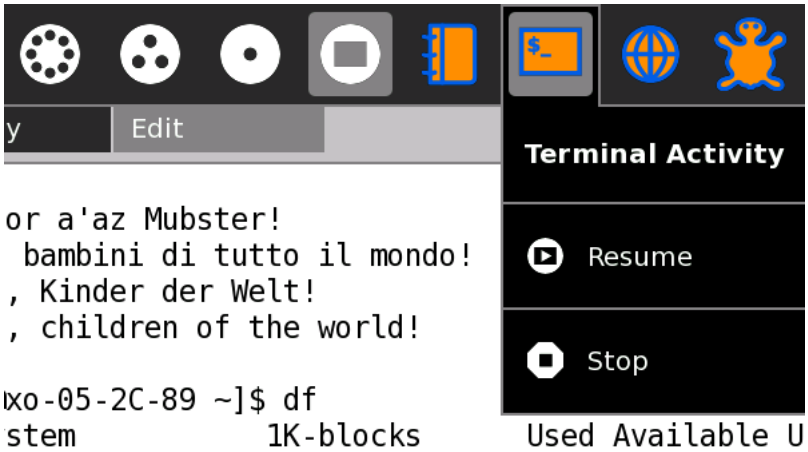
You can exit an Activity in three ways:

- Click the "Stop" icon in the Activity's tool bar.
- Press **ctrl + q** (Note: pressing **alt + escape** also works in most cases).
- Click *Stop* on the hover menu for the icon of the Activity you wish to stop.

USING THE STOP ICON



STOPPING AN ACTIVITY FROM THE FRAME



26. INSTALLING ACTIVITIES

You can install new and different Activities, which you can download and install from a web site, your school server, a USB storage device, or an SD card.

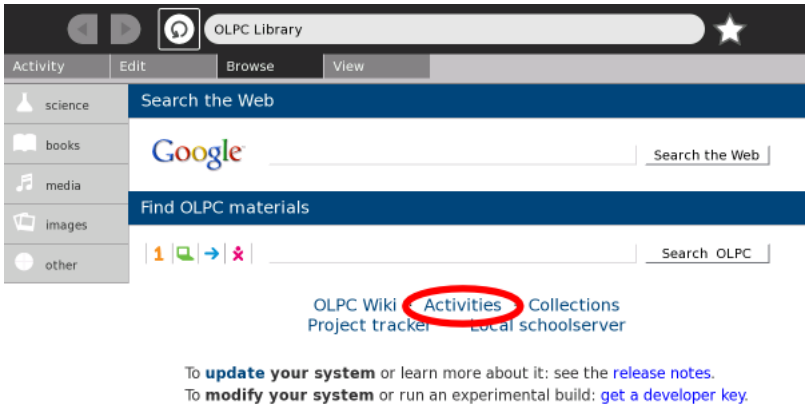
There are two ways to install new Activities:

- Use the Browse Activity to download an Activity and then use the Journal Activity to install it.
- Use the Terminal Activity to install an Activity directly from a USB device with a typed command.

INSTALLING FROM A WEB SITE

1. In the Home view, click Browse.

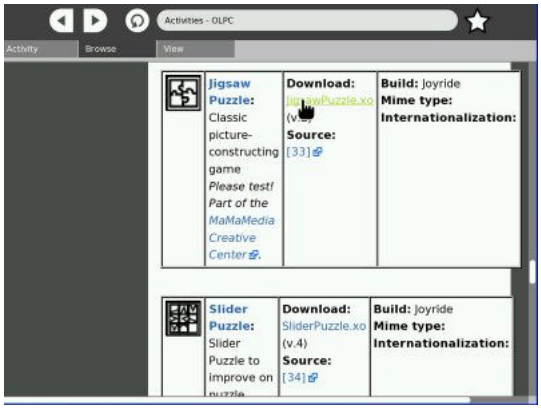
2. Click on the Activities link in the middle of the page (or goto http://wiki.laptop.org/go/Activities/All).



Note: Not every Sugar Activity is linked from http://wiki.laptop.org/go/Activities/All. For example, the GCompris collection is found at http://wiki.laptop.org/go/GCompris.

3. On the Activities page, look for a new Activity to install. (In the example below, a Jigsaw Puzzle Activity is installed.)

4. Click the link to the file that you want to install. (Activity files usually end in ".xo".)

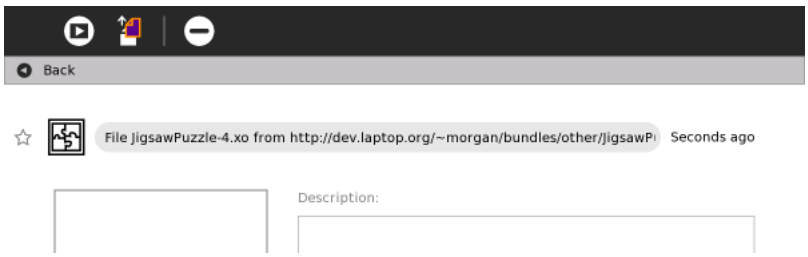


5. You may be taken to a second page. Click the link to the file to begin the download.

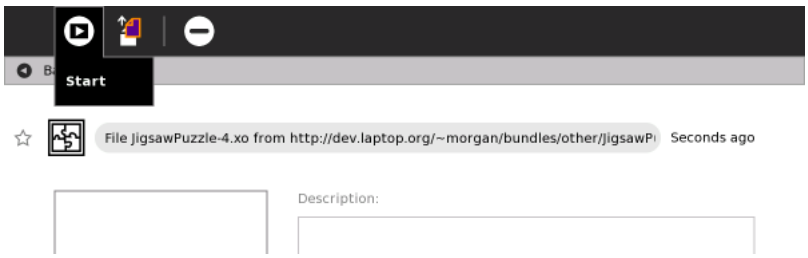
6. During the download, you can "Cancel" or "Continue" browsing.

7. When the download is complete, click "Show in Journal". (If you click "OK", you can continue browsing and finish the installation from the Journal later.)

8. You'll be taken to detail view in the Journal.



9. Click on "Start" to launch the Activity. The Activity will start and be installed. It will be included in the list mode of the Home view.



Enjoy your new Activity!

Note: If you didn't install the Activity at the time you downloaded it, you can install it by opening the Journal (click the Journal icon on the Frame) and then opening the detail view of the Journal entry (click the

icon on the right side of the entry).

Proceed from Step 8 above.

INSTALLING AN ACTIVITY FROM A USB STORAGE DEVICE

1. Insert the USB device.
2. Start the Terminal Activity from the Home view.
3. At the prompt, type:

```
sugar-install-bundle /media/<USB device name>/<filename.xo>
```

(Substitute the actual name of the USB device in place of "<USB device name>" in the command, and the actual path and filename of the .xo file in place of "<filename.xo>".)
Sugar installs the Activity.

Tip: To determine the name of your USB device, you can go to the Journal Activity and read the name from the icon in the bottom left corner of the screen.

INSTALLING A SET OF ACTIVITIES

Activities are downloaded separately from the base Sugar user interface. To install a set of Activities *on an OLPC XO-1 laptop*:

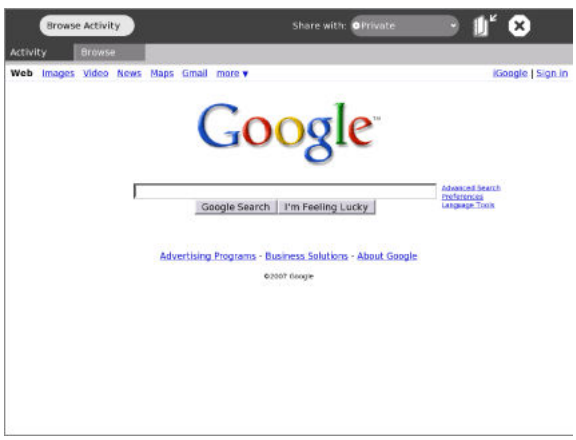
1. Download dev.laptop.org/~mstone/customization-2.zip.
2. Unzip customization-2.zip onto an empty USB device.
3. Create a directory called "bundles" on the USB device.
4. Download the activities .xo and .xol files that you want to include. (A sample set of Activities is found at wiki.laptop.org/go/G1G1_bundled_activities#G1G1_deployment.)
5. Copy these .xo and .xol files into the bundles subdirectory on the USB device.
6. Shut down your XO-1 laptop.
7. Insert the USB device into your XO-1 laptop.
8. Start up the XO-1 laptop. The set of Activities from the USB device are installed automatically.

27. ACTIVITIES SAMPLER

There are hundreds of Activities written for Sugar and new ones being created daily. A good place to look for new activities is wiki.laptop.org/go/Activities.

Below is a sampler of the variety of Activities created and supported by the Sugar community.

BROWSE

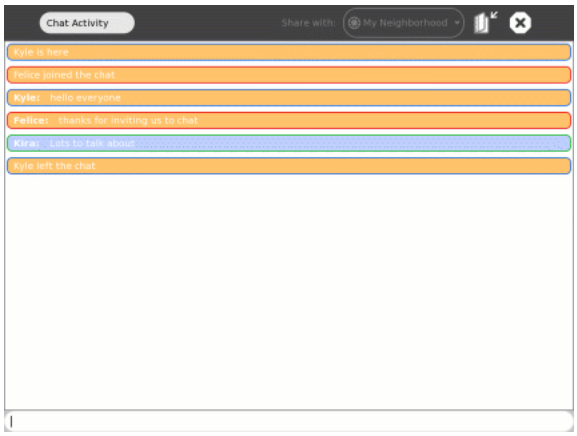


Browse is a simple Web application that lets you access and search the Internet and share bookmarks with your friends. (See the Browse chapter for more information.)

TAMTAMMINI

TamTam Mini is a fun, powerful way to perform music and play instruments. It is simple enough to be used by even the youngest ages.

CHAT

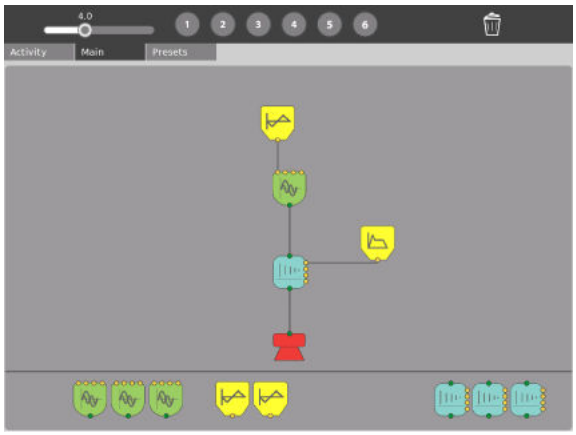


The Chat Activity lets you type messages that can be seen by other Sugar users. It can be used by two people or an entire classroom. (See the Chat chapter for more information.)

MEMORIZE

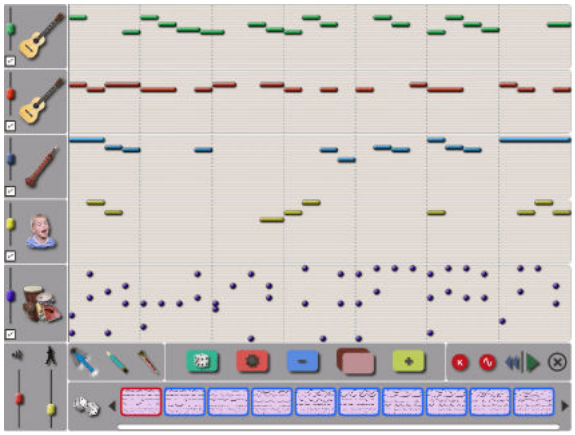
Memorize is the classic memory game of finding and matching pairs, but with a twist: the items in a pair can be any multimedia object, such as images, sounds and text. You can play existing games as well as create new ones.

SYNTHLAB



SynthLab is a mini-lab for acoustic- and electronic-circuit construction. It is designed for older children who are ready to venture into more sophisticated sound design.

TAMTAMEDIT

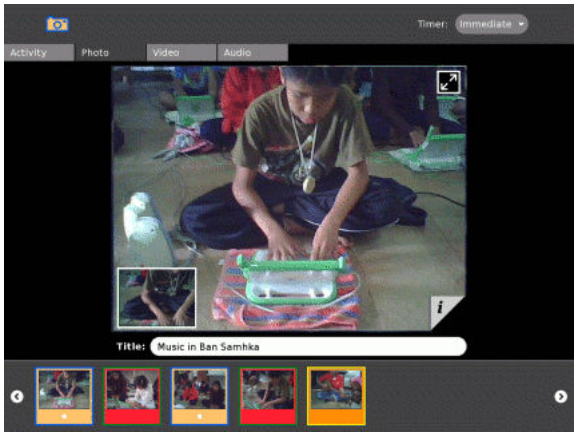


Sugar.TamTam Edit is an intuitive environment for composing music. You can create, modify, and organize notes on virtual "tracks", which allow for virtually limitless variations in musical styles.

TAMTAMJAM

TamTam Jam is a fun, powerful way to perform music, play multiple instruments, and collaborate musically with other children.

RECORD

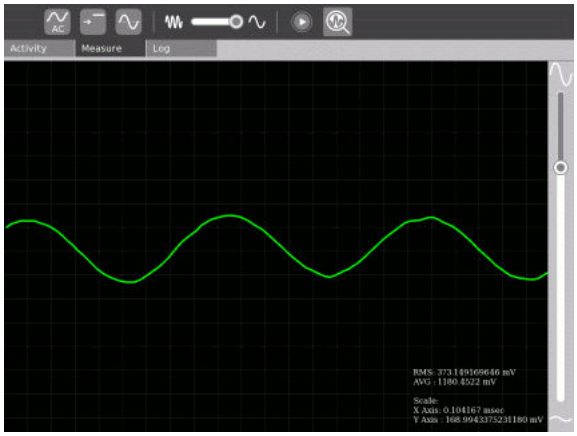


The Record Activity gives you a simple way to take pictures, view slide shows, and record video and audio—all content that can be shared with others. (See the Record chapter for more information.)

