# **KA Lite Documentation**

Release 0.16.9

**Learning Equality** 

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Welcome to the KA Lite Documentation page! Here, you will find all the information needed to set up the KA Lite software. Additionally, there's information on how to manage KA Lite and how to perform role-specific tasks. If you have any questions that are not addressed by the documentation and you have access to the Internet, please be sure to check our Forums!

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# CHAPTER 1

# KA Lite Installation Guides

Hello! If you know what OS you're installing on then click ahead.

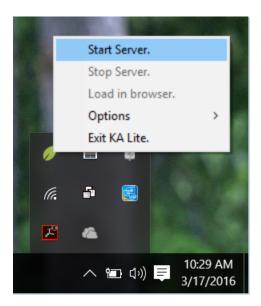
# **Windows**

- 1. Download the KA Lite Windows installer v. 0.16.9.
- 2. Double-click the downloaded .exe file, and the wizard window will appear to guide you through the process of installing KA Lite on your server.

# **Upgrade**

Upgrading KA Lite in Windows over an existing installation is easy – just run the installer and follow the prompts! You don't need to uninstall your old KA Lite installation first. You can follow the prompts to either keep your existing data or delete old data and start over. See the *release notes* for critical upgrade information for specific versions.

When you start the KA Lite program, you will find a leaf icon in your task tray. Right click on this icon to start/stop the server, open the application in a browser, or set other options:



By default, you can access KA Lite on the installation computer from the address http://127.0.0.1:8008. To access KA Lite from other machines, you will need to connect to the same network as the installation computer and access port 8008 using the its IP address. For example, if the installation computer has the IP address 192.168.0.104 on your network then you can access it from other machines on the same network at the address http://192.168.0.104:8008.

For more advanced use of KA Lite, such as changing the default port, see *Running KA Lite with your own settings* or use the command-line kalite program, which in typical installations can be found at the path C:\Python27\Scripts\kalite. Run kalite --help for usage info.

**Warning:** If you need to download and install contentpacks locally for languages other than English, make sure you are doing it **as the same user that installed KA Lite** in the first place. If you perform the contentpack installation as a different user, some content will not load properly. For downloading and installing content packs for offline methods and automatic deployments, see *How can I install a language pack without a reliable internet connection?*.

# Mac OS X

### Installation

- 1. Download the KA Lite OSX installer v. 0.16.9.
- 2. After the download is complete, double click the .pkg file.
- 3. Click on the Continue button to allow the installer program to check for pre-installation requirements.
- 4. Follow the prompts in the installer dialog to install KA Lite.
- 5. The "KA Lite app" will launch automatically during installation, display notifications and a menu bar icon.
- 6. When the installation finishes, you will be notified that "KA Lite is running...". The installer will also show the "Summary" page with instructions to start using KA Lite.
- 7. To start using KA Lite, click on the menu bar icon and select "Open in Browser".

# **Upgrade**

To upgrade an existing KA Lite installation.

- 1. Download the KA Lite OSX installer v. 0.16.9.
- 2. Make sure that you stop the server and quit the KA Lite Monitor.
- 3. After the download is complete, double click the .pkg file.
- 4. Click on the Continue button to allow the installer program to check for pre-installation requirements.
- 5. Follow the prompts in the installer dialog to install KA Lite.
- 6. The "KA Lite app" will launch automatically during installation, display notifications and a menu bar icon.
- 7. When the installation finishes, you will be notified that "KA Lite is running...". The installer will also show the "Summary" page with instructions to start using KA Lite.
- 8. To start using KA Lite, click on the menu bar icon and select "Open in Browser".

See the *release notes* for critical upgrade information for specific versions.

# Linux

# Main method: Ubuntu/Debian .deb

Download the latest .deb installer v. 0.16.9, and run this command:

sudo dpkg -i FILENAME.deb

Warning: Double-clicking the .deb in Ubuntu will open it in Ubuntu Software Center. This will fail on a default installation due to a bug in Ubuntu. To make it work, you need to install <code>libgtk2-perl</code>, for instance by running <code>sudo apt-get install libgtk2-perl</code>. After that, make sure Software Center is closed and double-click the .deb file.

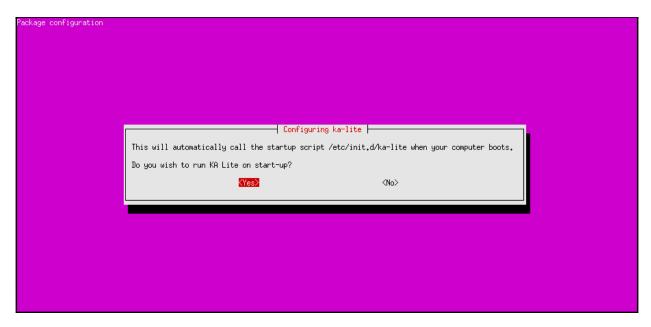
FILENAME should be replaced with the name of the file you downloaded. The file may be named as if it was intended for Ubuntu but works just as well for any other Debian-based systems like Debian, Raspberry Pi, Linux Mint etc.

You will be prompted to enter some configuration information. You should read the on-screen instructions carefully, but some explanation is included here:

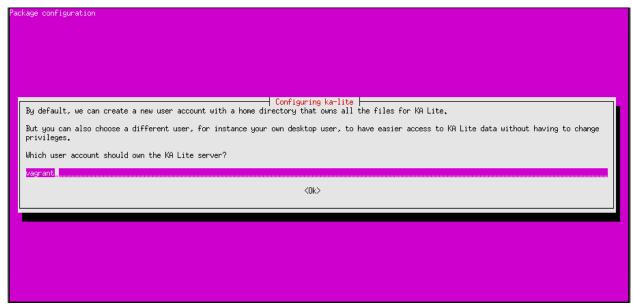
1. Choose weather you want to run KA Lite on boot or not. We recommend choosing yes, as it simplifies data management. If you choose not to, you must manually start KA lite every time.

**Note:** Running KA Lite as different users creates different sets of data files, so it's recommended that you run KA Lite as the same user every time.

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2. If you chose to start on boot in the previous step, you will be prompted to choose the owner for the KA Lite server process. Generally the default value is ok.



3. You will be asked to review your choices, and finally KA Lite will start automatically when installation is complete.

**Tip:** If you want to receive automatic updates from online sources, you can also use *Debian/Ubuntu: Subscribe to updates through a PPA*.

# Raspberry Pi

For a Raspberry Pi running a Debian system, you can install the special Debian package ka-lite-raspberry-pi (Download as .deb file v. 0.16.9).

To download and install it from command line:

```
# Install dependencies
sudo apt-get install python-m2crypto python-pkg-resources nginx python-psutil
# Fetch the latest .deb
sudo wget https://learningequality.org/r/deb-pi-installer-0-16 --no-check-
-certificate --content-disposition
# Install the .deb
sudo dpkg -i ka-lite-raspberry-pi*.deb
```

You can also add the PPA, see *Debian/Ubuntu: Subscribe to updates through a PPA*, and then run sudo apt-get install ka-lite-raspberry-pi.

After installing, you can setup a Wifi hotspot using this guide: Raspberry Pi Wi-Fi

# Other options

KA Lite is available for all platforms (e.g. non-Debian compatible platforms) through PyPi. See *Generic installation* (pip install).

# **Upgrade**

To upgrade KA Lite on Linux, simply download the latest deb file and follow the instructions above for installation. Your existing data will be preserved by default. See the *release notes* for critical upgrade information for specific versions.

# Configuration after installation or update

Every time you install or update KA Lite, you must run kalite manage setup command again to setup the database and download assessment items (video descriptions, exercises etc.).

# Uninstalling

### **Windows**

- 1. Uninstall KA Lite from the Control Panel.
- 2. In Windows XP, double-click the "Add or Remove Programs" icon, then choose KA Lite.
- 3. In later version of Windows, click the "Programs and Features" icon, then choose KA Lite.

### Mac OSX

- 1. Launch KA-Lite Monitor from your Applications folder.
- 2. Click on the app icon at the menu bar.
- 3. Click on Preferences in the menu option.
- 4. Click the Reset App from the Advanced tab.

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- 5. You will be prompted that "This will reset app. Are you sure?", just click on OK button.
- 6. Another dialog will appear asking your Password, type your password then click on Ok button.
- 7. Quit the KA-Lite Monitor app (do not click the Apply button!).
- 8. Move the KA-Lite Monitor app to Trash.

# Linux: Debian/Ubuntu

Option 1: Open up Ubuntu Software Center and locate the KA Lite package. Press Remove.

Option 2: Use apt-get remove <name of package>. You have to know which package you installed, typically this is ka-lite or ka-lite-bundle.

# Installed with pip

You can remove KA Lite (when installed from pip or source distribution) with pip uninstall ka-lite or pip uninstall ka-lite-static (static version).

# Removing user data

Some data (like videos and language packs) are downloaded into a location that depends on the user running the KA Lite server. Removing that directory can potentially reclaim lots of hard drive space.

On Windows, the HOME and USERPROFILE registry values will be used if set, otherwise the combination %HOMEDRIVE%%HOMEPATH% will be used. You can check these values from the command prompt using the commands echo %HOME%, echo \$USERPROFILE%, etc. Within that directory, the data is stored in the .kalite subdirectory. On most versions of Windows, this is C:\Users\YourUsername\.kalite\.

On Linux, OSX, and other Unix-like systems, downloaded videos and database files are in ~/.kalite.

# **Release Notes**

### 0.16.9

### **Bug fixes**

- Learner is not notified of mastery level, exercises keep displaying #4875
- Test improvements: Avoid test failure due to race condition #5252
- Activating simplified login results in blank login modal #5255

### Known issues

- Windows installer tray application option "Run on start" does not work see learningequality/installers#106
- Writing to server.log is disabled on Windows #5057
- Installing on Windows 8, 32bit is reported to take ~1 hour before eventually finishing.