THE JOURNAL

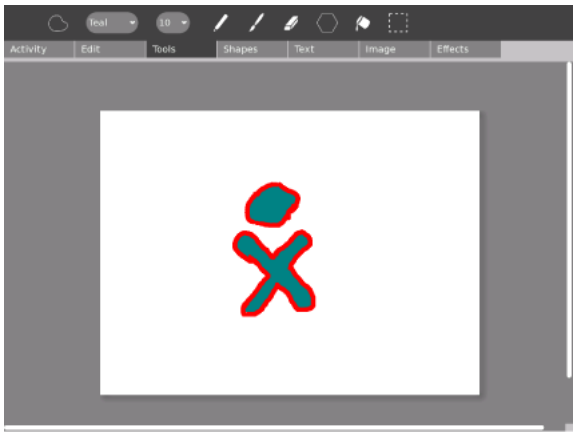
The Journal Activity is an automated diary of everything you do with your system. You can use the Journal to organize work or revisit a past project. Teachers and parents can use it to assess a child's progress. (See the Journal chapter more information.)

MEASURE



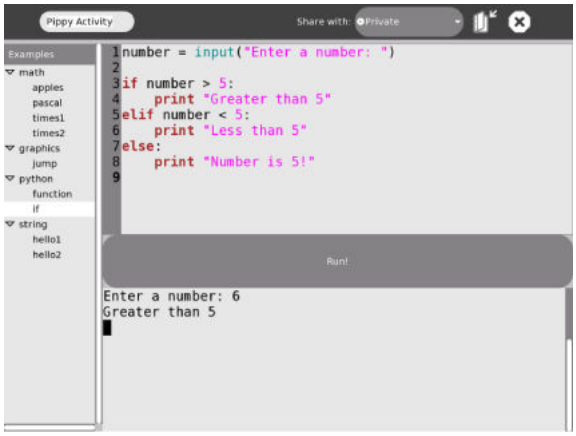
Measure is a tool that can be used to observe physical phenomena and real-world events. With it, you can measure and log data and create graphs. You can explore the data and connect events with each other.

DRAW



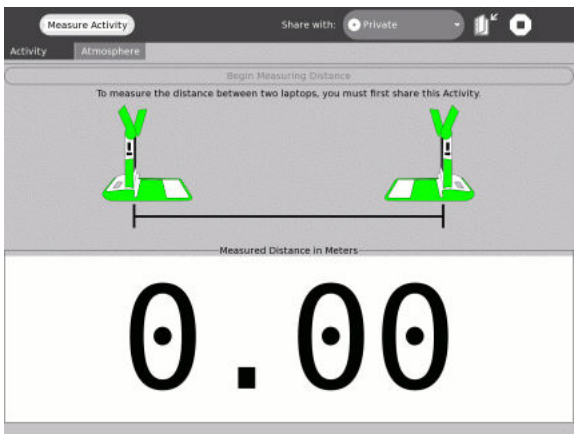
The Draw Activity gives you a canvas to draw pictures, by yourself or with friends. You can draw freeform images with a paintbrush and pencil, and use the dedicated toolbar to play and experiment with shapes. You can enter text, import images, and place items however you want.

PIPPY PYTHON



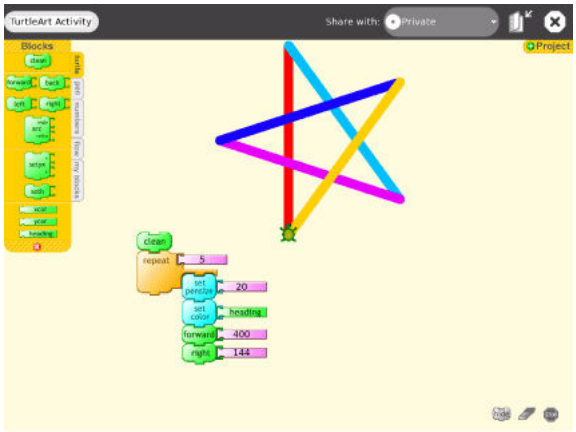
Pippy is a simple and fun introduction to programming in Python, the dynamic programming language underlying much of the software on the laptop.

DISTANCE



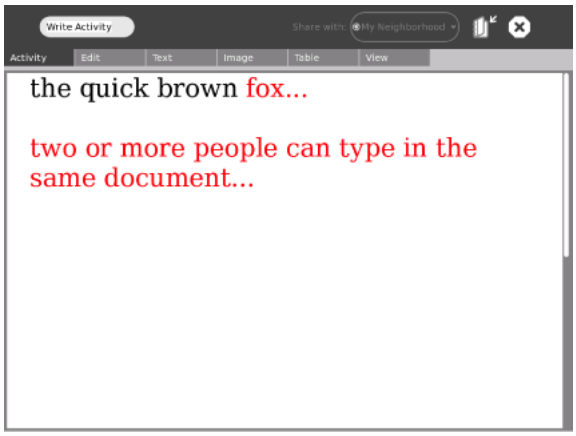
You can measure the distance between two laptops by measuring the length of time it takes for sound to travel between them. Along with the Measure and Record Activities, there are many ways to use the laptop to explore the physical environment.

TURTLE ART



Turtle Art lets you program a Logo "turtle" to draw colorful and complex artwork. Simple programming elements easily snap together, to bring art to life. (See the Turtle Art chapter for more information.)

WRITE

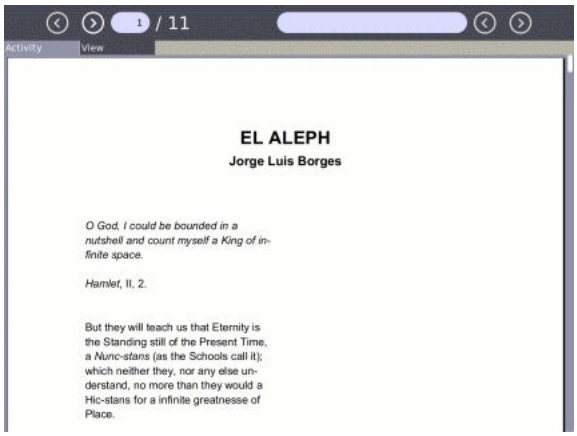


Write is a basic text editing application featuring straightforward tools and a simple interface. It provides an easy way to write a story, craft a poem, or complete an essay. It also has more advanced features like image insertion, table creation, and layout operations. It also supports collaborative real-time editing, so a group can work together to edit text easily and seamlessly. (See the Write chapter for more information.)

ETOYS

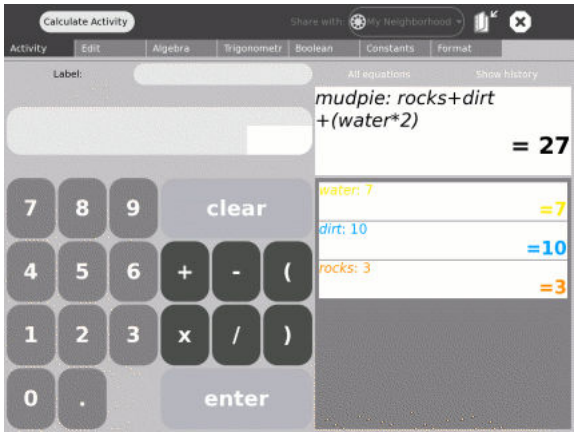
Etoys lets you create models, simulations, and games with text, graphics, and sound. This lets you explore ideas and learn by doing. You can also share desktops with other Etoys users in real time, encouraging immersive mentoring and play. Etoys has a worldwide community of users and developers who are working to create content, curriculum, and examples. (See wiki.laptop.org/go/Etoys for more information.)

READ AN EBOOK



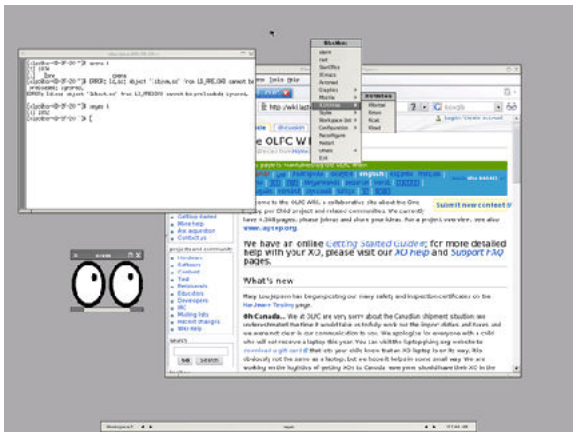
Sugar has a built-in eBook reader. The XO laptop has a screen that rotates 180 degrees and folds down on the keyboard, so you can read while holding the XO like a book. Read your favorite book on the XO while sitting outdoors in the sunlight.

CALCULATE



Calculate provides a generic calculator with a simple, straightforward interface. It is readable and easy to use for even the youngest children, but also supports more complicated mathematics.

X WINDOWS



The X Windows Activity provides an X Windows System workspace within Sugar. Use this Activity to run standard X Windows programs.

NOTE TO PARENTS AND TEACHERS

There is an ever-growing array of downloadable content and built-in access to popular Web-based applications. This includes Google applications, SimCity, GCompris (a suite of award-winning educational software for children), and hundreds of other applications. There are currently thousands of software developers around the world developing content for Sugar. This community is interested in your feedback so that they can better serve the needs of children learning.

28. GOING BEYOND ACTIVITIES

Sugar offers many ways to use a computer beyond just the display screen, although when you use Sugar in new ways, you can think beyond the display. Read on for new ideas of using Sugar or your XO beyond the Activity set and with the Activities currently available.

CREATE A SLIDESHOW

You can install a program called "feh" to display images quickly and offer an automatic slideshow of pictures.

What you need to begin:

- A way to take pictures, such as an XO laptop or digital camera.
- A USB drive or SD card, and know the name of the device.
- An Internet connection.

Activity (step by step)

1. Take pictures of your family, school, home, and community with the Record Activity or a digital camera.
2. In the Journal Activity, drag the pictures onto the USB or SD icon on the Frame to copy the pictures onto a USB drive or SD card.
3. Open the Terminal Activity and click the root button.
4. Type the following command and then press **enter**.
   `yum install feh`
5. Enter y for yes when prompted for permission to go ahead with the installation.
6. After feh is installed you can run your slide show by typing the following in the Terminal Activity:
   `feh -F -D 5 --scale-down /media/cardname/` where -F plays full screen and -D 5 plays the slideshow with a five second delay between images.
7. Press ctrl-q or Q to quit displaying the slideshow.

Ideas for Expansion in the Classroom

Create

Make artwork in the Draw Activity instead of taking pictures using the Record Activity for your slideshow pictures.

Create a digital art or photography gallery with all of your computers hanging on the wall or leaning as if they were easels.

Collaborate

Share pictures by copying files onto other student's SD cards or USB drives.

Have students collaborate with the Draw Activity by having each student draw for one minute, much like the Swarm Sketch site at http://swarmsketch.com/

Have students download pictures about a certain topic or use tags on sites like http://flickr.com to create a slideshow of only cats, dogs, or other pets.

Adapt

Think of a place that could display the computer slide shows for a practical purpose, such as offering changing advertisement at a store or restaurant. How could students make a business model for selling advertisements, designing slides, and displaying them on their slide show like a billboard?

Extend

Have students create collages or mosaics with more than one computer screen stacked on another, running the slideshows all at one time.

Research the command line parameters for feh. Can they modify the timing of the slideshow so that stacks of pictures create a larger image?

Explore

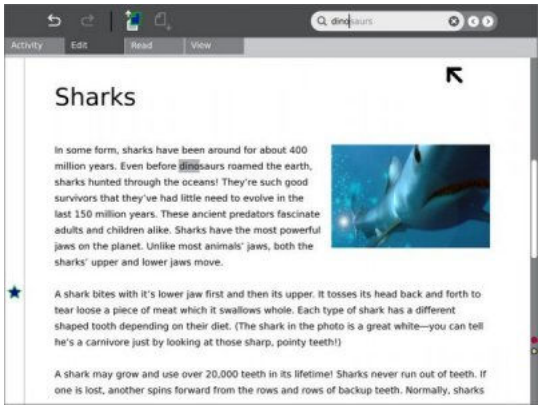
Could students use their slideshow to convince someone to purchase a product or make a decision?

Reflect

Make a video of your art or photography gallery premier or write a journal entry about your experience sharing photos or artwork.

READING WITH SUGAR

Read books that are stored on the computer or on the Internet. One way to read books is to open the Browse Activity, click the **books** link, and then click **encyclopedia**, **picture books**, or **dictionaries**.



The Sugar OS contains a library that offers many interesting reading materials in many languages. These books are sometimes called "ebooks" for electronic books, and Portable Document Format (PDF) files are one type of ebook.

If you are using an XO, you might like to flip the laptop display so that it lays flat while reading ebooks.

Reading PDF files

The way to view PDF files is to select the file in the Browse Activity or in the Journal, and then click the arrow button to have the Read Activity open it.

The Read Activity and Watch & Listen Activity are two activities that are not started from the Home View. You access them through a "launching" Activity like Journal or Browse.

Reading epub files

Epub is an electronic book or ebook format that you can read on your computer after downloading and installing a reader such as FBReader, and downloading and storing the epub files that you want to read. To complete this procedure, FBReader must be installed.

Installing FBReader

To install FBReader, connect to the Internet, open the Terminal Activity and type:

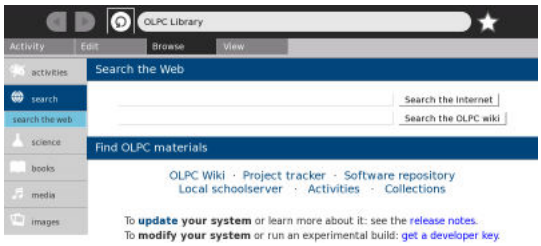
```
su yum install fbreader
```

After you press enter, the installer downloads and installs fbreader. Next, you'll want to download some epub books.