• If you are upgrading from 0.15 on a Windows system, you have to manually locate python-packages\requests, typically in C:\Python27\share\kalite\python-packages\requests and delete it (after completing the installation process). Otherwise video download breaks. #5263

# Paper cuts

- Old versions of pip installer breaks because of requests library downgrade. #5264
- Exercise "Measure area with unit squares" is broken #5130
- VTT Subtitles are broken in Epiphany browser #5125
- Viewing subtitles on Ubuntu requires ubuntu-restricted-extras #4993
- Individual Student Progress Report may take a long time to load #5106
- Button "Show Keypad" may be missing on some exercises due to upstream data API issue #5103

### 0.16.8

### **Bug fixes**

- Mac OSX installer version (based on pyrun) crashes #5211
- Confusing and harmless "error" message removed from first-runs #5236
- Tests now run several minutes faster and are more reliable #5242

### **Known issues**

- Windows installer tray application option "Run on start" does not work see learningequality/installers#106
- Learner is not notified of mastery level, exercises keep displaying #4875
- Writing to server.log is disabled on Windows #5057
- Installing on Windows 8, 32bit is reported to take ~1 hour before eventually finishing.

### Paper cuts

- Exercise "Measure area with unit squares" is broken #5130
- VTT Subtitles are broken in Epiphany browser #5125
- Viewing subtitles on Ubuntu requires ubuntu-restricted-extras #4993
- Individual Student Progress Report may take a long time to load #5106
- Button "Show Keypad" may be missing on some exercises due to upstream data API issue #5103

# 0.16.7

### **Bug fixes**

- Restore learner stats: Correctly display login count and aggregate login durations (previously uncollected data!) #5157
- Mastery percentage wrongly displayed on learner stats page #5181
- Speed up content scanning for up to 10x speedup when scanning big video directories, meaning content scanning drops from hours to minutes #5201

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- Lockdown fix for user logins #5202
- Initial "pragma" support for SQLite and setting CONTENT\_DB\_SQLITE\_PRAGMAS. Use this to improve performance, such as allocating more memory for caching. Peewee docs. #5225
- Put max-height CSS rule on navbar logo #5206
- Submit correct HTTP user-agent for learningequality.org stats #5226
- Broken legacy assessment item download fixed (affects mainly some Debian packages) #5214
- Fix automatic CI tests so they now run (development issue, not related to deployments) #5201
- Added automatic coverage reports (development issue, not related to deployments) #5230
- Running setup command as root will give a warning + prompt, because we don't advice running as root.
   #5032
- Docs updates: Tested and updated Apache/Nginx WSGI guide, updated PPA setup to work on Debian/Raspbian
- Content packs: Added ~1700 dubbed videos in Non-English versions of the content packs, populating content
  databases and thus adding language support for: Burmese, Indonesian, Kannada, Swahili, Tamil, Xhosa, Zulu.
  content-pack-maker#28. #5120

### **Known issues**

- Mac OSX installer version (based on pyrun) crashes #5211 will be fixed in 0.16.8
- Windows installer tray application option "Run on start" does not work see learningequality/installers#106
- Learner is not notified of mastery level, exercises keep displaying #4875
- Writing to server.log is disabled on Windows #5057
- Exercise "Measure area with unit squares" is broken #5130
- VTT Subtitles are broken in Epiphany browser #5125
- Viewing subtitles on Ubuntu requires ubuntu-restricted-extras #4993
- Individual Student Progress Report may take a long time to load #5106
- Button "Show Keypad" may be missing on some exercises due to upstream data API issue #5103
- Installing on Windows 8, 32bit is reported to take ~1 hour before eventually finishing.

# 0.16.6

### **Bug fixes**

- Content packs updated, bulk of broken exercises fixed and all languages rebuilt (and should be re-downloaded), pay attention to a couple of known issues!
- Allow logins during LOCKDOWN #5117
- Remove RPI warning message about max number of concurrent downloads, there's no longer a limit on small platforms #4982
- Make ROOT\_DATA\_PATH consider the KALITE\_DIR environment variable #5143
- Restore downloading on RPI w/ m2crypto: Unbundle requests and use requests.get instead of urllib.urlretrieve #5138
- Docs: Add warning message on KA Lite windows application docs #5137

- Treat socket.error as if no server is running #5135
- Docs: Connect to ka-lite on IRC #ka-lite (Freenode) #5127
- Notify student when all exercises in a series are completed (level has been mastered) #4875
- Use current year in parts of footer #5112
- Handle socket.error: Fix some cases where KA Lite fails to start due to a previous unclean shutdown #5132
- Content packs 1800 outdated questions (assessment items) inside exercises (English version) used to cause problems due to their widgets and have been removed not only by KA Lite, but also on KhanAcademy.org. This does not affect the number of exercises and there are still 29,839 assessment items left, so it's not a big concern! #5131

### **Known issues**

Please note that issues with **content packs** are not related to the software itself but are being fixed and updated along side our release.

Watch individual issues on Github or dev@learningequality.org for announcements and updates.

- Content packs ~1700 dubbed videos are missing in Non-English versions of the content packs, making the following languages have empty content databases: Burmese, Indonesian, Kannada, Swahili, Tamil, Xhosa, Zulu. These issues can be tracked in content-pack-maker#28. #5120
- Learner is not notified of mastery level, exercises keep displaying #4875
- Login counts and session times in Learner progress reports are wrong #5157
- Browsers on Windows XP are experiencing issues with SVG images #5140
- Exercise "Measure area with unit squares" is broken #5130
- VTT Subtitles are broken in Epiphany browser #5125
- Viewing subtitles on Ubuntu requires ubuntu-restricted-extras #4993
- Individual Student Progress Report may take a long time to load #5106
- Button "Show Keypad" may be missing on some exercises due to upstream data API issue #5103
- Writing to server.log is disabled on Windows #5057

### 0.16.5

### **Bug fixes**

• Missing fonts for some icons and math symbols #5110

### 0.16.4

# **Bug fixes**

- Update Perseus JS modules resulting in many broken exercises #5105 #5036 #5099
- Fix broken unpacking of legacy assessment items zip #5108

1.5. Release Notes

# 0.16.3

# **Bug fixes**

• Fix for 'nix based systems with unconventional kernel versioning #5087

### 0.16.2

# **Bug fixes**

• Fix attempt log filtering #5082

### 0.16.1

# **Bug fixes**

- Tweaks to our documentation #5067
- Refactor assessment item asking logic in the setup command #5065
- Properly copy over docs pages while preserving content pack assets #5074

# 0.16.0

### General

- KA Lite is officially supported on OSX 10.11 (El Capitan).
- We've revamped the language packs into a new format, called content packs. This results in significantly faster startup times across the board.

**Warning:** You will have to redownload all your languages to fully support 0.16.

- We introduced a new beta inline help system. Check this out by going to the Facility management page and clicking "Show me how!"
- A lot of UI tweaks and bugfixes. KA Lite is now more stable than ever!

## 0.15.0

# General

Python 2.6 is no longer supported. It may still work, but we are no longer actively supporting it. Other known issues:

- The latest OSX version (EL Capitan) is not yet supported. KA Lite is officially supported on OS X 10.8 10.10.
- On OSX, you must restart the server after downloading videos in order for them to be marked as available.
- · On all platforms, you must restart the server after downloading a language pack in order to use it.
- You can no longer configure your server using local\_settings.py. Instead, custom settings must appear in settings.py in the user's .kalite directory.

# 0.14.0

### General

Installation from source (using git) is no longer supported. If you have previously installed from source, in order to upgrade you must first install KA Lite again in a new location using one of the supported installers. Then you can migrate your database and content from your old installation to your new one using the command:

```
kalite manage setup --git-migrate=/path/to/your/old/installation/ka-lite
```

You *must* use the kalite command that comes with your new installation. The path you should specify is the base project directory – it should contain the kalite directory, which should in turn contain the database directory. Follow the on-screen prompts to complete the migration. You should then no longer use the old installation, and should consider deleting it.

# 0.13.0

### General

Interacting with the system through kalite/manage.py has now been deprecated. Please use the kalite executable under the bin/folder. Run bin/kalite -h for more details.

If you are pulling the source from git, you will need to run the setup command to complete the upgrade. From the base directory run:

bin/kalite manage setup

On Windows, use the bin\windows\kalite.bat in the cmd.exe prompt:

```
bin\windows\kalite.bat manage setup
```

When you are asked whether or not to delete your database, you should choose to keep your database! You will also be prompted to download an assessment items package, or to specify the location if you have already downloaded it. If you wish to download the package and specify the location during the setup process:

- Download the assessment items package here. Save it in the same folder as the setup script.
- During the setup process you will see the prompt "Do you wish to download the assessment items package now?". Type "no" and press enter to continue.
- You will then see the prompt "Have you already downloaded the assessment items package?". Type "yes" and press enter.
- Finally, you will see a prompt that begins with "Please enter the filename of the assessment items package you have downloaded". A recommend file may appear in parentheses if this is the file you downloaded, then press enter. Otherwise, enter the name of the file you downloaded. (Absolute paths are okay, as are paths relative to the directory you are running the setup script from.)

### **Windows**

**Warning:** Internet Explorer 8 is no longer supported in this version. Please use a newer browser, or stick to version 0.12 to maintain compatibility.

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# Raspberry Pi

If you're updating a current Raspberry Pi installation, make sure to put this in your local\_settings.py to avoid slow performance:

DO\_NOT\_RELOAD\_CONTENT\_CACHE\_AT\_STARTUP = True

# **Advanced installation options**

**Note:** Every time you install or update kalite, you should (re)run kalite manage setup to setup the database and download content packs (exercise texts, images, translations etc.).