Downloading and viewing books

To download and view epub books, follow this procedure.

1. Start the Browse Activity.



2. In the address bar type in http://www.snee.com/epubkidsbooks and press **enter**.
3. Scroll down to the book you want to download, and click the link.
Sugar displays a countdown while the file downloads.

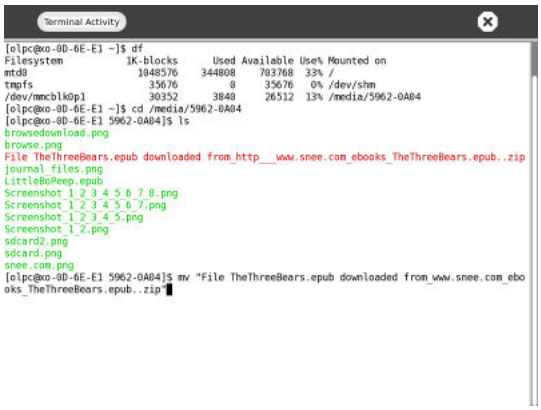
4. Switch over to the Journal Activity by clicking the Journal icon at the top of the Frame.
5. Insert an SD card or a USB device into the XO. The Journal shows an icon in a bottom bar when you insert external storage media.
6. Locate the downloaded epub file, but do not click it to launch it. Drag the file to the SD or USB icon in the bottom bar.

7. Start the Terminal Activity.

8. Click in the Terminal window and find the name of the external storage device, which is in the /media directory. For example, type:

```
df
```

9. You will see the name of your SD card or USB device in the row with /media/ before it. You need that name to copy the epub file from the external media to the correct location for FBReader to find the book file.



10. Change to the media directory where the epub file is stored and rename the file to something shorter. For example, type:

```
cd /media/USBMEM mv "File TheThreeBears.epub downloaded
from_http___www.snee.com_ebooks_TheThreeBears.epub..zip"
TheThreeBears.epub LittleBoPeep-ANurseryRhymePictureBook.epub
```

11. Copy the newly named file to the ~Books directory. For example, type:

```
cp TheThreeBears.epub ~/Books
```

12. Launch FBReader by typing FBReader at the Terminal Activity prompt. The screen displays the book you downloaded with FBReader's toolbar at the top of the screen.

Ideas for Expansion in the Classroom

Create

Make your own ebook by either creating a PDF file using a free PDF creator online or by learning about the epubs format to make your own book.

Ask students to learn about reading by reading more and more books and charting the class's progress in completed books read over a period of time.

Collaborate

Share your favorite books by copying files onto other student's SD cards or USB drives.

Have students write an email or letter to the author of their favorite books, asking them interview-style questions about working with others while authoring books.

Adapt

Who else might like to read the books you've downloaded? Can you find books that your family might enjoy together? What about books about your area of the country?

Extend

Use the Write Activity to keep a journal while reading your book. What discussion questions do you have for your class after reading the book?

Look the book up online at Amazon.com and read reviews for the book. Do you have the same reactions to the book as another reviewer?

Explore
How do students use reading in their every day lives to make decisions or otherwise act upon what they've read?

Reflect
Write a review to convince others to read a certain book. What aspects of the book can you use to convince someone that it is worth the time investment to read it?

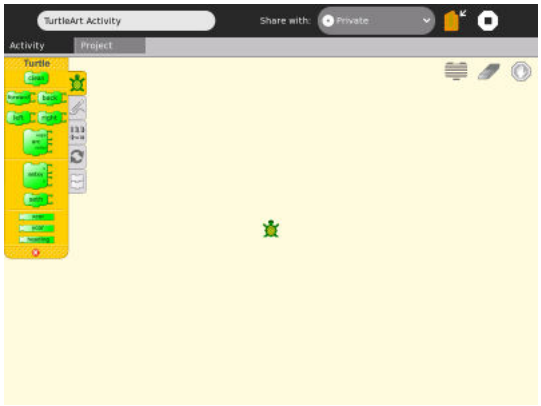
DEMONSTRATE TURTLE ART

Turtle Art is a colorful visual activity to use in a classroom setting where students can give the turtle commands and even spell out their names.

Activity (step by step)

You may want to demonstrate on a computer that can be displayed on an overhead projector.

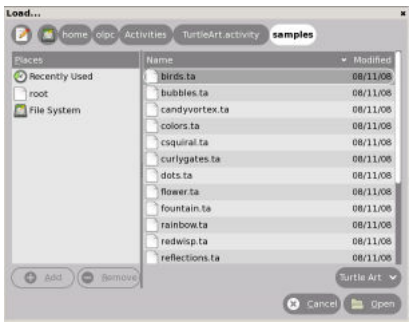
1. Open the Turtle Art Activity.

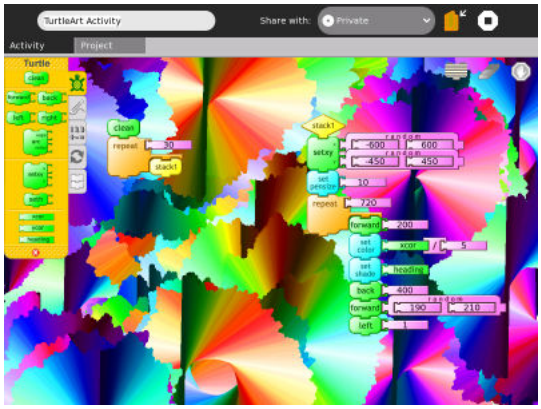


2. Click Project.

3. Click the Samples icon.

4. Select a sample file such as **birds.ta** and click Open.

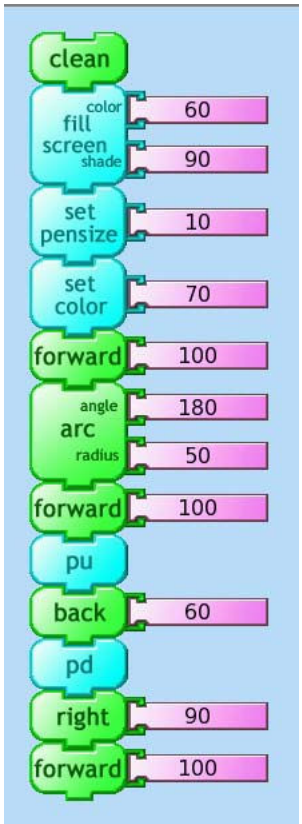




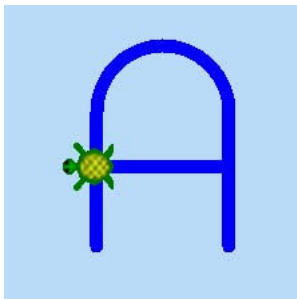
Create

Have students follow the instructions for creating letters. What shape will this set of commands make? Try it and see.

1. Drag each puzzle piece onto the turtle's floor.
2. Next, click the bar next to the piece, then type numbers to enter the number values you see, such as color and shade.
3. Once all the pieces are locked together, click the first puzzle piece to start your turtle.



Did your turtle draw this shape?



If your turtle didn't draw the shape of an uppercase A, or if the color is different, check each puzzle piece one at a time, pretending that you are the turtle trying to understand the command you gave it. When you see a number or a piece that is out of place, change it and try again.

Collaborate

Have students share their letter drawings and use combinations for their names to work together in the classroom, such as having kids with N in their name share their turtle's commands by sending .ta files to each other.

Adapt

How can the turtle commands be adapted for giving someone directions to a nearby store? Would you tell a person to pick up a pen and set it down? How about telling a person how many degrees to turn? Try to tell another classmate how to walk in a curved line by using the turtle commands.

Extend

Could your turtle draw plans for a house or for a path through a maze?

Explore

What's going on underneath the surface of the Turtle Art Activity is putting together a set of commands in a program, much like how computers take instructions and give results. Explore the idea of giving commands to something other than a turtle, such as a computer.

Reflect

Your Turtle's commands are stored in the Journal for you to review from time to time. Store the commands that make up your name.

CONNECTING

29. About Network Connections
30. Connecting to the Network
31. Give Me the Internet, Please
32. Networking Hardware
33. Wireless Devices
34. Troubleshooting Network

29. ABOUT NETWORKS AND THE INTERNET

WHAT IS A NETWORK?

A computer network is a grouping of connected computers.

Types of networks

Networks are typically described by their scale: local-area network (LAN) covering a small geographic area, like a home, office, or building; wide-area network (WAN), covering a relatively broad geographic area (such as one city to another and one country to another country), Metropolitan-Area network (MAN) connecting multiple local-area networks together but not extending beyond the boundaries of the immediate village, town, city or area.

Sometimes networks are described by the hardware that connects the computers: satellite, optical fiber, Ethernet, wireles and so on. Some networks use physical connections—wired—while others use radio waves—wireless.

You can name a network based on its functional relationship: client-server and peer-to-peer are good examples.

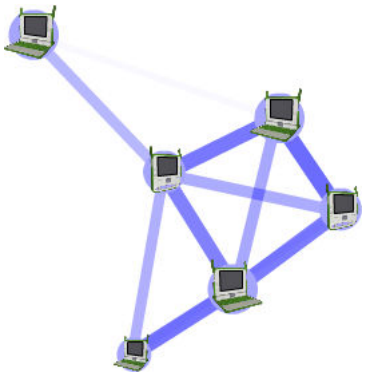
Finally, you can talk about networks by topology. Topology means the logical relations between devices. Examples include: bus, star, mesh, and tree.

OLPC XO networks

A typical OLPC XO network would be local-area, wireless, peer-to-peer, mesh. However, the XO supports (directly or indirectly) a variety of networks.

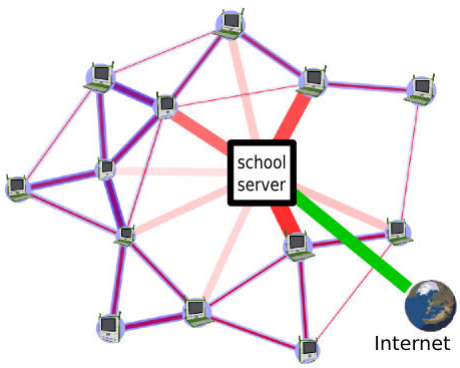
The most common scenarios all utilize the built-in wireless radios:

- Simple mesh: XOs talking to each other without Internet access.
- Infrastructure: XOs connecting to the Internet through a preexisting access point (AP).
- School server: XOs talking to each other and the Internet through a school server.



Simple mesh network

Infrastructure network



School server network

The school server

Part of the OLPC deployment model is to utilize school servers. These servers are designed to provide a gateway to the Internet, a local content repository, back-up, school management, and other local functions. As important as all of these services, their most critical role is to scale the local-area network. Without a school server, the largest network that can be maintained is approximately 20 laptops. Each school server can maintain a network of approximately 120 laptops.

The reasons for this difference include:

- By maintaining state information, the school server eliminates the need for much of the multicast traffic, which puts a heavy load in the network.
- The school server can unify up to three separate mesh channels.

WHAT IS THE INTERNET?

The Internet consists of a worldwide interconnection of governmental, academic, public, and private networks. The Internet carries various information resources and services, such as electronic mail, chat, documents, online gaming, and the the World Wide Web (WWW).

GET ME THE INTERNET!

Although the OLPC ecosystem provides a self-configuring local-area wireless network, connectivity to the Internet is something that needs to be worked out on an individual basis.

GLOSSARY OF NETWORK-RELATED TERMS

mesh network
: a wireless mesh network is a communications network made up of radio nodes in which nodes can forward information on behalf of each other so that even nodes that are not in direct radio contact can communicate via nodes that are between them. The collective coverage area of the radio nodes working as a single network becomes a mesh cloud.

infrastructure mode
: network connectivity through a XO.WiFi access point, e.g., 802.11b/g

mesh mode
: network connectivity through a mesh network (The Mesh Routing Protocol used in the OLPC laptop (OLPC-Mesh) is based on the 802.11s standard being developed by the 802.11 Task Group S [http://www.ieee802.org/11/Reports/tgs_update.htm].)

simple mesh mode

a mesh network that is running between laptops without a School Server

school server mesh mode
: a mesh network that is mediated by a School Server

mesh channel
: the laptops use three channels for communication: 1, 6, and 11; in simple mesh mode, the laptops can only see other laptops on the same channel; in a School Server mesh, laptops on all channels are visible

access point (AP)
: an AP is a device that connects wireless communication devices together to form a wireless network. The AP usually connects to a wired network and can relay data between wireless devices and wired devices. Several APs can link together to form a larger network.

mesh portal point
: a mesh node that serves as a gateway (portal) to a network external to the mesh

30. GETTING CONNECTED

A primary goal of the Sugar learning platform is enabling students to learn and work together.

In a wireless environment, an access point (AP) is a device that allows your computer to connect to an existing set of communicating devices. The access point usually has a direct connection to the Internet, and can relay data between the wireless devices and the devices it can access.