# Generic installation (pip install)

# Installing through pip or with setup.py

For command line users with access to pip, you can install KA Lite from an online source like this:

```
$> pip install ka-lite
```

### Static version

If you need to run KA Lite with static dependencies bundled and isolated from the rest of your environment, you can run:

```
$> pip install ka-lite-static
```

# Portable tarballs / zip files with setup.py

If you can't install KA Lite on systems with the standard Windows/Mac/Linux installers, you can fetch the KA Lite python package from PyPi.

To unpack the package for installation, run:

```
$> tar -xf ka-lite-static-0.16.9.tar.gz
```

Once it's unpacked, install it by entering the extracted directory and running:

```
$> sudo python setup.py install
```

Beware that the PyPi sources do not contain assessment items, so you need to download the contentpack en.zip manually (>700 MB)..

# Debian/Ubuntu: Subscribe to updates through a PPA

We maintain a PPA on Launchpad and if you are connected to the internet, this will also give you automatic updates. On Ubuntu, do this:

# User interface for Debian/Ubuntu

Make sure you have the PPA added, then run:

```
sudo apt-get install ka-lite-gtk
```

# **Development**

A guide recommending how to install KA Lite for development is available in *Setting up your development environment*.

# **Specific system setups**

# Raspberry Pi Wi-Fi

Note: Two Wi-Fi USB modules have been tested with KA Lite on the Raspberry Pi

- · Raspberry Pi WiPi adaptor
- Edimax EW-7811Un

In our tests, we found that the WiPi adaptor supported a higher number tablet connections.

Note: The Raspberry Pi may crash if the USB adaptor is inserted or removed while the computer is switched on.

- Make sure to shutdown and remove the power from the Raspberry Pi.
- Afterwards, insert the wireless USB adaptor.
- Lastly, switch the Raspberry Pi on.
- 1. Install the .deb package, see *Raspberry Pi*.
- 2. Get the network configuration scripts.
  - cd /opt
  - sudo git clone https://github.com/learningequality/ka-lite-pi-scripts.git
- 3. Install and configure the access point:

```
cd /opt/ka-lite-pi-scripts
sudo ./configure.sh
```

Note: If using the Edimax EW-7811UN, ignore the "hostapdSegmentation fault" error.

- 4. Install the USB adaptor software.
  - If using the WiPi, run this command:: cd /opt/ka-lite-pi-scripts sudo ./use\_wipi.sh
  - If using the Edimax EW-7811Un, run this command:

```
- cd /opt/ka-lite-pi-scripts- sudo ./use_edimax.sh
```

# 5. Complete the access point configuration

- sudo python ./configure\_network\_interfaces.py
- sudo insserv hostapd

### 6. Finally

- sudo reboot
- A wireless network named "kalite" should be available.
- Connect to this network
- If the KA Lite server is started, browse to 1.1.1.1

# Nginx / Apache setup

This section is written for the Django-knowledgable crowd.

KA Lite includes a web server implemented in pure Python for serving the website, capable of handling hundreds of simultaneous users while using very little memory. So you don't have to run Apache or Nginx for efficiency.

Apache configuration, using mod\_wsgi, example would work for an Ubuntu .deb installation:

```
<VirtualHost *:80>
    ServerName kalite.com
    DocumentRoot /var/www/html/

<Directory />
        Require all granted
    </Directory>

Alias /static /var/www/.kalite/httpsrv/static
    Alias /media /var/www/.kalite/httpsrv/media

WSGIScriptAlias / /usr/lib/python2.7/dist-packages/kalite/project/wsgi.py

# Possible values include: debug, info, notice, warn, error, crit,
# alert, emerg.
    LogLevel warn

ErrorLog ${APACHE_LOG_DIR}/kalite-error.log
    CustomLog ${APACHE_LOG_DIR}/kalite-access.log combined
</VirtualHost>
```

**Note:** It's recommended that you install ka-lite-static in a virtualenv. If you are using Apache+mod\_wsgi, you should copy & modify wsgi.py to reflect the path of your venv.

If you are using uwsgi+Nginx, this is the critical part of your uwsgi configuration, provided that you have installed kalite from PyPi or .deb:

```
module = kalite.project.wsgi
```

Remember that KA Lite runs in user space and creates data files in that user's home directory. A normal Debian/Ubuntu system has a www-data user for Apache which is the default user for mod\_wsgi and will create database files, static files etc. for kalite in /var/www/.kalite/. If you run it as another user, it may be located somewhere else.

**Note:** Log in as the Django application server's user, e.g. www-data and initialize the kalite static files and database before anything you can run kalite with uwsgi / mod\_wsgi!

Example of setting up kalite for the www-data user:

```
$> sudo su -s /bin/bash www-data
$> kalite manage setup
$> exit
```

# System requirements

# **Operating systems**

- Windows Vista, 7, 8, 10
- Mac OSX 10.9, 10.10 and 10.11
- Linux: Any system with Python 2.7
- Debian/Raspberry Pi packages: Wheezy or later
- Ubuntu packages: 14.04, 15.10, 16.04 anything that's not end-of-life.

# **Limited support**

The following systems are known to work, but we do not actively ensure their stability and their might be issues.

- · Windows XP
- Ubuntu 12.04

# **Supported Browsers**

- IE9+
- Firefox \*)
- Chrome
- · Safari

KA Lite is currently *not* supported on Internet Explorer version 8 or lower.

**Note:** \*) Firefox 45+ is the system we run all the automated tests on, and so has the greatest guarantee of working. However, we do not use technology that's incompatible with other browsers, and so we expect them to work and fix any issues that occur.

### Known issues:

- Videos do not play on Windows XP (use the Chrome browser)
- Subtitles do not work for Epiphany (the browser in Raspberry Pi).

# Video playback

Videos are MP4 encoded. On Ubuntu/Debian systems, install the Ubuntu restricted extras package.

# Hardware requirements

### **Clients**

Very old desktops and very low-power computers can be used as client devices to access KA Lite. For instance, some deployments are known to use first-gen Raspberry Pi as desktop computers.

It is always a good idea to do a practical test, but when you want to do a project with KA Lite involved, it's not necessary to scale your hardware because of KA Lite.

The main concern is that your system needs a video card and driver that can play the videos. Please note that we serve two sets of videos, the individual downloads and the torrent with resized videos – the latter requires the least from hardware.

### **Servers**

KA Lite's hardware requirements as a server are next to nothing.

- 256 MB
- 500 MHz CPU
- · Hard drive space:
  - ~39GB HDD (full set of English resized videos)
  - ~18GB HDD (Spanish)
  - ~15GB HDD (Portuguese/Brazilian)
  - ~10GB HDD (French)
  - ~265GB (full set of English, non-resized videos + partner contents)

If you have a center with less than 30 computers, a device as simple as a Raspberry Pi is known to work fine as a server.

**Note:** In case you are deploying on Linux and want an efficient setup, use the ka-lite-raspberry-pi package, it doesn't require a specific architecture, but it's required to use if you deploy on a system with specs equivalent to or smaller than Raspberry Pi.

Please note that during the very first run or after upgrades or installation of new languages, the server has to scan for videos and update its database. If you have a slower device, this one-time action will require a lot of time.

# **Getting the videos**

Remember that you need a very fast internet connection to get the initial set of videos, and that the application itself including English content databases is ~500MB.

**User Manual** 

The user manual is organized by the different "user types" within KA Lite. If you know which user manual you'd like to see, click to jump to a specific manual:

# **Administrator User Manual**

Who is an "administrator"?

### A person who:

- helps to plan and oversee a project using KA Lite
- installs and updates KA Lite
- can create Coach logins, Learner logins, download videos and language packs

# **Administrator Glossary**

If you choose to register online, these important terms will help you better understand the flow of data between your installations and the online data hub.

**Sharing Network** A Sharing Network is a group of devices that share user data. This data is synced to the central server when an Internet connection is available, and then synced down onto other devices in the same Sharing Network.

**Organization** An organization is a group of people responsible for administering a set of Sharing Networks. An organization can have multiple administrators and manage multiple sharing networks.

**Facility** A facility is the physical space in which a device is located (e.g. a school or a computer lab in a community center). Learner, coach, and admin accounts are associated with a particular facility.

**Device** A device should be able to run a KA Lite server (most computers) and other devices to be used as clients. One common configuration is using a Raspberry Pi or other inexpensive computer as a server and relatively cheap tablets as client devices. Tablets can access the servers through an access point, such as a Wi-Fi dongle, or some other networking device such as a router.

**Web Browser** A program that retrieves and presents information resources on the World Wide Web. Popular web browsers include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

# **Running the KA Lite Server**

At the very end of the setup you are prompted to run KA Lite. Make note of the command needed to run the server - usually just kalite start.

### Windows or OSX behind a Firewall

When you start KA Lite your operating system might prompt you to allow "Python.app" to accept incoming connections. The message dialogue may look like the following, depending on your operating system:



Please allow the app to run. This will make it possible for the KA Lite application to be accessible by other computers in your local network.

# **Accessing KA Lite**

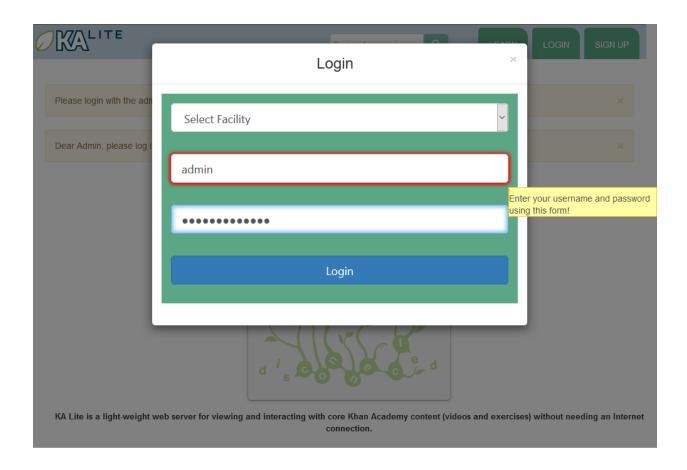
Once the server has started, you will be given two IP addresses that you can copy and paste into a web browser to to access KA Lite.

- To access KA Lite from the same machine where the server is installed use the http://127.0.0.1:8008 IP address.
- In order to access KA Lite from other machines in your local network, use the second IP address (different from the above) listed in Terminal after running *kalite start*.

# Setting up KA Lite

Once you have successfully installed KA Lite, the installation script will give you a URL (http://127.0.0.1:8008/) to visit so that you can open KA Lite and login for the first time.

- 1. Copy and paste the URL into a web browser. The KA Lite application should show up.
- 2. Login to KA Lite using the username and password you created during the installation process.
- If you have forgotten the username/password combination, simply run kalite manage createsuperuser in your Terminal.



Once you've logged in, the next step in the setup process is to register your device with the KA Lite Hub.

# Registering Your Device with the Hub

By registering your device with FLE, you can sync data back with our central data hub. This is useful for many reasons:

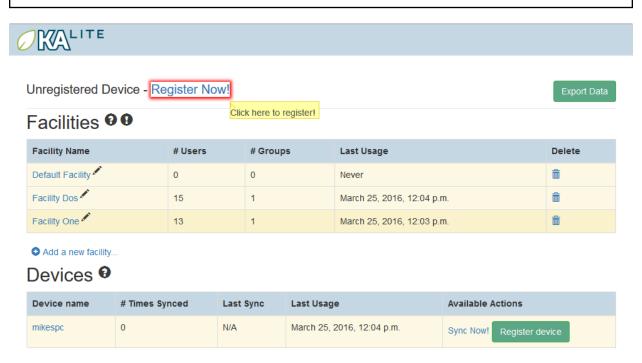
- 1. The Project administrator can manage user accounts and view usage data from afar, without the need to physically visit the offline device.
- 2. Syncing back usage data can inform the FLE team of multiple users in a certain geographic region, and we can connect people that might be able to help one another.
- 3. It helps FLE and our partners understand where and how the software is being used, so we can keep adding features that support you!

You will have two options:

1. **One click registration**. This is the perfect option for individual users who just want to get KA Lite up and running fast, and don't need online access to data. This allows you to get the registration process over in one-click without worrying about creating a login that you're never going to use.

2. **Register with online access to data**. Choose this option if you're an administrator of larger projects. This option allows you to access your uploaded data and connect multiple installations to the same account.

**Warning:** If you choose to one-click register, you will unable to register with online access to data later. (If you chose this option by accident and would like to start over, navigate to the folder KA Lite is installed and re-run the setup command).





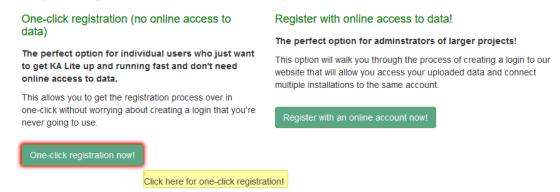


# What is device registration?

Once you register your installation with us, your data can be synced to our online repository when KA Lite has access to the Internet. This is a good thing! Here's why:

- · Your data will be backed up online
- · You can login online and review your usage data
- Our team can use this data to objectively assess the impact our work is having around the world!

# Ready to register? You have two options:







# What is device registration?

Once you register your installation with us, your data can be synced to our online repository when KA Lite has access to the Internet. This is a good thing! Here's why:

- · Your data will be backed up online
- · You can login online and review your usage data
- · Our team can use this data to objectively assess the impact our work is having around the world!

# Ready to register? You have two options:

One-click registration (no online access to data)

The perfect option for individual users who just want to get KA Lite up and running fast and don't need online access to data.

This allows you to get the registration process over in one-click without worrying about creating a login that you're never going to use.

Register with online access to data!

The perfect option for adminstrators of larger projects!

This option will walk you through the process of creating a login to our website that will allow you access your uploaded data and connect multiple installations to the same account.

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Register with online access to data!

The perfect option for adminstrators of larger projects!

This option will walk you through the process of creating a login to our website that will allow you access your uploaded data and connect multiple installations to the same account.



# How to register your device with online access to data

**Note:** You will need Internet access in order to perform these steps.

- 1. Log into KA Lite with the username and password that you chose during setup.
- 2. If you have not already registered your device, you will be redirected to a page that displays your options. Click the "Register with an online account now!" button to get started with the registration process.



# What is device registration?

Once you register your installation with us, your data can be synced to our online repository when KA Lite has access to the Internet. This is a good thing! Here's why:

- · Your data will be backed up online
- · You can login online and review your usage data
- · Our team can use this data to objectively assess the impact our work is having around the world!

# Ready to register? You have two options:

One-click registration (no online access to data)

The perfect option for individual users who just want to get KA Lite up and running fast and don't need online access to data.

This allows you to get the registration process over in one-click without worrying about creating a login that you're never going to use.

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This option will walk you through the process of creating a login to our website that will allow you access your uploaded data and connect multiple installations to the same account.

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Register with online access to data!

The perfect option for adminstrators of larger projects!

This option will walk you through the process of creating a login to our website that will allow you access your uploaded data and connect multiple installations to the same account.



If you do not see this page, click on the "Manage" tab. At the top of the page you should see a link similar to this, offering to register your device:

Please follow the directions to register your device, so that it can synchronize with the central server.

You will be prompted to log in with your central server login credentials. Please note that these credentials are different from your login credentials created during setup. Click on the "Sign up here" link, and you will be redirected to a page that prompts you to create an account on the central server.



Once you have filled out the form and submitted it, you will be sent an activation link to the email address you supplied.

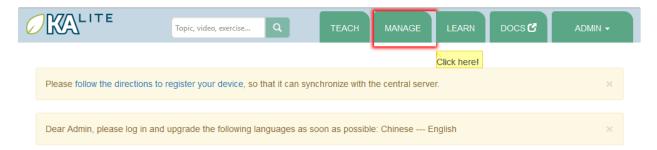
# **Post Registration Setup**

Now that you have registered successfully, it's time to configure your local KA Lite installation to suit your needs. If any terms like 'facility' or 'device' become unclear, check the *Administrator Glossary* for a quick reminder.

# **Create a Facility**

KA Lite assumes that you are going to be using the software primarily in one place. This could be a school, a home, a community center, etc. We call this place a "facility", and use it to help differentiate users who are syncing back data with our central data hub. In order to create a facility, follow the steps below.

- 1. Log in to KA Lite.
- 2. Click the "Manage" tab at the top of the page.



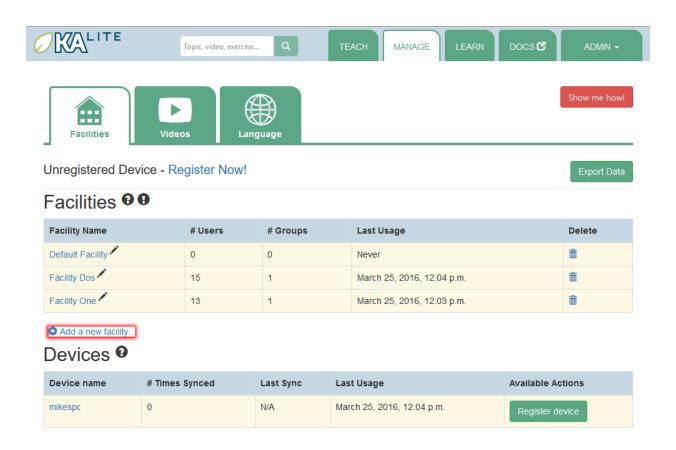
# A free world-class education for anyone anywhere.



KA Lite is a light-weight web server for viewing and interacting with core Khan Academy content (videos and exercises) without needing an Internet connection.



- 3. Make sure that the "Facilities" tab is selected.
- 4. Under the Facilities section, click on "Add a new facility..."





- 5. Fill in the information for all the fields you find below the map
- 6. Click the "Save facility" button when you are finished.



# Unregistered Device - Register Now!

# Add a new Facility

Please use this search box to locate your facility (and/or click on the map to select a spot), and then enter the additional information in the form

(Knowing, as closely as possible, where you are in the world allows us to better plan for future deployments and partnerships)

Search for your facility's address or name to find its location on the map (enter to search)



# Pescription An optional description of your school... Address (Please provide as detailed an address as possible.) Contact Name (Who should we contact with any questions about this facility?)

### User Count

**Contact Phone** 

**Contact Email** 

Name (required)

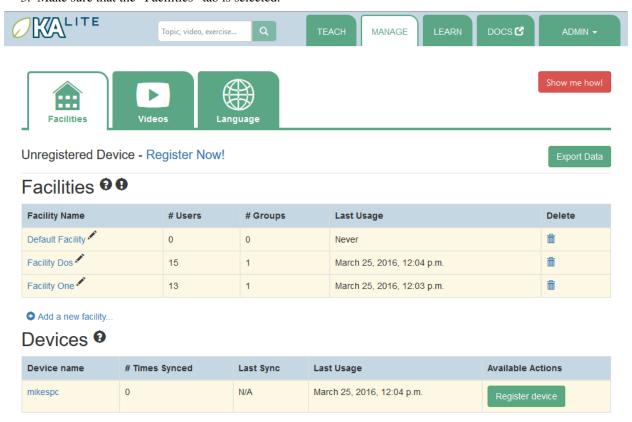
# 2.1. Administrator User Manual

31

7. Once the information has been saved, you will be redirected back to the "Facilities" page, where you will see a message indicating that you have successfully saved your new facility.