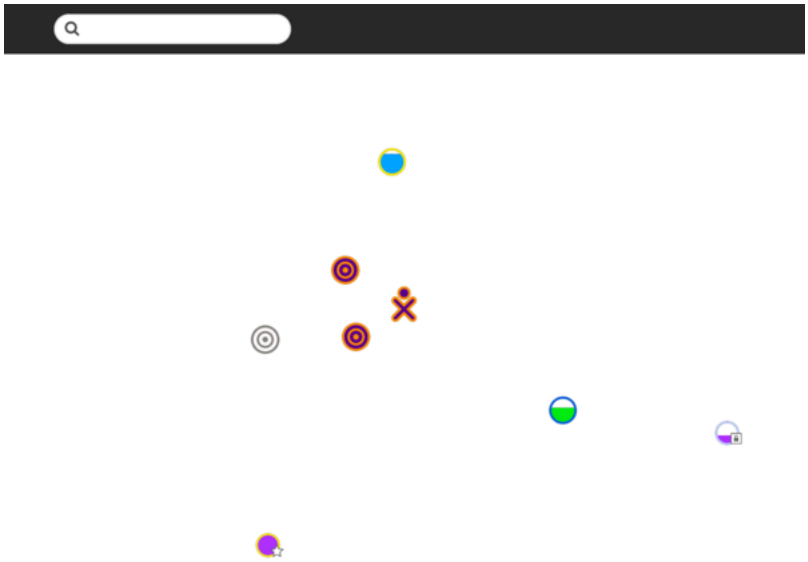
Multiple ways to connect to others

- wireless access point (Sugar.WiFi hotspot)
- wired network—may require an external adapter
- OLPC "School Server" mesh network
- OLPC "simple" mesh network, which lets you collaborate directly with other Sugar users

CONNECTING THROUGH AN ACCESS POINT

You can connect from the Neighborhood View. You can see information about the connection on the Frame.

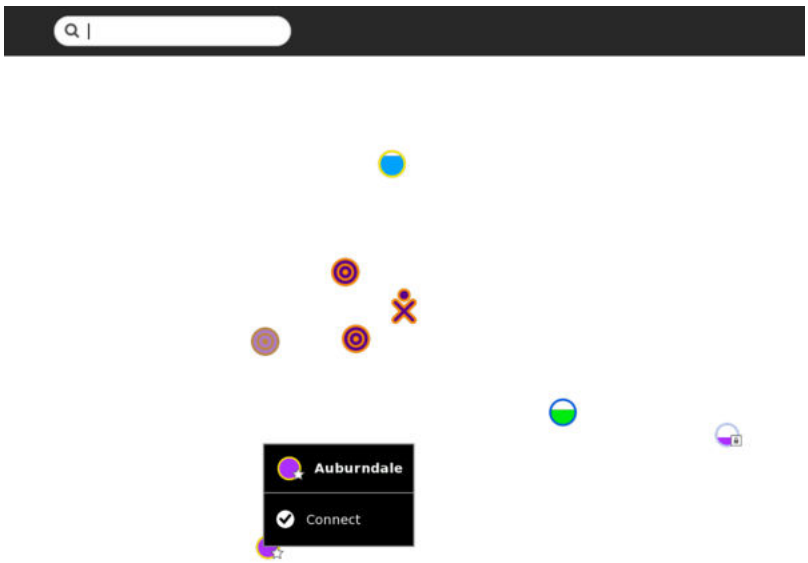
Step 1: Go to the Neighborhood View



Go to the Neighborhood View to connect to an access point.

Tip: To access the Neighborhood View, click the Neighborhood Icon on the Frame or press the **F1** key.

Step 2: Choose an access point



Circles represent Networks (access points) on the Neighborhood View. Hover over a circle to see more information about an access point. An access point broadcasts a name (ESSID) to identify itself. An OLPC laptop mesh-point—represented by a series of concentric circles—is identified by its channel number (1, 6, or 11). You can also search for an access point by name in the search bar at the top of the page.

Note: If an access point is not broadcasting its name, the Neighborhood View may show that AP with some other name.

The fill level of a circle indicates the signal strength of its associated access point. The color of the circle is based upon the name of the access point. A lock icon identifies networks that are secured and require a key (passcode) to use. A star icon identifies access points that have been previously used (favorites).

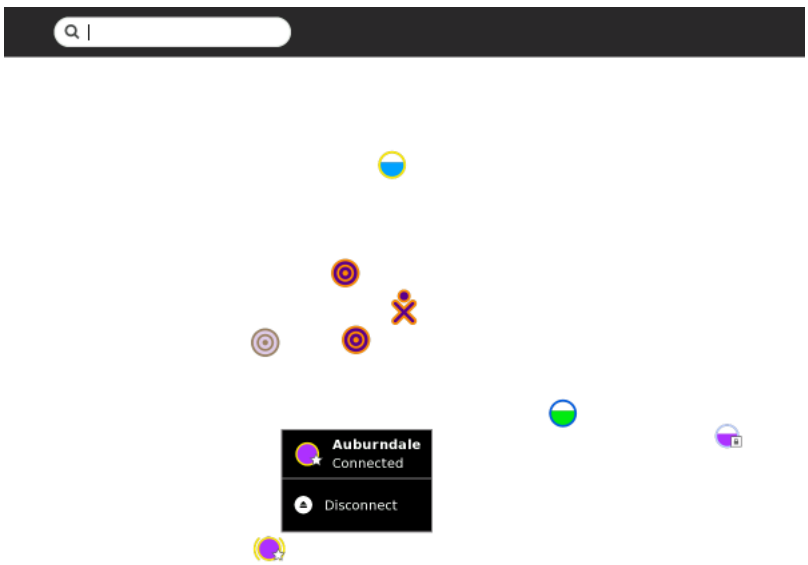
Step 3: Activate a connection

To activate a network connection, click once inside the circle that corresponds to your chosen access point (or click the Connect option in the hover menu).

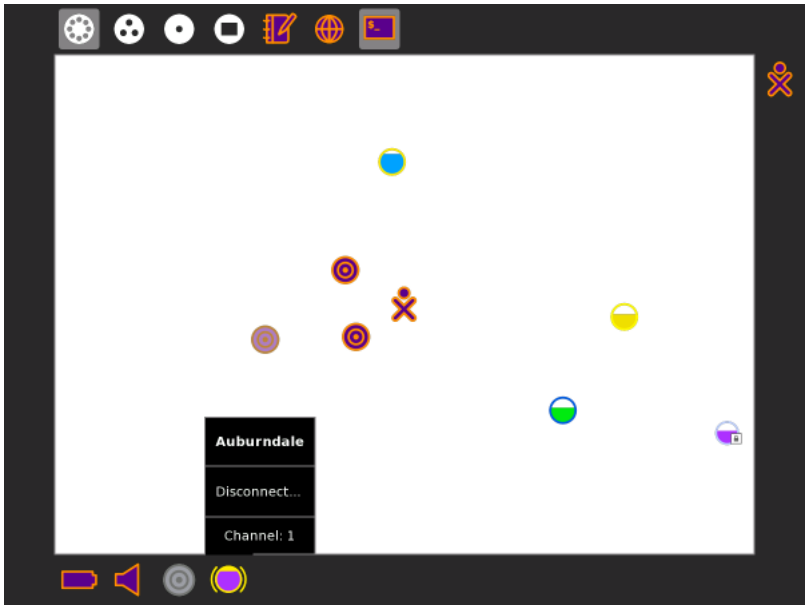
While the connection is being established, the inside of the circle blinks. Once the connection is established, the bottom edge of Frame contains an icon for it. If for some reason the connection fails, the circle stops blinking. Sometimes it is necessary to try several times before the connection is established.

If the access point is secured and requires a key, a dialog prompts you for the required information. Different access points may require different types of keys. Before entering the key, be sure to select the correct type from the pull-down menu that is presented.

Step 4: Checking the connection



A hover menu details the connection status.



You can check the status of your connection from the Frame (from any view). By hovering over the circle icon, you can find details about your connection status in a hover menu.

OLPC deployments

OLPC has designed a mesh network that allows XO laptops to communicate without the presence of the Internet and a School Server as a means to make their school network connectivity more efficient. The School Server also provides web and chat services.

NOTE TO PARENTS AND TEACHERS

Collaboration between learners is one of the most important features of Sugar. To enable collaboration in a classroom or home setting, it is necessary to establish the same type of connection for each computer. Computers can be connected through a School Server, a simple mesh if they are OLPC XOs, or an access point.

When using an access point for the connection, the computers must all use the same Jabber server in order to collaborate. Please refer to the Sugar Control Panel discussion in the Personalizing Sugar chapter for details regarding the configuration of Jabber.

ADDITIONAL HINTS

You make your connection from the Neighborhood View.

Your current connection status is shown on the Frame. Also, the hover menu on the access point icon indicates "Connected". It sometimes takes 2–3 tries to connect. To disconnect, select "Disconnect" from the hover menu that appears in either of the network status menus (See Step 4 above).

Circles represent access points. The fill level indicates signal strength.

Access points that require keys have a lock icon. The color of the circle is calculated from the ESSID of the access point. The name of the access point is displayed when you hover over it.

"Favorite" access points have a star.

You connect by clicking the center of the circle. The center of the circle blinks while the laptop is trying to connect.

Once the connection is made, the icon is surrounded by parentheses.

If you are using an OLPC XO computer, mesh points are represented by a series of concentric circles. The color of a mesh point is the same as your XO color. If your OLPC XO computer is "mesh enabled" and you have not connected to an AP, you are automatically joined to a simple mesh network, enabling you to collaborate with others in the mesh, but not necessarily to access the Internet.

You are prompted if the access point requires a key.

31. GIVE ME THE INTERNET, PLEASE

The designers of the XO laptop designed it for primarily wireless access, so it can work well in developing nations, where it is faster and less expensive to introduce wireless connections than wired ones.

XOs are designed to connect to other XOs using a mesh network. A mesh network allows nearby XO laptops to talk to one another directly (wirelessly) without the need for a traditional Internet Service Provider (ISP).

The XO also supports wireless connections for direct Internet connection. Collaboration with others on Activities does not require an Internet connection.

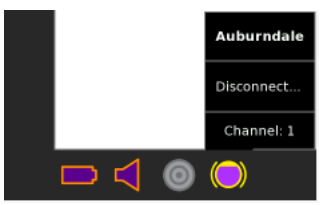
There are different ways to connect to the Internet:

- using a wireless access point such as a XO.WiFi hotspot at a library or coffee shop, or a location that has a wireless router such as your house
- using a "School Server" provided by your school system
- using a USB-to-Ethernet cable that plugs into a cable modem, DSL modem, or local network such as those offered at a home or workplace

BEFORE YOU CONNECT

If you are going to connect at home, check with your ISP to find out if your network is protected with a password. Your router also has a password which can be found in its documentation. Become familiar with your wireless router settings so that you can troubleshoot the connection if needed. The Troubleshooting chapter offers some assistance.

Check your current connection status as shown in the lower area on the Frame. If you have connected successfully in the past, the XO "remembers" the connection and will connect again in the future.



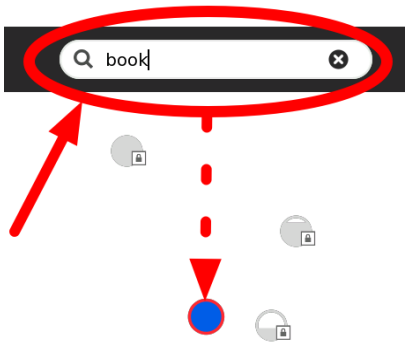
Go to a location with your XO where you know there is a Wireless Access Point (WAP) nearby.

Find out the network name (or SSID) and its password, if it is secured with a password. The XO refers to this as the Wireless Key.

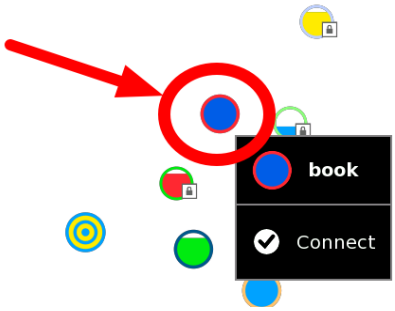
CONNECTING TO THE NETWORK

1. Go to the Neighborhood View.

2. In the Search field, enter the name of the network to which you want to connect.



Or roll the pointer over one of the network access circles until you recognize the name of the wireless network.



3. Connect by clicking the center of the circle.

Wireless access points are represented by circles. The fill level indicates signal strength.

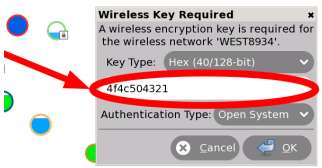
Access points that require keys have a "locked" icon.

Access points that you have successfully connected to become "Favorites" as indicated by a star icon.

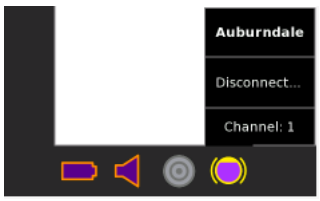
The center of the circle blinks while the laptop is trying to connect and two curves surround the circle.

Access points that represent the Mesh network are indicated with a target icon, with one for channel 1, one for channel 6, and one for channel 11.

4. Enter the wireless key if prompted.
   You might need to ask your teacher or parent for the wireless key.



While the XO is connecting to the network, the Access Point blinks.
Once you are connected, the menu on the circle in the Neighborhood View changes, and you can see a circle with two curves around it in the lower right area of the Frame.



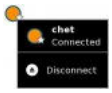
RETRYING IF NEEDED

If the attempt to connect fails, the circle stops blinking, but the access point icon does not appear in the Frame. Click the circle in the Neighborhood View to try again—it sometimes takes 2–3 tries to connect.

If you cannot see an Access Point with a name that you recognize, the wireless antenna might be too far away, or the Access Point might not be working properly. For more information, or if you have difficulties getting a network connection, refer to the Troubleshooting chapter.

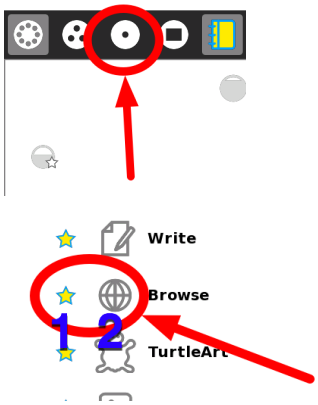
DISCONNECTING

To disconnect from the network, hover the pointer over the access point and click Disconnect on the menu.

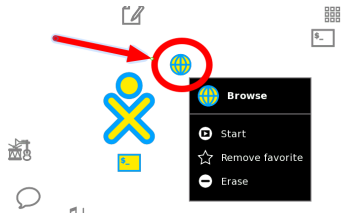


LAUNCHING THE BROWSE ACTIVITY

Once your XO is connected, you can return back to the Home View and launch the Browse Activity.

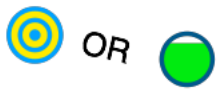


1. If you *have not* yet added the Browse Activity to your favorites, click the List View (left) and scroll to Browse. Add the Activity to your favorites list by clicking the star next to it (**1**). Launch Browse for the first time by clicking the globe icon (**2**). Next time, you can use the freeform view to launch it (as is shown in the next paragraph).
2. If you *have* added the Browse Activity to your favorites list, you can click the globe icon to open the Browse Activity and test your access to the Internet.
3. Click the globe icon to launch the Browse Activity.

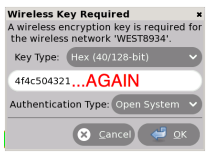


More information about your XO's connection:

- Your Wireless Access Point has a network name, also called an SSID, that displays in the Neighborhood View. The XO cannot recognize SSIDs that are hidden, which is configured on the access point. Refer to the Troubleshooting chapter for more information about hidden SSIDs.
- If you are connected to the Internet, your XO laptop cannot be on the mesh network, and if your XO is on a mesh network, it cannot simultaneously connect wirelessly to the Internet.



- If the XO cannot find an available Internet network point after five minutes of searching, it defaults to Mesh Network 1, which enables your XO laptop to connect to other nearby XO laptops.
- Please be patient; it can take your XO up to a minute to find newly visible networks.
- Sometimes you'll be asked to enter the "Wireless Key" again. Enter it again and repeat until your connection is complete.



- For more information about connecting, please see the Support FAQ online.

32. EXTERNAL HARDWARE

Your XO has three USB ports that can be used to connect an external mouse, keyboard, storage devices, and possibly other hardware additions with appropriate support.

CONNECTING TO THE INTERNET WITHOUT WIRELESS ACCESS

You can use a USB to Ethernet connector for a wired connection to the Internet. Examples of products that work include the Linksys XO.USB100M and the Zoltan Tech USB2.0 Fast Ethernet adapter, which cost about USD $10-$25. For a current list of USB Ethernet devices go to http://wiki.laptop.org/go/USB_ethernet_adaptors.

33. WHICH WIRELESS DEVICES MAY WORK WELL WITH MY XO?

The hardware that provides the wireless connection can affect whether the XO laptop can connect either to the Mesh network or to the Internet.

A Wireless Access Point Compatibility table at wiki.laptop.org/go/Wireless_Access_Point_Compatibility gives some information about manufacturers of wireless hardware, the model number, and some notes about its compatibility.

34. TROUBLESHOOTING CONNECTIVITY

You can look at http://wiki.laptop.org/go/Support_FAQ for many technical troubleshooting tips, but you should read through all the information on this page to troubleshoot the wireless connectivity yourself.

UNDERSTANDING WIRELESS ROUTER CONFIGURATION

Connect your router to any computer, and then use a web browser to view the router's configuration page and change the router's settings.

Here are some common router manufacturer's administrative addresses, usernames, and passwords used for configuring router information. To find a more complete list, you may try visiting another computer that has an internet connection (for example, the local library) and searching the Internet for **router default logins**.

Router	Address	Username	Password
3Com	http://192.168.1.1	admin	admin
D-Link	http://192.168.0.1	admin	
Linksys	http://192.168.1.1	admin	admin
Broadband	http://192.168.2.1	admin	admin
Netgear	http://192.168.0.1	admin	password

If you are unable to connect a computer to your router to do this, call your Internet Service Provider and ask them for assistance. They should be able to access your router remotely, get the needed information for you, and even make any needed changes.

Your wireless router settings may contain Wired Equivalent Privacy (WEP) or Wi-Fi Protected Access (WPA) for security protection. Find out which type of security it uses and the passphrase either by asking your ISP or by using the router's configuration pages.

Based on the type of security system being used (WPA or WEP), the Wireless Key type varies. For WPA, you use a Passphrase key (for example, "password", "tHisisAp4ssword"). For WEP, use either a Hex key (for example, "4f4c504321", usually all keys that consist of only of 0-9 and a-f) or its corresponding ASCII key ("OLPC!"). 40-bit Hex keys are 10 letters/numbers long, corresponding to 5 letter/number ASCII keys.

WEP Password Types (40-bit)

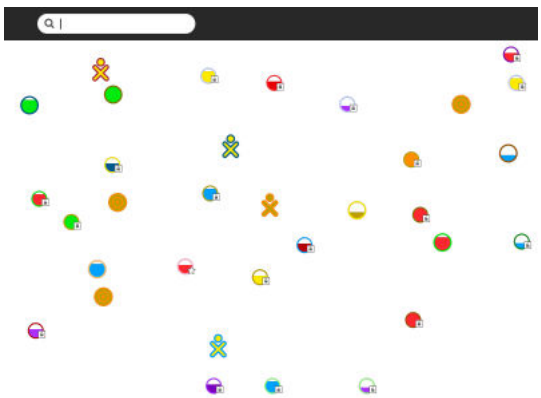
ASCII:	O	L	P	C	!
Hex:	4f	4c	50	43	21

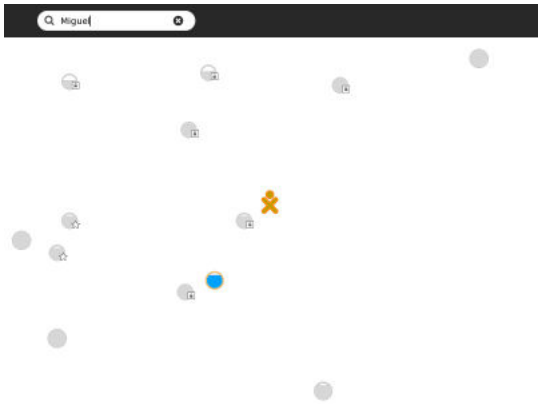
COMMON CONNECTIVITY PROBLEMS AND SOLUTIONS

Inability to connect with an Access Point from the Neighborhood View is the most commonly reported symptom. The symptom is usually a flashing circle icon where the access point circle icon never appears in the Frame or the circle's menu never contains "Connected." This flashing animation indicates the XO is trying to connect, but the lack of connection indicators tells you that it fails to connect. If this happens, try the troubleshooting suggestions just below.

Is the wifi hotspot dot visible in the Neighborhood View?

Go to the Neighborhood View and type the name of your SSID in the Seach box to highlight your access point. Each circle network icon represents a Service Set Identifier (SSID). On one of the icons in the Neighborhood View, you should see your Wi-Fi hotspot's network name.





If you cannot see the network name there may be a few reasons for this, so continue troubleshooting.

Is the name of the network a hidden SSID?

If your SSID/Network Name is set to be Hidden in the router configuration, it is not possible for the XO to connect to your wireless network through the Sugar User Interface.

You may connect manually by typing commands in the Terminal Activity. To do so, launch the Terminal Activity and type these commands:

```
su -l
/sbin/iwconfig eth0 mode managed essid myhiddennetwork
/sbin/dhclient eth0
```

As an explanation, the **su** command creates a root process. The **iwconfig** command connects to your hidden network (of course, substitute the name of your access point for the string *myhiddennetwork* in the above example). Finally, **dhclient** asks for an IP address from the access point.

Is your Wi-Fi router filtering connections based on a MAC Address?

You can prevent other computers from using your wireless router by configuring it to filter by MAC Address. A MAC Address is a unique address embedded in your computer's network adapter. While MAC address filtering is not a secure method of protecting a network, some routers use it, and it could prevent your XO from using that access point.

To fix a filtering problem, you can find the MAC Address and add it to the list of allowed computers that can connect with the wireless router.

To do so, launch the Terminal Activity and type these commands:

```
/sbin/ifconfig -a eth0
```

The MAC address is in the first line next to the HWAddr tag: and is in the form of "00:17:C4:XX:XX:XX"

In the XO.WiFi router configuration for filtering, add the MAC Address you found with the **ifconfig** command.

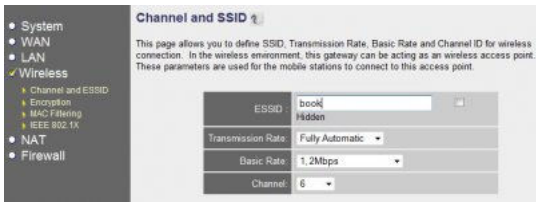
Is your XO.WiFi router configured to support 802.11b or 802.11g or both?

Read the documentation for your wireless router to determine how to configure it for 802.11g support, or to determine if it is using the 802.11g protocol. In this example, the Mode drop-down list is where you would look for protocol settings. It may not work to have both **g** and **b** modes as shown, so try different configurations to see if another configuration works.

Are the access point settings not in channels 1, 6, or 11?

Is your access point working on another channel that is not in 1, 6, or 11? For some older builds, the XO expects to find access points in one of these three channels, the three non-interfering channels available to 802.11g wireless protocol.

Try changing your access point to one of the three channels and check if you can associate your XO to it. Refer to your access point's documentation for information on changing the frequency channel that your access point broadcasts on. This image shows an example of the settings for a wireless router. The Channel field is where you change the frequency setting.



Why can't the XO Browse when connected?

Symptom: Your XO shows that your Internet connection is working, but you cannot browse or search any pages.

Most likely, the XO has failed to receive DNS information from your internet access point. If this is the case, you would be able to access the Internet for sites named directly with IP addresses but not their common names. In other words, http://209.85.133.18 would work but http://www.google.com would not.

Verify what the XO has received (from the Internet access point) for DNS information by using the Browse Activity and looking at this URL:

file://localhost/etc/resolv.conf

This page should show the IP address of the DNS server assigned by the Internet access point. If there isn't an IP address on this page, or if the IP address assigned is wrong, this would account for the behavior you're seeing.

If there is no IP address, or the address is wrong, you'll need to determine why the Internet access point is failing to supply one, but this is likely to be misconfiguration of the access point.

CONNECTING TO THE INTERNET WITHOUT WIRELESS ACCESS

If you cannot successfully or consistently connect to the Internet using Wi-Fi, you can use a USB-to-Ethernet connector to hook up to a wired connection rather than wireless. Examples of products that have worked for other users include the Linksys XO.USB100M and the Zoltan Tech USB2.0 Fast Ethernet adapter, which cost about USD $10-$25.

If you want to connect to your XO wirelessly with a dial-up connection, you can do it with an older version of Apple's Airport Extreme (A1034). Apple no longer sells them, but they are available on the Internet for between $18 and $36. Be sure the one you get has a port for the phone line, and preferably, with a phone cord included. Directions for connecting with it are on the Wiki at http://wiki.laptop.org/go/Wifi_Connectivity#Apple_Airport.

CONNECTING WHILE TRAVELING

Your XO makes a wonderful traveling companion. You can connect to a wide variety of public XO.WiFi sites often found in community centers and libraries, even in restaurants and hotels. All you will need to do is to obtain a correct password and log on according to the instructions above. Many places will not require a password to connect and the process will be even easier. Remember, however, that passwords provide an extra layer of internet security. Without them, you run a slightly higher risk of experiencing some type of Internet fraud.

MAINTENANCE

35. CARING FOR YOUR XO

Although your XO is tough, try to keep it dry and clean. Here are some tips for taking care of it:

- Carry it carefully to avoid dropping it.
- Don't step on it or sit on it.
- If it gets dirty, wipe it with a damp cloth and dry it.
- Do not dip it into water. If it gets wet, such as from rain, let it dry completely before using it.

The XO laptop has no hard drive and only two internal cables. With care it can be dissassembled for repair. For added robustness, the XO's plastic walls are thicker than other laptops. Its green mesh network antennae give a better wireless connection than typical laptops. Plus, they double as external covers for the USB ports, which are protected internally as well. Internal bumpers protect the screen display by cushioning it.

36. BACKING UP

When working on Sugar Activities it's a good idea to have a second copy of your work. You can use an external storage device to back up your work on Sugar, creating a second copy that you can take to another computer.

If you have a School Server, you can back up your work to the server. If you want your work later, you copy the contents from the School Server back onto your computer.

EXTERNAL STORAGE DEVICES

If you want a second copy of your files, you can store them on external storage media such as an SD card or USB storage device. To copy files to an external device, follow these steps.

1. Launch the Journal Activity, either by pressing the magnifying glass icon key or by going to the Home view and clicking the Journal icon at the bottom of the Home circle.
2. Insert an SD card or a USB device into the computer.
   The Journal shows an icon in a bottom bar when you put in external storage media.

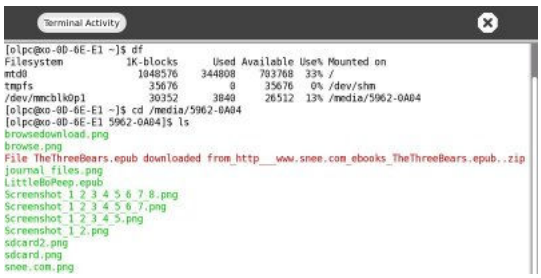
3. Click to select a file, then drag the file to the SD or USB icon in the bottom bar.
4. When you are done using the SD card or USB device, right-click on the icon and choose **Unmount**.

5. Now you can remove the external media either by removing the USB device or pressing to "spring" the SD card out of its slot.

TERMINAL ACTIVITY

You can look at an SD card or USB file names with the Terminal Activity.

1. Start the Terminal Activity.
2. Find the name of the external media device, which is in the /media directory. For example, type:
   `df`
3. You see the name of your SD card or USB stick in the row with /media/ before it. You need that name to find the files with the next command.
4. Use the change directory command (cd) to switch your location to the storage media and press **enter**.
   `cd /media/5962-0A03`
5. Next, use the list command (ls) to list all the files on the storage media and press **enter**.
   `ls`



5.

   All your file names are listed with the **ls** command.