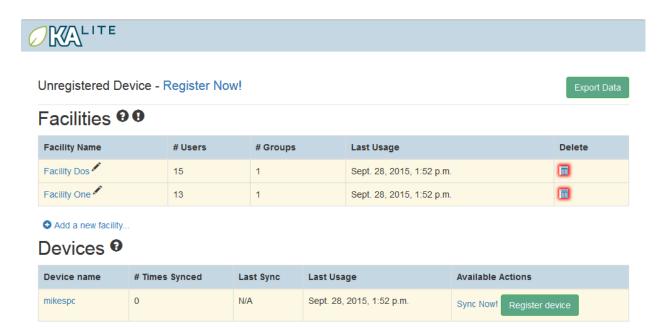
# **Delete a Facility**

- 1. Log in to KA Lite.
- 2. Click the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.





4. Find the facility you would like to delete, and click the trash can icon to delete the facility.





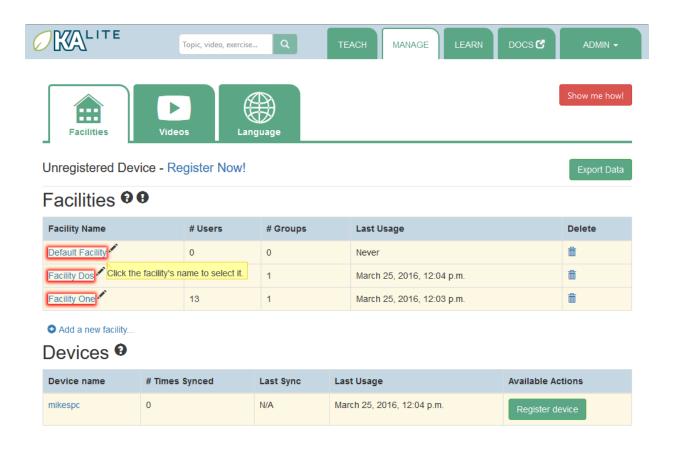
- 5. You will be prompted to type in the name of the facility you wish to delete for confirmation.
- 6. If your delete is successful, you will be redirected back to the "Facilities" page, where you will see a message indicating that you have successfully deleted the facility.

# **User Management**

Coaches and learners are the other types of users that KA Lite supports. In order for them to be able to login, you need to create accounts for them.

## **Adding Learners**

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.
- 4. Select the facility that the learner will belong to.





5. Under the "Learners" header, click on "Add a new Learner".



## Unregistered Device - Register Now! / Facility Dos 🖍

# Coaches 9

Coach	Edit	Logins	Login Time	Coach Report Views
Brown, Richard	<i>*</i>	0	0 hour(s)	0
Clement, Kwame	1	0	0 hour(s)	0
Paterson, Melanie	1	0	0 hour(s)	0
Sample, Teacher 1	<i>F</i>	0	0 hour(s)	0

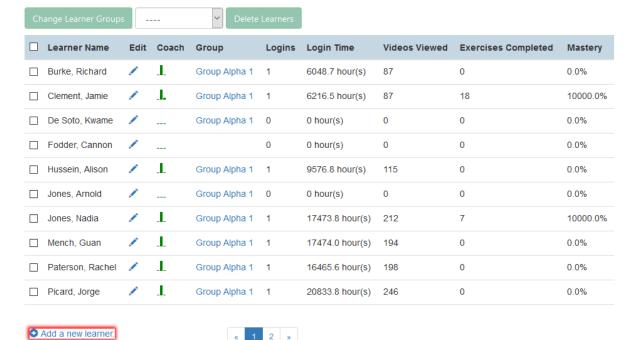
## • Add a new coach.

# Learner Groups 9

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	P	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.

# Learners 9

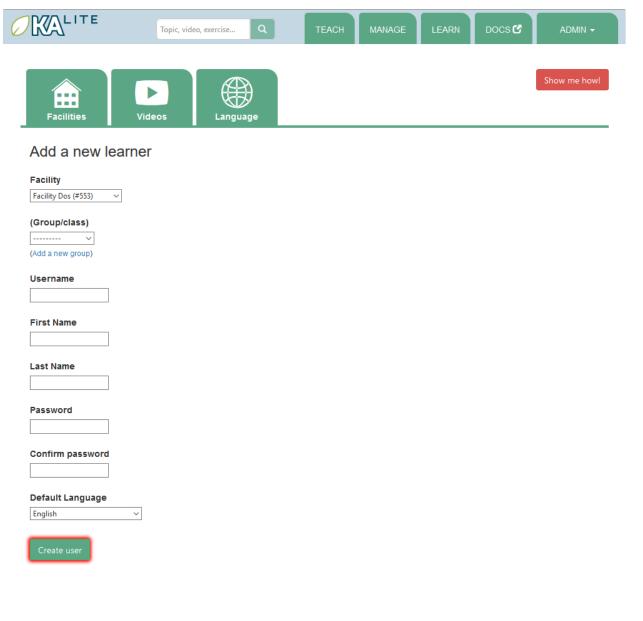


2.1. Administrator User Manual

English

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- 6. You will be redirected to a page that says "Add a new Learner". Fill in all the information. The facility dropdown defaults to the facility you selected in the previous steps.
- 7. Click "Create user". You should be redirected to the "Facilities" page, where you will see a message indicating that you have successfully created a Learner user.

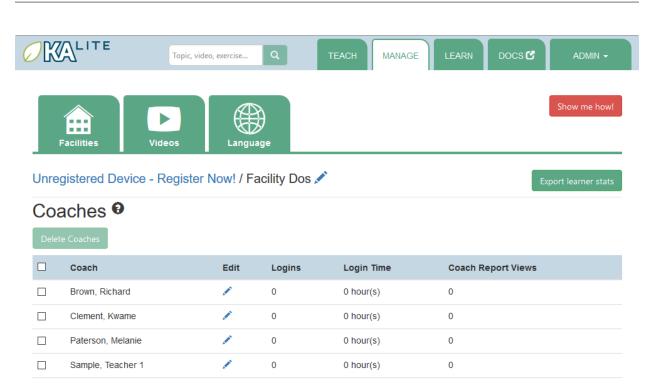


# FOUNDATION FOR LEARNING EQUALITY KA Lite version 0.16.0 © 2015 English Videos © 2015 Khan Academy (Creative Commons) // Exercises © 2015 Khan Academy (cc) BY-NO-SA

## **Permanently Deleting Learners**

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.

- 3. Make sure that the "Facilities" tab is selected.
- 4. Under the "Facilities" header, select the facility the Learner belongs to.
- 5. Under the "Learners" header, mark the box to the left of the Learner account you would like to delete.



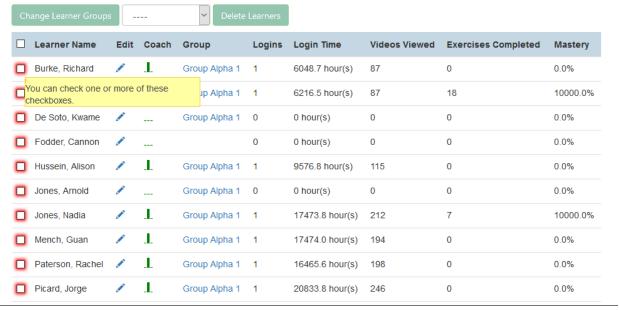
# Learner Groups 9

#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

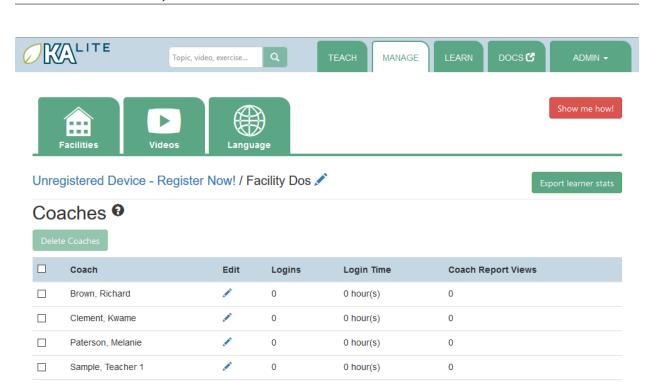
## Add a new group.

# Learners 9



38

6. Press the "Delete Learners" button.

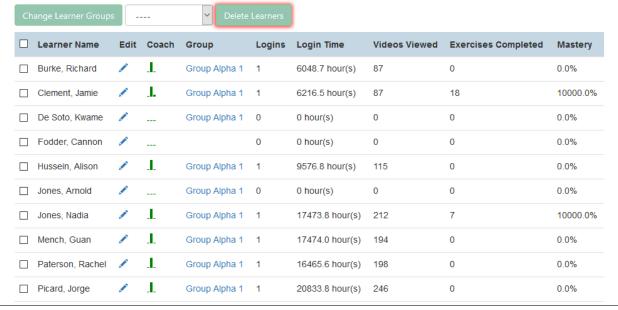


# Learner Groups 9

#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.



7. You will be prompted to confirm your decision to delete. Press "OK" to proceed.

# **Adding Coaches**

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.
- 4. Select the facility that the coach will belong to.
- 5. Under the "Coaches" header, click on "Add a new coach".



Unregistered Device - Register Now! / Facility Dos 🖍

# Coaches 9

Coach	Edit	Logins	Login Time	Coach Report Views
Brown, Richard	<i>*</i>	0	0 hour(s)	0
Clement, Kwame	1	0	0 hour(s)	0
Paterson, Melanie	1	0	0 hour(s)	0
Sample, Teacher 1	<i>F</i>	0	0 hour(s)	0

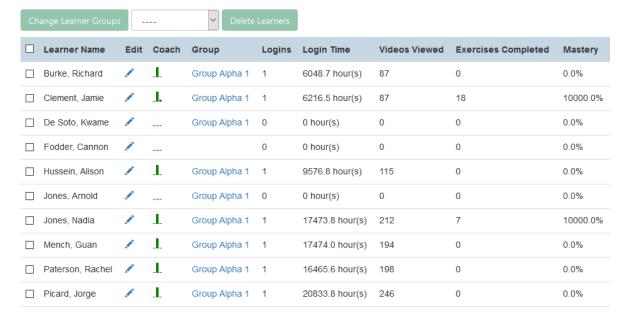
Add a new coach.

# Learner Groups 9

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	P	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

Add a new group.

# Learners 9

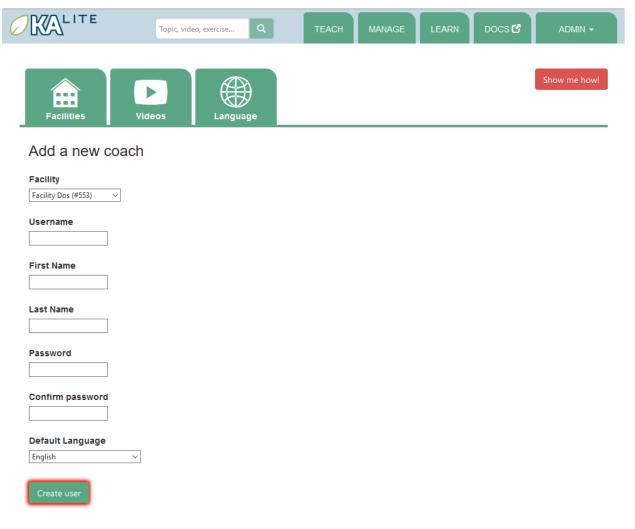


Add a new learner.



English

- 6. You will be redirected to a page that says "Add a new coach". Fill in all the information. The facility dropdown defaults to the facility you selected in the previous steps.
- 7. Click the "Create User" button.



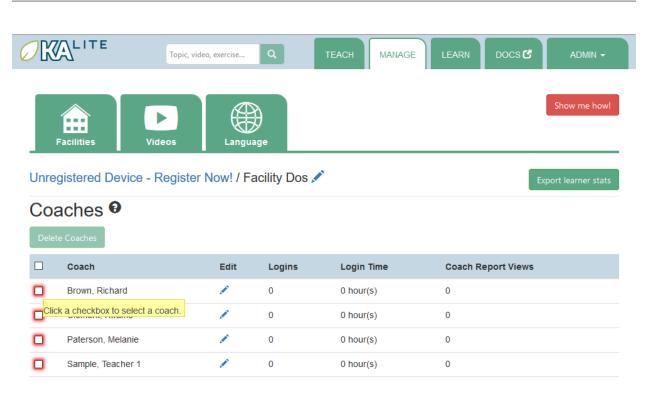


8. If the user was successfully created, the page will reload with a message indicating that you have created the user.

## **Permanently Deleting Coaches**

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.

- 4. Under the "Facilities" header, select the facility the coach belongs to.
- 5. Under the "Coaches" header, mark the box to the left of the coach account you would like to delete.

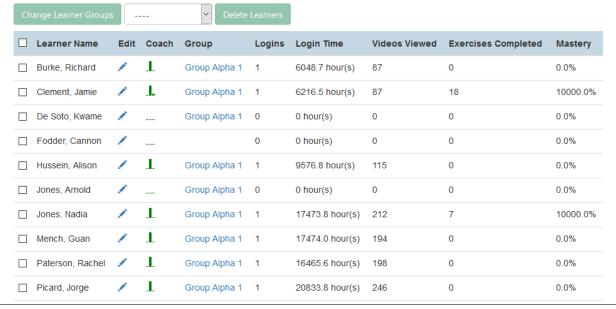


# Learner Groups 9

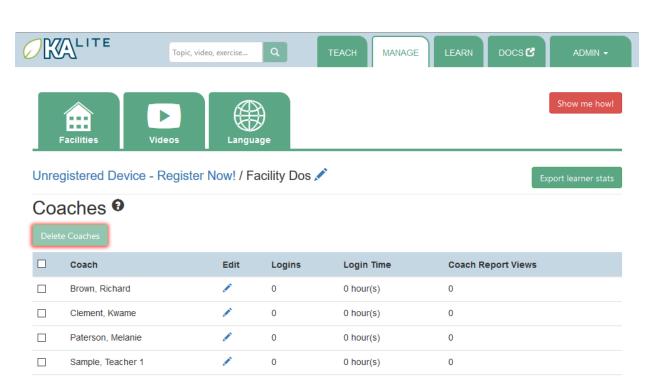
#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## • Add a new group.



6. Press the "Delete Coaches" button.

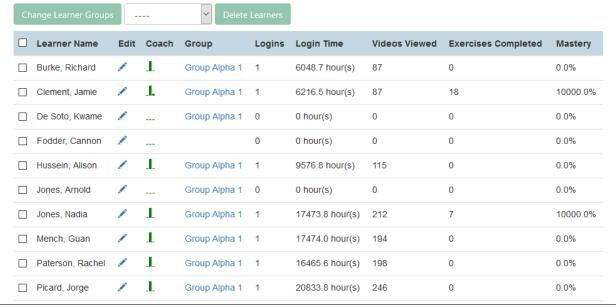


# Learner Groups 9

#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.

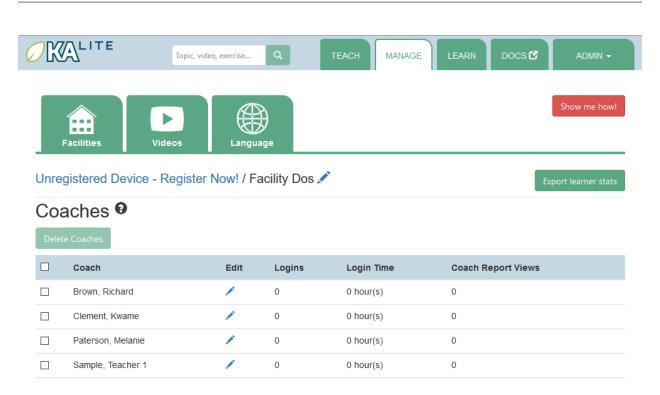


7. You will be prompted to confirm your decision to delete. Press "OK" to proceed.

## **Adding a Group**

You can create groups within a facility. Each group can represent a classroom, a study group, or any other way you would like to group Learners. To create a group, follow the instructions below:

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.
- 4. Select the facility that the group will belong to.
- 5. Under the "Learner Groups" header, click on "Add a new group".



# Learner Groups 9

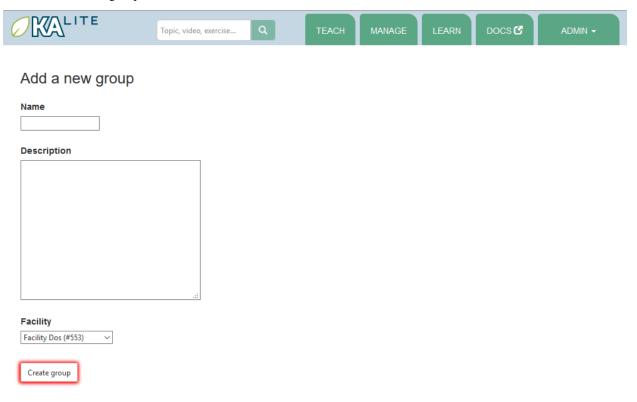
#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.



- 6. Fill out the name of the group, and provide a description.
- 7. Click "create group".

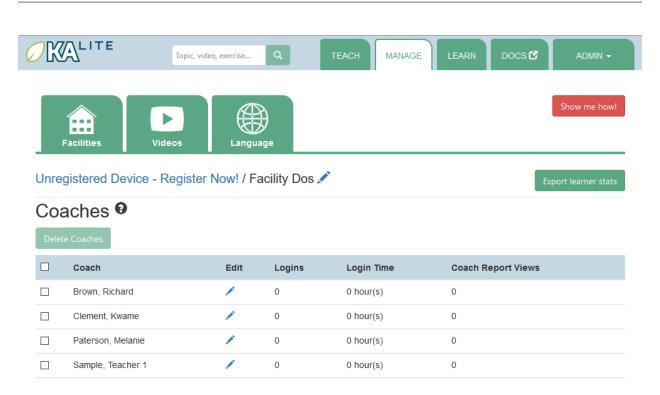




8. You should be redirected back to the Facility page. If the group was successfully created, you will see it listed under the "Learner Groups" section.

## **Deleting a Group**

- 1. Log in to KA Lite.
- 2. Click on the "Manage" tab at the top of the page.
- 3. Make sure that the "Facilities" tab is selected.
- 4. Select the facility that the group you would like to delete belongs to.
- 5. Mark the box to the left of the group you would like to delete.
- 6. Press the "Delete Groups" button under the "Learner Groups" header.