BACKING UP USING A SCHOOL SERVER

You register your computer with a school server by clicking the XO icon in the Home view and choosing Register, then choosing Restart. Once your computer is registered, a backup job that runs once a day collects the activities in your Journal and stores them on a separate server computer known as the School Server.

If you think you have lost something, or you want to go back to a certain date and time, ask your teacher for the name of your School Server.

1. Launch the Browse Activity.
2. Enter the web address of the School Server followed by /ds-restore, such as http://myschoolserver/ds-restore.
3. In the listing of daily backup dates, click a date listing.
4. In the listing of the documents available for that date, click a document.
5. Depending on the type of document, it launches either in the Read Activity or in the Browse Activity. Sugar automatically stores it locally once it is launched.

37. MAINTAINING YOUR XO

Maintenance of the XO hardware involves updating the software and firmware and keeping the case in working order.

To update the Sugar software or Activities that run on the XO laptop, refer to the update information for software update at http://wiki.laptop.org/go/Olpc-update. You might want to update all the software on your XO laptop when a new version of the software is released. It takes about 30 minutes, and you can use the instructions there to install all new updates without losing any data. Refer to the "Latest Releases" section of http://wiki.laptop.org for the most recent version number and information about updates and reasons for updating.

UPDATING YOUR XO TO THE LATEST FIRMWARE VERSION

Typically separate Open Firmware (OFW) updates are not neccesary because the software will contain the needed firmware updates.

However, you can update the OFW by following the instructions on http://wiki.laptop.org/go/Upgrading_Firmware.

38. REPAIRS

Your XO is built and designed for repair work to be completed with only your hands and a screwdriver, and the case includes extra screws in case you need them.

For photos and step-by-step instructions on repairing your XO or putting replacement parts in, go to http://wiki.laptop.org/go/Repair.

Refer to http://wiki.laptop.org/go/Repair_center_locations to get to the most recent directory of repair centers, if you do not want to repair your XO yourself.

RECALIBRATING THE TOUCHPAD

The XO touchpad does not offer a click mechanism like some touchpads. You must click the long button marked with an X to select something on the screen. Sometimes the touchpad seems to behave erratically or makes the cursor jump on the screen.

If the pointer is not following your finger on the touchpad, or if it jumps to the corners when you touch the touchpad, please try this recalibration procedure:

Hold down the three keys at one time: the upper left, upper right, and lower right of the keyboard and the fourth key, **fn**, the lower leftmost key, as the last one pressed, and then release them all.

If this doesn't help, try shutting down the laptop and removing the battery for ten seconds before restarting.

Finally, plug a standard USB mouse into your laptop to bypass the problem.

CHECKING FOR KEYS THAT STAY DOWN OR APPEAR STUCK

Your XO must have a developer's key to do this keyboard test. Refer to http://wiki.laptop.org/go/Developer_key for more information about developer's keys.

1. With the XO off, hold down the "check mark" game button (above the power button) while pushing the power button. After start up, the screen displays "Release the game keys to continue" and shows a text diagram of which key is pressed.
2. Release the "check mark" game button.
3. Next, after you see "Type the Esc key to interrupt automatic startup," press the **escape** key in the upper left hand corner of the keyboard layout (a circle with an x). The XO displays an ok prompt.
4. At the ok prompt, type:
   test keyboard
   and press **enter**.
   A blue keyboard map displays on the screen.
5. Press keys one at a time to see the keyboard map turn the key light blue.
   If the display on screen shows a light blue key constantly, the keyboard has a problem with that particular key sticking. Refer to a repair center for full diagnosis and repair at http://wiki.laptop.org/go/Repair_center_locations.
6. Press the the **escape** key (circle with an x) again to exit the keyboard test.
7. At the ok prompt, type reboot to restart.

REPAIRING DAMAGE TO THE KEYBOARD

If your keyboard becomes damaged, normally it has to be replaced. Replacements are available through the repair centers. Information on spare parts and repair centers can be found at http://wiki.laptop.org/go/Repair_center_locations.

RESTORING THE SOFTWARE TO FACTORY DEFAULTS

IF YOU WANT TO COMPLETELY WIPE CLEAN THE XO, YOU CAN TRY UPGRADING THE ACTIVATED LAPTOP TO RE-FLASH ITS ENTIRE "DISK IMAGE" INCLUDING BOTH ITS OPERATING SYSTEM AND ITS ACTIVITIES. REFER TO RESETTING YOUR XO FOR DETAILED INSTRUCTIONS. PLEASE BE AWARE THAT ALL DATA WILL BE LOST.

TROUBLESHOOTING THE INTERNAL XO HARDWARE

The XO can give you information about possible repairs that are needed.

Start by pressing the power button for a second, and then answer the following questions.

Does the Power LED half-circle light up?

When the power button is pressed once, and the power LED doesn't turn on, first try resetting it.

To reset the XO, remove all power sources from the laptop:

1. Take the battery out and remove the power adapter.
2. Wait two minutes. This allows embedded hardware to lose all power and reset itself.
3. Replace at least one source of power, either the battery or power adapter, and watch the power/battery LED while you do so.

The battery LED should flash orange momentarily (about a quarter of a second) when power is first reapplied. If you do not see this flash, you either have a motherboard hardware problem or faulty EC firmware installed. Contact a repair center for assistance.

If the power LED doesn't turn on or flash, but the laptop proceeds to illuminate the backlight and even start, the problem may be either the LEDs themselves or the power LED driver. The LEDs are in series, so if one fails they may both fail to light.

On rare occasions, the power button becomes stuck mechanically. In this case, the laptop does not detect the depression of the power button, and does not turn on. Ensure that the power button is moving freely by pressing it a few times.

If the battery LED flashed on restoration of power and the power button isn't stuck, and no other signs of life are detected, then you can't determine the reason for failure. Contact a repair center for assistance.

DOES THE DISPLAY LIGHT UP?

After starting the XO and viewing the power LED, the next visible feedback from the XO is that the display lights up. The LCD display should be initialized with white, then begin to show text or graphics. The backlight for the screen should be turned on, even if the backlight was previously turned off.

If this does not happen then the boot sequence may not be operating correctly. Next, look at the Microphone activity LED to see if it is lit. If the power LED and the microphone LED are both lit then a serious boot error has occurred and you should contact a repair center for assistance.

Can you hear the startup sound when the XO starts?

If the startup sound does not play, this usually indicates a problem that a repair center needs to fix.

Yes, the startup sound plays

If the display doesn't initialize, but the boot sound plays, then this is probably a problem with the display.

No, the XO boots normally, but no boot sound plays

If no boot sound is played, but the machine boots normally and has audio, it is possible that the default boot volume to has been changed to 0. While the boot sound is playing, you can adjust the volume using the *volume adjust* keys. This modified volume setting is saved and used for future boots. Try increasing the volume right after starting the laptop a few times, and see if the boot sound returns.

If no boot sound is played, and the machine boots normally but has no audio see http://wiki.laptop.org/go/XO_Troubleshooting_AV.

DOES THE DISPLAY REMAINS BLANK AFTER STARTING UP?

Sometimes the display is active (including backlight), but no text or graphics appear. This problem can be caused by removing the power to an XO while it is upgrading the firmware. You should contact a repair center for assistance.

DOES THE DISPLAY SAY "CONNECT POWER TO PROCEED"?

SOMETIMES A FIRMWARE UPDATE REQUIRES TWO SOURCES OF POWER, BOTH A BATTERY AND A POWER ADAPTER. IF THIS IS THE PROBLEM, PROVIDE BOTH SOURCES OF POWER AND REBOOT. THE XO SHOULD PROCEED WITH A FIRMWARE UPDATE AND BOOT NORMALLY.

IS THE DISPLAY IS SHOWING AN XO ICON ONLY?

This means that the XO has started the startup process.

You can see much more information about your Open Firmware by holding the "check mark" game button (above the power button) after powering on. That makes Open Firmware display more detailed messages about what it is doing during the secure boot process (including early boot messages from the Linux kernel). The messages are in English only.

Is it showing an XO icon with a serial number and three icons below it?

If the laptop powers up, but stops when displaying the XO icon in the middle of the screen, followed by a serial number (e.g. XO.CSN74902B22) and three icons (SD disk, USB disk, Network signal strength), it is looking for its activation lease. This should eventually print "Activation lease not found" at the top of the screen and power-off soon thereafter.

The solution is to re-activate the laptop. Obtain a copy of the lease (or a new lease) from your country activation manager, place it (named "lease.sig") in the top-level directory of a USB key and boot the laptop. See the "what to do with activation keys" section within: http://wiki.laptop.org/go/Activation_and_Developer_Keys.

Is it showing an XO icon with a "sad face" above it?

This means that Open Firmware couldn't find a signed operating system on the internal flash memory. Firmware bootup also looks on USB memory sticks and SD cards for signed operating system software.

Try upgrading or re-installing the software: http://wiki.laptop.org/go/Secure_Upgrade.

XO icon with a single dot below it?

If the XO powers up, but stops when just displaying the XO icon in the middle, with a single dot below it, it means that something was wrong when the Linux operating system started. When this happens, try upgrading or reinstalling the XO.

If this has happened to the same XO more than one time, consider a repair center for full diagnosis and repair at http://wiki.laptop.org/go/Repair_center_locations.

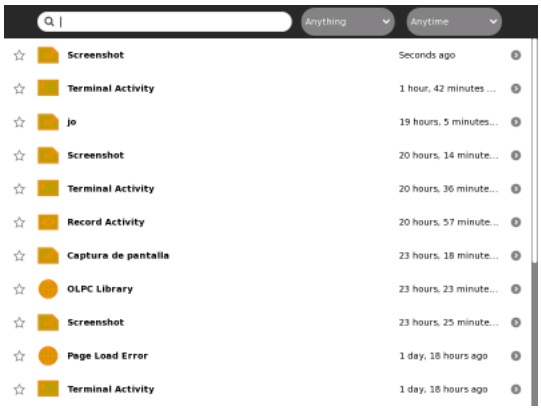
39. CONSERVING DISK SPACE

You have a limited amount of space for files. When your computer runs out of storage space, you should delete some items by using the Journal Activity.

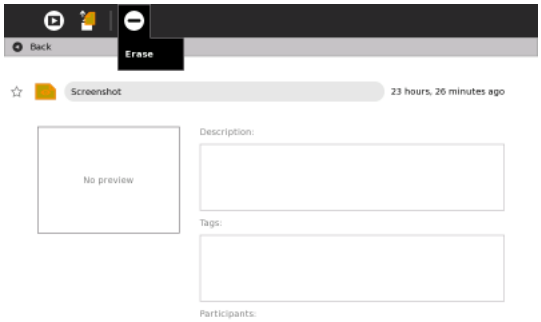
To clear out space for more files, follow these steps.

1. Open the Frame and click the Journal icon in the top row.

2. Look for files that you can delete, such as old files or large files that you may have stored on another computer so you don't need it on this computer.



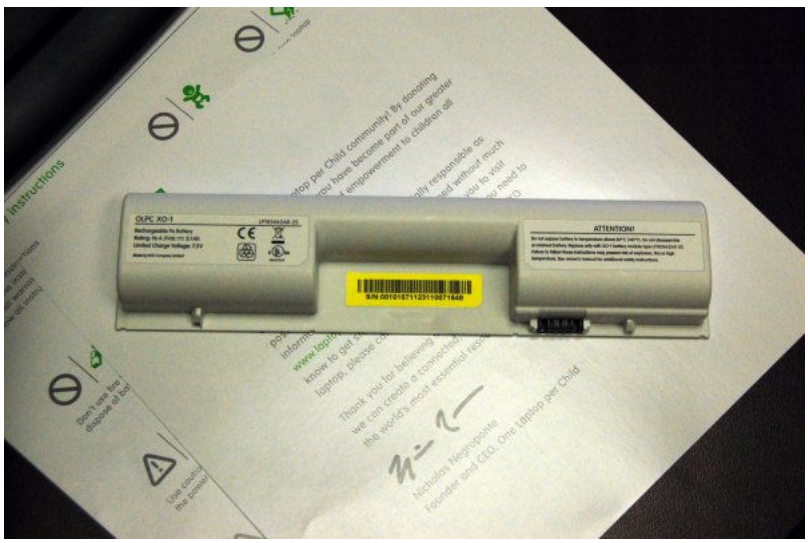
3. Click the file and then click the Erase button (minus sign) to delete the file.


Back
Erase
Screenshot
23 hours, 26 minutes ago
No preview
Description:
Tags:
Participants:

40. CHARGING THE BATTERY

USING BATTERY POWER

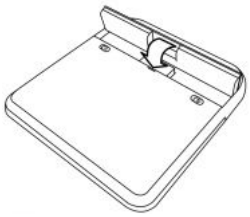
The XO needs its battery attached, or the laptop needs to be plugged into a wall directly. It will run from either source of power. When you get your battery it should come with some amount of charge. Use the following instructions to install your battery and charge your laptop.



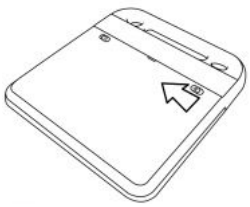
This is the XO battery. The battery attaches to the back of your XO.

INSTALLING THE BATTERY

1. Line up the four tabs on the new battery with the long edge furthest from the catches.
2. Slide the battery into place.



3. Slide the left-hand side catch to the left, and press the battery gently into place.
4. Slide the right-hand side catch to the left, to lock the battery in place.



CHARGING THE BATTERY

1. Be sure that the battery is attached to the XO.
2. Plug the power cord into your XO.
3. Plug the other end of the power cord into the nearest power source.

When to charge the battery

The battery icon in the Frame fills with color, showing you how much power (or charge) is left in the battery. Move the pointer over the battery icon to see how full the battery is. While the battery charges, the battery light near the power button (shaped like a battery) should display yellow, turning to green when the battery is fully charged. A red light tells you that the battery is running very low, and you should charge it soon.