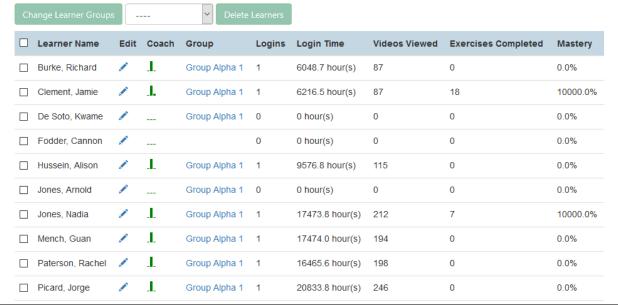


# Learner Groups 9



Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

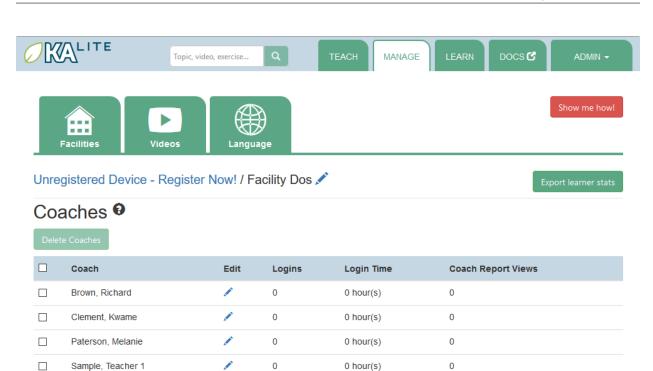
## Add a new group.



7. You will be prompted to confirm your decision to delete. Press "OK" to proceed.

# Moving a User to a New Group

- 1. Navigate to the page for the facility the user belongs to.
- 2. Under the "Learners" header, select the Learner you would like to move by clicking in the checkbox to the left of the Learner name.

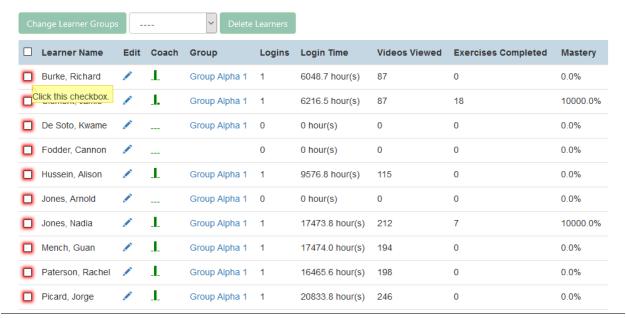


# Learner Groups 9

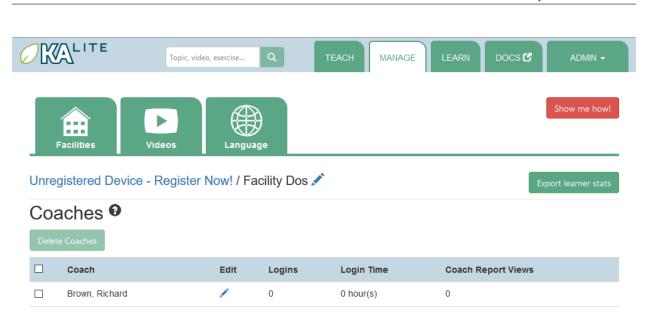
#### Delete Groups

☐ Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1		1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.



3. In the dropbox, select the group you would like to move the user to.



0 hour(s)

0 hour(s)

0 hour(s)

0

0

0

0

0

0

### Add a new coach.

# Learner Groups 9

Clement, Kwame

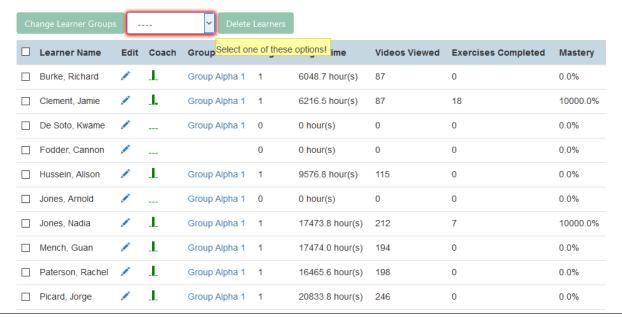
Paterson, Melanie

Sample, Teacher 1

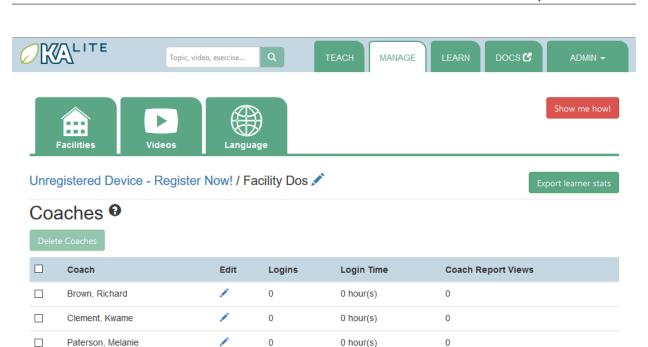
#### Delete Groups

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1		1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

## Add a new group.



4. Click the "Change Learner Groups" button.



# Learner Groups 9

Sample, Teacher 1

#### Delete Groups

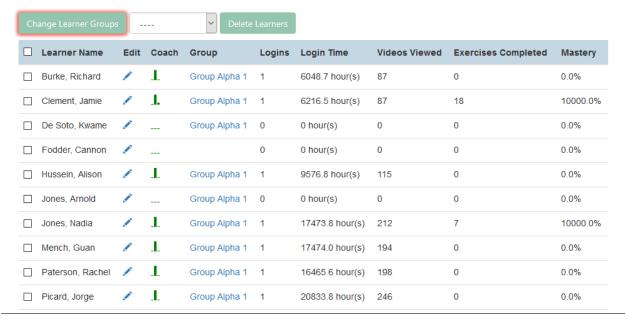
Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1	1	1	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	N/A		1	0	0 hour(s)	0	0	0.0%

0 hour(s)

0

0

## Add a new group.





5. The page will refresh, with a message at the top indicating a successful move.

## Removing Users from a Group

If you'd like to remove a user from a group without permanently deleting the user, please follow the instructions below:

1. Follow the same instructions as for "Moving a User to a New Group", but select "Ungrouped" from the drop-down menu.

## **Group Summary Statistics**

For each group, you should be able to view some statistics.

- 1. Navigate to the Learner Groups section of the facility you wish to look at.
- 2. Click on the group that you wish to view.



Unregistered Device - Register Now! / Facility Dos 🖍

# Coaches 9

Coach	Edit	Logins	Login Time	Coach Report Views
Brown, Richard	1	0	0 hour(s)	0
Clement, Kwame	1	0	0 hour(s)	0
Paterson, Melanie	1	0	0 hour(s)	0
Sample, Teacher 1	A.	0	0 hour(s)	0

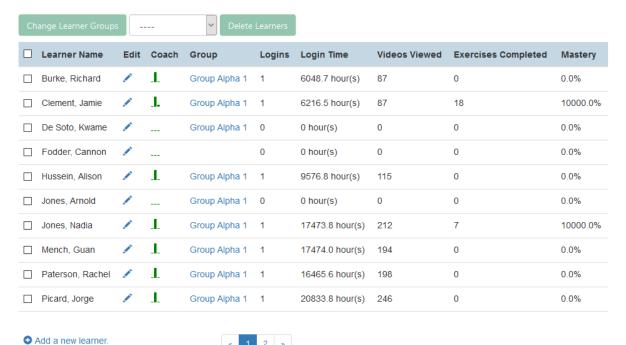
• Add a new coach.

# Learner Groups 9

Group	Edit	Coach	# Learners	Logins	Login Time	Videos Viewed	Exercises Completed	Mastery
Group Alpha 1		T	10	7	94089.2 hour(s)	1139	25	2000.0%
Ungrouped	lick here	e to view g	roup statistics!	0	0 hour(s)	0	0	0.0%

Add a new group.

## Learners 9



2.1. Administrator User Manual

English

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3. The statistics for the group should be displayed at the top of the page.

### **Edit User Information**

- 1. Navigate to the page for the facility that the user belongs in.
- 2. Find the user you would like to edit.
- 3. Click the blue pencil icon next to the name of the user that you would like to edit.
- 4. Make all necessary changes on the edit user page, and click "Update user".
- 5. You will be redirected to the previous page, with a message at the top indicating that your changes have been saved.

# **Allowing Other Users to Connect**

In order for other users to be able to connect with the KA Lite from different computers, you will need to give them an IP address with which to access the software. The rest of the users should use the second IP address, different from the one you use (usually 127.0.0.1:8008 received during setup), to connect with KA Lite.

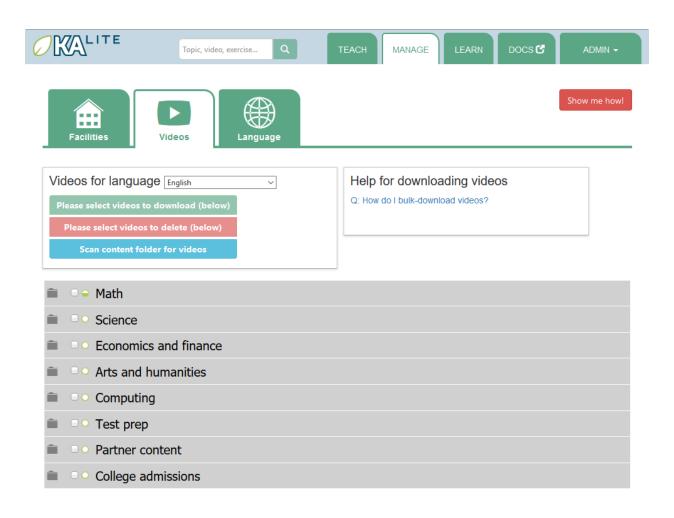
## **Downloading Videos**

Now that you've created a facility and user accounts, it's time to add video content to your local KA Lite installation! Since the videos can take up a large amount of space, you can choose to download only the videos that you need. If your device has enough space and you wish to download all of the videos, we recommend using the *Downloading Videos in Bulk* option.