TROUBLESHOOTING

If your battery charge gets extremely low during shipping, your XO may not start up. Plugging in external power may not charge the battery. If this happens, remove the battery and power up the laptop on external power. Once the laptop is powered on, insert the battery. It will now charge, and the charging light should be on.

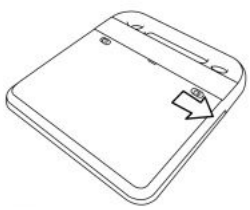
If you're the tinkering type, more advanced battery troubleshooting tips can be found at: http://wiki.laptop.org/go/XO_Troubleshooting_Battery.

41. REPLACING THE BATTERY

You do not need to remove the battery unless it is faulty. For example, a faulty battery might not charge, or might lose its power very quickly. Here are instructions for removing a faulty battery.

REMOVING THE BATTERY

1. Shut down the XO by going to the Home View, clicking the XO icon, and then clicking Shutdown.
2. Close the lid, and turn the XO over, so that the XO logo is on the underside.
3. Slide the right-hand side catch further to the right. It does not come off.



4. Slide the left-hand side catch further to the left. Note that this catch is spring loaded so you must hold it in the desired position.

5. Lift the battery out from the central indentation between the two catches.
   To re-insert the battery, refer to the Charging chapter.

LOCATING A BATTERY FOR REPLACEMENT

Refer to wiki.laptop.org/go/Directory_of_repair_centers to get to the most recent directory of repair centers, and ask for a replacement battery for your XO.

42. RESETTING TO FACTORY DEFAULTS

Warning: EVERYTHING on your XO will be deleted if you use a USB storage device and the following method to reflash your XO's flash memory.

With Internet connectivity, you can prepare yourself to reflash (restore) an XO to its factory-default settings. This procedure is called a "clean-install" and is described in more detail at http://wiki.laptop.org/go/Clean-install_procedure. (Software updates can be delivered by clean-installing or by other means.)

Clean-installing works by completely reformatting your XO with a software image stored on a USB storage device.

BEFORE YOU BEGIN

You will need:

- A USB storage device that has at least 1 GB of space free
- A computer with fast Internet access (this should allow you to download the required 300-400MB within about an hour)
  You will then load two special downloaded files onto your USB storage device. After that, the reflashing process takes about ten minutes.

PREPARING YOUR USB STORAGE DEVICE

1. Download the OS image and its "fs.zip" file to your local computer. These are compressed files, so DO NOT open them — instead, in your browser, visit the following two pages and follow their instructions:
   - http://download.laptop.org/xo-1/custom/g1g1/releases/8.2-latest/os-image.html
   - http://download.laptop.org/xo-1/custom/g1g1/releases/8.2-latest/fs-zip.html
2. Copy the resulting files onto your clean (FAT or FAT32-formatted, not quick-formatted) USB storage device.
   - Your USB storage device should now contain exactly two files named something like: `en`*`xxx`*`-`*`n`*`.img` and `fs.zip`. (On some operating systems, the ".img" and ".zip" extensions may be hidden.)
   - These files should occupy a total of at least 300 MB of space.
3. Unmount the USB storage device and disconnect it from your computer when it is safe to do so.

You have now prepared yourself to restore the factory-default settings which are current at this time.

REINSTALLING YOUR XO'S OPERATING SYSTEM

1. Turn off your XO.
2. Connect your prepared USB storage device to your XO.

3. Next, hold down all four gamepad keys above the power button, and then push the power button to turn the XO on. You will see a message that tells you to "Release the game key to continue". Do not continue until you see this message.
4. Release the gamepad keys. The reflash process runs automatically; first you will see the XO arrange and color in a grid of boxes, then the XO will display "Rebooting in 10 seconds..." The XO will then restart with a clean image.
5. Enter your name for your XO and then click Next.
6. Click the XO icon to change the colors and then click Done.
7. Optionally, connect your XO to the Internet, then use the Control Panel to download the latest Activities.

If something goes wrong

If you see a "Bad hash at eblock #0" message while reflashing your XO, then it means the image you copied to the USB storage device is corrupt. You should repeat the preparation steps, perhaps with a different USB storage device, and then retry the reinstallation step.

ADVANCED: CHANGING THE XO'S OPERATING SYSTEM

After you become comfortable with the procedure for restoring your XO to its factory-default settings, you might decide to change, upgrade, downgrade, or altogether replace your XO's operating system. There are several ways to accomplish this goal, all of which are discussed at http://wiki.laptop.org/go/Change_your_OS. Some of these mechanisms (such as olpc-update and others) may be more bandwidth-efficient and easily undoable.

43. TROUBLESHOOTING GUIDE

This chapter offers a guide for finding solutions when you have problems with Sugar.

GETTING STARTED

Where do I get support?

Both Sugar Labs and OLPC have support communities that can help you. They have written documentation such as this manual. They also offer live chat support, interactive web forums, and regional user groups. Please refer to http://wiki.laptop.org and http://wiki.sugarlabs.org for further information.

Can I print from the XO laptop?

Currently there is no printer support in the Sugar user interface.

How do I access a GNU/Linux command prompt?

Please refer to the chapter on the Terminal Activity.

What does "Register" (in the Home View hover menu) do?

"Register" is for children that are connecting to School Server. It serves no function outside of that context. Please see the School Identity Manager page in the OLPC wiki for further explanation.

Why is there no windowing system?

The Sugar user interface sits on top of the X Window System. Sugar uses a zoom metaphor instead of an overlapping windows metaphor so the presence of the windowing system is less apparent.

How do I learn the XO Sugar Environment?

Sugar differs from traditional PCs and Macs. We hope you not only "learn by doing", but also seek others to collaborate with you in the learning process. You can find an in-person local user group by searching online, or find an online community to help you learn.

How do I change my nickname? my XO's colors?

You can change your nickname and colors from the Sugar Control Panel found on the hover menu on the Home View when viewing the ring view.

How do I set the date and time on my laptop?

You can set the date and time as follows:

1. Connect to the Internet.
2. Start the Terminal Activity.
3. Start a "root" process by typing:

   ```
   su -l
   ```

4. At the command prompt, enter the following commands:

   ```
   /usr/sbin/ntpdate time.nist.gov
   /usr/sbin/hwclock --systohc
   ```

5. In response to the ntpdate command, if it successfully contacts this US government official time server, the system outputs a line displaying the correct date and time.

How do I set the timezone on my laptop?

You can set the timezone using the Sugar Control Panel.

What are the functions of all the keys on the keyboard?

- **F1** Neighborhood View
- **F2** Group view
- **F3** Home View
- **F4** Activity View
- **Shift-Alt-F** Toggle Frame visibility
- **Alt-Tab** cycles forward through running Activities
- **Shift-Alt-Tab** cycles backward through running Activities
- **Ctrl-Tilde** cycles forward through running instances of the current Activity

- **Shift-Ctrl-Tilde** cycles backward through running instances of the current Activity
- **Ctrl-c** Copy to clipboard
- **Ctrl-v** Paste from clipboard
- **Ctrl-x** Cut (and copy to clipboard)
- **Ctrl-a** Select all (current input/dialog/text box)
- **Ctrl-q** Quit Activity
- **Ctrl-Esc** Quit Activity
- **Alt-Enter** Toggle full-screen mode
- **Alt-Space** Toggle tray visibility
- **Ctrl-u** View source in Browse Activity (opens copy of source in Write Activity)
- **Fn-Space** View source (system wide, although not enabled in all applications yet)
- **Ctrl-Alt-Erase** Restart Sugar
- **Alt-1** Screen capture; saved to Journal as a PNG file named "Screenshot"
- **Ctrl-Alt-F1** Open Console 1
- **Ctrl-Alt-F2** Open Console 2
- **Ctrl-Alt-F3** Open X Windows

The OLPC-XO keyboard has a number of keys dedicated to the Sugar interface. Please see http://wiki.laptop.org/go/Keyboard_Shortcuts for details.

INTERNET, CONNECTIVITY, EMAIL, CHAT

How can I access the Internet?

Our Connectivity Quick Start Guide answers most questions about Internet Connectivity.

What if I cannot get online?

Do you have wireless Internet/WiFi nearby?

Is your Sugar.WiFi access point locked? If yes, you must have the password in order to connect.

Have you connected to your Sugar.WiFi access point?

You can go to the Neighborhood View and click the circle that represents your Sugar.WiFi access point. The name of an access point appears when you hover over a circle. After you click the circle, its center should blink. When you are connected, the center blinking stops and a circle icon for the connection appears in Frame bottom right. If your access point is locked, you are prompted to insert a key. Select the proper key format for your access point from the pull-down menu. You can confirm that you are connected by hovering over the network status circle in the Home View. Please see the chapter on Connecting.

How do I disable wireless when flying?

To disable wireless when flying, refer to the Network panel in the Sugar Control Panel and clear the Radio checkbox under Wireless.

What is a mesh network?

A mesh network allows nearby laptops to talk to one another directly (wirelessly) without the need for a traditional Internet Service Provider (ISP).

Is there an email program?

There is not a native email client for Sugar. You can use the Gmail Activity to access your email, if you have a @gmail.com account; or you can simply use Browse to access most web-based email programs.

Can I install other software, such as Flash, Java, AIM, MSN Messenger, or Skype?

Please refer to the chapter on Installing GNU/Linux applications.

FILE ACCESS

How do I save my work?

Your work is automatically saved in the Journal.

How can I backup my work?

You can backup your work onto a USB storage device. When you insert a USB storage device, it is automatically mounted and appears as an icon in the Journal (at the bottom of the screen). You can drag and drop Journal entries onto the icon to transfer them to the USB device. When you are finished, use the hover menu to unmount the device.

How can I add new programs and content to the laptop?

OLPC maintains an Activities page with links to many additional programs. You can install new programs directly from the web browser. Activities are "bundled" in files with a .xo suffix. Clicking a bundle causes it to download from the Internet into the Journal. Launching the bundled Activity from the Journal installs it in the List View of the Home View. Similarly, you can download content, such as PDF or DOC files, videos, and music into the Journal.

You can also install software and content from a USB storage device from within the Journal.

Finally, you can install software and content from the Terminal Activity, which gives you access to the Linux command shell.

How do I load a file on the disk into the Browse Activity?

Open the Browse Activity. In a window in the middle of the top of the Browse Activity page you see the words OLPC Library. Click that and you see the url: file:///home/olpc/.library_pages/search/bundle__index.html in the window and the contents of the file: .library_pages/search/bundle_index.html are loaded in the browser. If you replace that filename in the window with the name of the file you want to load, and have it display, let us say: file:///home/olpc/upload-file.html and press **enter**, the file upload-file.html is loaded from your home directory into the Browse Activity.

How do I save or retrieve files from a USB drive or SD (Secure Digital) card?

Please see the complete instructions for using a USB storage device (sometimes known as a flash drive or USB key or USB stick).

How do I delete a file?

Go to the Journal, which you can access from the Frame. Click the notebook icon to open the Journal. Find the file to be deleted by scrolling up and down the list. Open the detail view for the entry by clicking the name of the file. From within the detail view, press the "minus" button at the top of the screen to delete the entry.

ACTIVITIES

How do I close an Activity (program)?

Most Activities have an "Activity" tab with a close button found at the top-right of the display; select the Activity tab and click the close button to close the Activity. For most Activities, the keyboard shortcuts **ctrl + q** or **ctrl + esc** can also close the Activity. Alternatively, on the Frame, hover the pointer over the Activity icon to bring up a menu; click "Stop" to end the Activity.

How do I download and run Activities (programs)?

There are many Activities the community has developed for download. From the Browser Activity on the XO laptop, go to Activities and click an .xo file you find there. This downloads and installs the Activity to your laptop. When it is finished installing, click OK. Press the Home key (fifth key from the upper left) to see the Home View. Click the List View icon in the upper right of the Home View to see all the Activities. Scroll the list down if necessary until you see the icon for the Activity you just installed. Click the Activity's icon to start it.

All Activities on the laptop have been developed in the open-source community by volunteers. OLPC encourages all laptop owners to contribute to this effort.

How do I use a camera?

A camera can be used with the Record Activity.

How do I take a screenshot?

Press **alt + 1** (hit the **1** key while holding down the **alt** key at the same time). Go to the Journal. The screenshot should be the first item in the Journal. You can then copy the screenshot to the clipboard and open it with the Browse, Paint, or Etoys Activity, or drag it on to an inserted USB memory stick for transporting it to another computer. This quick screenshot hack also makes it easier to capture and upload multiple screenshots to a web server.

Read: How do I read PDF files?

Click on a PDF file to automatically launch the Read Activity, either through the web browser (Browse Activity) or from a USB storage device (Journal Activity).

Browse: How do I bookmark a website and browse it later?

Click the star in the upper-right corner to bookmark the website. The website is saved in the Journal Activity for future use.

Browse: How can I protect my children from objectionable content?

The best thing you can do to keep your children safe is to participate in their education. For example, explain to them the kinds of threats they may encounter online and appropriate behavior, don't give out personal information such as an address, phone number, or other personally identifying information over the Internet.

There are possible third-party solutions, such as http://DansGuardian.org available.

ACTIVITY DEVELOPMENT

How do I begin to write programs for the XO laptop?

You can find information on how to create your own programs for the XO at Getting started programming, and look for details at http://wiki.laptop.org/go/Developers. For those already familiar with both Linux and Python, the Activity tutorial is a step-by-step guide to building a Sugar Activity.

How do I report a bug?

We are very interested in bug reports. Please report bugs by sending email to help at laptop.org. Developers, please continue to file bugs in our tracking system.

We are also interested in your suggestions for enhancement to our system.

Community input and collaboration is vital to the success of OLPC. Thank you for your participation.

44. GETTING SUPPORT

An entire community built this XO and everything on it, and we want to help you with it. OLPC has proven that volunteer-driven support works, often with far more heartfelt caring than any corporate help desk!

If you have any questions about the XO, ask a teacher for help, a friend, or search on the Internet. If you have a question about your XO, there is a very good chance it is already answered within our expanding Support FAQ / RTFM knowledge base:

- http://wiki.laptop.org/go/Support_FAQ

Then look into the http://support.laptop.org web site's extensive helpful guidance for exploring and fixing your XO, allowing you to solve challenging issues right alongside others. Specifically, check out:

- Getting Started http://laptop.org/start
- Email Lists http://lists.laptop.org
- Live Chat http://forum.laptop.org/chat or http://wiki.laptop.org/go/IRC
- OLPC Community Wiki http://wiki.laptop.org

If you are still unable to find an answer online, please email help@laptop.org.

Finally, if you are satisfied with the hard work volunteers have brought you here, please consider giving back, by joining our dedicated community: http://wiki.laptop.org/go/Support_Gang

Thanks!

MORE

45. KEYBOARD SHORTCUTS

You can use key presses instead of moving the pointer for some actions on the XO. This list shows the keys that you press at the same time to get the described results. Note: not all shortcuts will work in all Activities.

Key combination	Description
ctrl + c (**shift + ctrl + c** in Terminal)	Copy the selection
ctrl + v (**shift + ctrl + v** in Terminal)	Paste the selection
ctrl + x (**shift + ctrl + x** in Terminal)	Cut the selection
ctrl + u while using the Browse Activity	Launch the Write Activity and view the source code for the current web page
alt + esc	Quit an Activity
alt + tab	Cycle forward through running Activities
shift + alt + tab	Cycle backward through running Activities
alt + enter	Toggle full-screen mode
alt + spacebar	Toggle tray visibility. This command may not work in all applications.
alt + 1	Save a snapshot of the current screen into the Journal
ctrl + alt + erase	Restart Sugar, the graphical interface for the XO
fn + 1	Neighborhood View
fn + 2	Group View
fn + 3	Home View
fn + 4	Activity View

Key combination	Description
shift + alt + r	Rotate the display
esc + Frame icon key + XO.RightArrow + fn (the four corners keys on the keyboard)	Reset the touchpad if the pointer behaves strangely when you use the touchpad
fn + spacebar	View source code system wide. This command may not work in all applications.
fn + up arrow	Page Up
fn + down arrow	Page Down
fn + left arrow	Home
fn + right arrow	End
ctrl + brightness down	Backlight off - black&white mode
ctrl + brightness up	Full brightness - color mode
ctrl + volume down	Mute
ctrl + volume up	Full volume

46. HARDWARE SPECIFICATIONS

STORAGE

Random access memory (RAM): 256 megabytes

Built-in Flash, instead of a traditional hard disk: 1 gigabyte

Expansion:

- 3 USB sockets (can be used with external or portable storage devices)
- 1 SD card slot, for multi-gigabyte Secure Digital cards

NOTE: With the wireless network, you can store additional files to your school's server or to other network storage locations.

PERIPHERAL DEVICES

- Built-in microphone
- Video and still picture camera: 640x480 pixels at 30 frames per second

NETWORKING

The wireless networking capability supports the following standards:

- WiFi: 802.11b/g (2.4GHz)
- Mesh: 802.11s

DETAILED SPECIFICATION

http://wiki.laptop.org/go/Hardware_specification

47. GLOSSARY

ACCESS POINT (AP)

A device that connects wireless devices together to form a network. Usually connects to a wired network and relays data between wireless devices and wired devices. Several APs can link together to form a larger network.

ACTIVE KILL

A mechanism for remotely shutting down a laptop that has been reported stolen when the laptop connects to the Internet.

ACTIVATION

In order to use your laptop for the first time (or after a "reflash" of the operating system), it must be unlocked by an activation key.

ACTIVATION KEY

Key that unlocks an XO laptop.

ACTIVITY

An application that has an icon in the taskbar, for example, Write, Record, Browse; Activities engage you in taking a picture, reading a book, creating a page, annotating a page, animating a drawing, making sounds and music, measuring and sensing, sharing your favorites, inviting your friends, surfing on the web, and many, many other things. Has a **.xo** suffix

ACTIVITY VIEW

A view used by the current Activity that is running on the laptop.

BITFROST

The OLPC security platform.

BUILD

A version of the operating system, designated by category and number; for example, Ship.2-656; Update.1-698; Joyride-1792.

CLICK

The action of positioning the pointer over an object such as a menu item or icon and then pressing and releasing a "mouse" button. To "left click", you click with the left-hand mouse button. To "right click", you click with the right-hand mouse button.

CONTENT

The books, music, movies, photographs, drawings, and other objects that are created on the laptop or downloaded to the laptop. Stored in an **.xol** file.

DATASTORE

Component that manages the access to the data displayed in the Journal; these data are stored in individual files; an index that contains the metadata and speeds up searches.

DEVELOPER KEY

If the boot firmware sees a developer key, it makes the XO laptop work just like any ordinary PC-style laptop, in the sense that it will let you interrupt the boot process and enter commands; and it will try to boot and run any program you supply to it, no matter whether the OLPC organization has tested or signed it. (The laptop also works this way if its firmware security is disabled.)

DOUBLE CLICK

Click two times in rapid succession. In many graphical user interfaces, double click is used as a different gesture than two separate single clicks. Sugar does not use double clicks.

DRAG AND DROP

The combination of dragging an object and then dropping onto a region of the screen. To drag an object: (1) position the pointer over the object; (2) press and hold the mouse button; and (3) move the pointer without releasing the mouse button. To drop an object, release the mouse button. In Sugar, drag and drop is used to copy items from the clipboard into an Activity.

EMAIL LIST

A collection of email addresses—an efficient way to send email to a group of people who share an interest.

FIRMWARE, WIRELESS

The wireless firmware is software that controls the operation of the wireless radio. It is downloaded into the wireless radio by the operating system.

FIRMWARE, SYSTEM

The system firmware is made up of two parts: The EC and OFW. The first part is the software that runs the embedded controller (EC). The EC handles the processing of the keyboard, touchpad, game buttons, power button, and charging the battery. The second part is Sugar.OpenFirmware (OFW). OFW is responsible for initializing the hardware and booting the operating system. OFW also handles boot security so that it will only load "official" OLPC operating systems.

FRAME

The Frame, which can appear in any view, holds system status (battery, speaker, network), a clipboard, the list of open Activities, navigation controls, and list of "buddies" (collaborators).

GROUP VIEW

A view of your friends with whom you are working on shared projects.

HOME VIEW

View of installed Activities from which you launch them—the Home view is the starting view on the laptop.

HOVER OVER

To move the pointer over something on the screen (such as an icon) and leave it there for a moment. Often, hovering over an object's icon activates a menu of options for that object.

INFRASTRUCTURE MODE

Network connectivity through a Sugar.WiFi access point, for example, 802.11b.

INTERNET RELAY CHAT

IRC/chat is real-time text chat used by the development and technical support communities (and hopefully the learning community as well).

JABBER

A protocol that the laptop uses for collaboration.

JOURNAL

Activity where you can see your previous work. You can also resume the work done at those Activities.

JUMPDRIVE

A small, external storage device that plugs into one of the USB ports on a computer. They can store between 16MB (enough to hold several music files) up to 4GB (enough to hold several high quality full-length movie files) and a wide range in between. Jump drives are easily purchased at any electronics store starting as low as $5 to $10.

KEY GENERATION

Process of generating both activation and developer keys.

LEASE

When a laptop is activated, the activation has an expiration date. The period between activation and expiration is the lease period. The lease period is determined during the key-generation process; the laptop can be reactivated after the lease has expired.

LIBRARY

Content that is created on the laptop is accessed through the Journal; preloaded content is stored in a library and is accessed through the Browse Activity.

MALWARE

Malware is software designed to infiltrate or damage a computer system without the owner's informed consent. Linux is relatively robust in light of malware and Rainbow provides additional protections above and beyond the standard Linux defaults.

MEMORY STICK

See: *Jumpdrive*

MESH CHANNEL

The laptops use three channels for communication: 1, 6, and 11; in simple mesh mode, the laptops can only see other laptops on the same channel; in a School Server mesh, laptops on all channels are visible.

MESH NETWORK

A wireless mesh network is a communications network made up of radio nodes in which nodes can forward information on behalf of each other so that even nodes that are not in direct radio contact can communicate via nodes that are between them. The collective coverage area of the radio nodes working as a single network becomes a mesh cloud.

MESH MODE

Network connectivity through a mesh network, for example, 802.11.

MESH PORTAL POINT

A mesh node that serves as a gateway (portal) to a network external to the mesh.

MOUSE BUTTON

Originally referring to a button on a computer mouse, the term is now used to refer to a button on any pointing device, such as a touchpad or pointing stick.

NAND FLASH

Internal storage in some laptops, including the OLPC XO.

NEIGHBORHOOD VIEW

A view of who is on the network with you and what Activities and content are being shared.

OPERATING SYSTEM

(OS) - The low-level system that manages the various files, processes, etc. needed to operate the laptop; the OS used by the XO laptop is the Sugar.RedHat Fedora distribution of Linux.

PALETTE

A black box that appears when the mouse hovers over an object; a palette can contain the name of the control, some details about it or some related actions.

PASSIVE KILL

Currently unsupported, this is a mechanism that uses the lease mechanism to require laptops to periodically ask for a renewed activation. Without the renewal, the lease will expire and the laptop will be locked.

PO FILE

A file containing the instance of translated strings for a single language based upon a POT file.

POOTLE

A server that is used to store and manage translation templates and files.

POT FILE

The master translation template for a project.

POWER ADAPTER

Each laptop comes with a power adapter to allow it to be plugged into a power socket.

PRESENCE

A discovery service for finding other laptops on the network.

RAINBOW

Rainbow implements the isolation shell implicitly described in the Bitfrost security specification. This means that it isolates Activities (and eventually system services) that it is asked to run from one another and the rest of the system.

REFLASH

The process by which a fresh build is installed in the laptop; reflashing overwrites all files, including files in the *Journal* and /home/olpc. And so, it should be done with caution.

REQUEST TRACKER (RT)

Web site: http://rt.laptop.org/ This is a *Support* ticket tracking system. Read: http://bestpractical.com/rt/ for more information.

RESUME

To return to a normal state of operation after suspending.

ROLLOVER

See: *Hover over*

SCHOOL SERVER MESH MODE

A mesh network that is mediated by a School Server.

SD CARD

Secure Digital (SD) is a flash (non-volatile) memory card format used in portable devices, including digital cameras, handheld computers, PDAs, and mobile phones. SD card capacities range from 8 MB to 32 GB.

SIGNED/UNSIGNED BUILDS

OLPC produces both "signed" and "unsigned" builds of the operating system. Signed builds are release builds that have undergone QA testing. Unsigned builds are development builds, which are used for testing new features and bug fixes. You cannot run an unsigned build in your laptop unless you have either a developer key or security has been turned off (as in the case of the Sugar.G1G1 laptops).

SIMPLE MESH MODE

A mesh network that is running between laptops without a School Server.

SINGLE CLICK

Click one time. In many graphical user interfaces, multiple clicks are used as a different gesture than single clicks. Sugar does not use multiple clicks.

SUGAR UI

The Sugar user interface. It consists of four views, the Frame, and the Journal.

SUSPEND

To cause a computer go into a standby state in order to save power.

THUMB DRIVE

See: *Jumpdrive*

TOOLBAR

A user-interface element that can contain several buttons, text entry fields, drop-down menus, and other elements, that is usually contained in a toolbox; common examples of toolbars include: *Activity*, *View*, and *Edit*.

TOOLBOX

A user-interface element that appears in the top part of most Activities and contains one or more toolbars.

TUBES

A protocol for passing data between computers.

UPDATE/OLPC-UPDATE

The process by which incremental changes to system software are installed.

USB DRIVE/USB STICK/USB STORAGE DEVICE

See: *Jumpdrive*

VIEW

Instead of a desktop, Sugar maintains four views: *Neighborhood*, *Group* (Buddy), *Home*, and *Activity*.

VIRUS

A computer program that can copy itself and infect a computer without permission or knowledge of the user, a type of *malware*.

WIKI

A collaborative website that allows for community contributions and editing, for example, http://wiki.laptop.org and http://wiki.sugarlabs.org.

XO-1

A low-cost, power-efficient, durable laptop computer designed for education in developing countries by One Laptop per Child. The XO-1 features *mesh networking* and a dual-mode, low power, sunlight readable display.

XS SCHOOL SERVER

An *XS* or *school server* extends the amount of storage available to children. It also serves as a local library and a mesh portal to the Internet.

48. ABOUT THIS MANUAL

This manual was produced in FLOSS Manuals.

This documentation is a result of a collaborative effort. Much of the material was written at a one-week Book Sprint held in Austin Texas in September 2008 and managed by Adam Hyde (FLOSS Manuals) and Anne Gentle (FLOSS Manuals / Just Write Click). Participating on site at the Book Sprint were Walter Bender (Sugar Labs), David Farning (Sugar Labs), Adam Holt (OLPC), Brian Jordan (OLPC) Mikus Grinbergs, Janet Swisher (janetswisher.com), David Cramer (Motive), Anne Gentle and Adam Hyde. There were also many remotely located contributors (please see the credits on each page for details).

The venue for the BookSprint was provided by Motive Inc., and the event was funded by individual donations including substantial contributions from David Farning, RedHat, OLPC, and FLOSS Manuals.

This community documentation effort started its life as a project with Val Scarlata's students at Illinois Institute of Technology and was eventually moved to wiki.laptop.org. Much of the community writing brought into FLOSS Manuals was completed by Todd Kelsey, Emily Kaplan, Anne Gentle, Adam Hyde, with editing work from Kelly Holcomb. Translations on the wiki.laptop.org copies were thanks to some time-intense translation support, coordination, and introductions by Greg DeKoenigsberg and Micheal Cooper.

The documentation is in continual development. To contribute to the documents, buy a book, or to check for updates please visit the FLOSS Manuals website at http://www.flossmanuals.net.

"Free Manuals for Free Software"

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