## **Downloading Individual Videos**

After registering your device:

- 1. Click the "Manage" tab at the top of the page.
- 2. Click on the "Videos" tab.





- 3. View subtopics by clicking on the subject of your choice. You can close them by clicking on the subject again.
- 4. Mark the content you wish to download by clicking the checkbox to the left of the content name.
- 5. Click the first "Download n new selected video(s)" button (colored green) in the top left box of the page. The button should also show you the total number of videos you have selected to download, as well as the total size of the content.
- 6. Once the download is completed, video content will be ready for Learners to watch!

## **Downloading Videos in Bulk**

The full set of videos, if downloaded through the KA Lite interface, will occupy more than 150GB. If you want to download all the videos, we also have torrent files with resized videos (~33 GB for English). To fetch all the videos, download and open the appropriate torrent file.

Save the videos in the CONTENT\_ROOT directory of your installation. By default, that is the .kalite/content/folder in the *home directory* of the user running KA Lite.

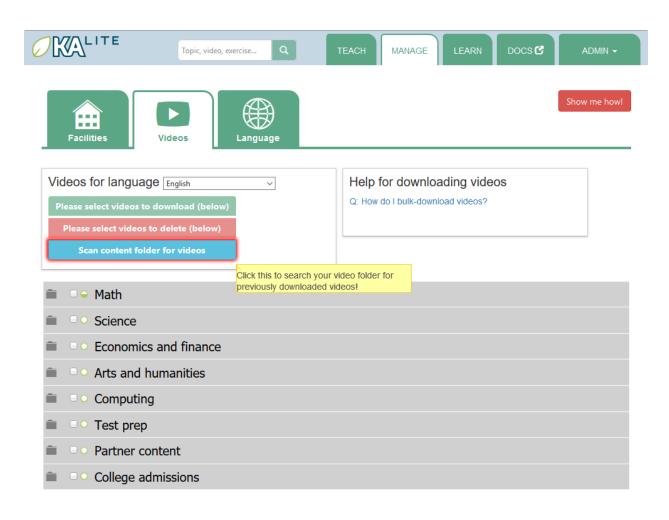
On Windows, navigate to something like C:\Documents and Settings\<username>\.kalite\content.

**Note:** If the drive where your .kalite/ folder is located does not have enough free disk space, you can change the path of the CONTENT\_ROOT in your *Configuration Settings*, and define a different folder where your want to store videos. Remember to move the files from your old /content/ folder into the new one.

**Note:** The .kalite folder may be hidden on some systems, so you have to enable showing hidden files and folders in your file browser.

After you copied in the new video files or changed the CONTENT\_ROOT path, you need to register those changes with KA Lite:

- 1. Click the "Manage" tab at the top of the page.
- 2. Click on the "Videos" tab.
- 3. Click the "Scan content folder for videos" button (third one, colored blue) in the top left box of the page.





4. Once the scan is completed, video content will be ready for Learners to watch!

# **Adding Languages**

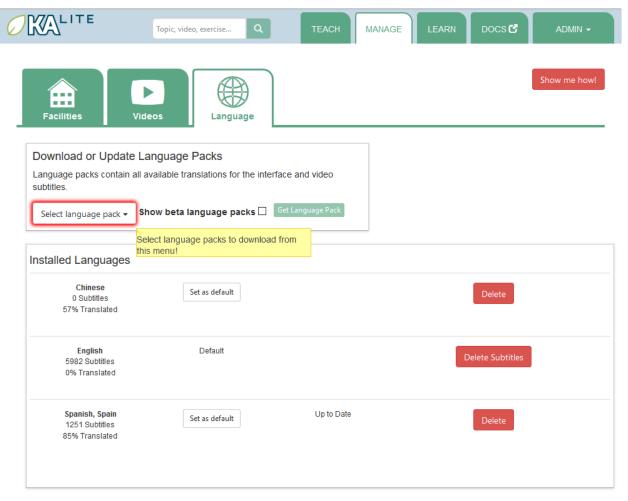
KA Lite content is offered in several languages. If your language is available you can download the **contentpack** for it with all the available subtitles and user interface translations. After you download and install the **contentpack** for a desired language, KA Lite will give you the option to download individual dubbed videos from that language's Khan Academy YouTube channel. For more technical background about the new **contentpacks**, please refer to our Wiki page.

**Warning:** If you are upgrading from a previous KA Lite version, you **MUST** update all the languages you had previously **AND** restart your server. If you are unsure on how to do this, please see *Restarting your server*.

## **Download Language Packs**

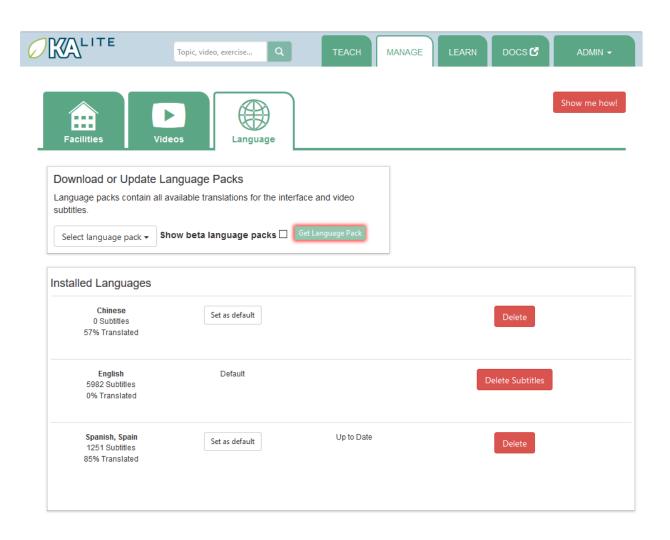
To download language packs:

- 1. From the "Manage" page, click on the "Language" tab.
- 2. Select the language pack you wish to download by selecting from the drop-down menu.





3. Click the "Get Language Pack" button.



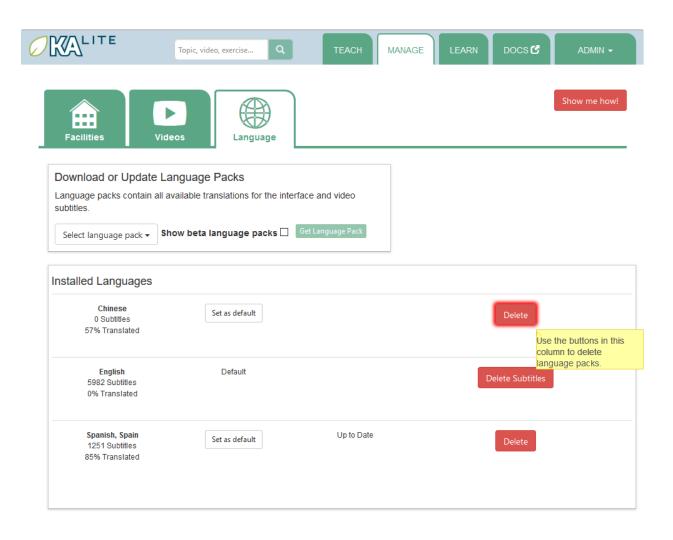


- 4. Once the download finishes, you can see your language in the "Installed Languages". If you are upgrading from a previous version of KA Lite, you **MUST** restart your server to make the new content/language pack available for your users. If you are unsure on how to do this, please see *Restarting your server*.
- 5. After the server restart, learners and coaches will be able to switch their language to any of the installed language packs. Their default will be the default that you set by clicking on "Set as default".

## **Delete Language Packs**

To delete language packs:

- 1. Log in as the administrator.
- 2. Click the "Languages" link in the navigation bar
- 3. In the Installed Languages section, there is a button for deletion of each language.





## **Restarting your server**

When you make configuration changes such as changing the filepath for your video content, you may need to restart your server for changes to take effect. Remember that this will cause KA Lite to become inaccessible to users until the server is running again, but it will not delete any user accounts or information that you have configured during setup.

Restart process varies depending on the OS you are running the KA Lite server on.

## **Restarting Your Server: Windows**

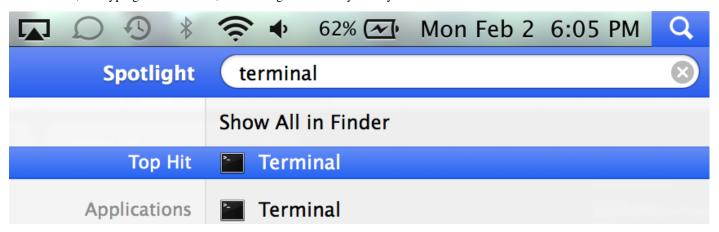
In the system tray, right click on the KA Lite icon. Click the "Stop Server" item in the context menu. Right click on the KA Lite icon in the system tray again, and click "Start Server". If the option is not clickable, wait a while and try again or restart your computer.

## **Restarting Your Server: Linux**

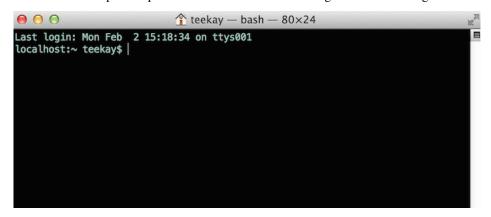
- 1. Open up your terminal. For most Linux distributions, you can do this by going to **Menu -> Accessories -> Terminal** or **Applications menu -> System -> Terminal**.
- 2. Type in kalite restart. This should stop the server, then attempt to restart it again. The process may take up to a few minutes.
- 3. Once you see the script that begins with To access KA Lite from another connected computer, try the following address(es): .... you will know that your KA Lite server has been successfully restarted.

## **Restarting Your Server: Mac**

1. Open up your terminal. You may do this by navigating to the magnifying glass at the top right corner of your screen, and typing in "Terminal", then hitting "Enter" on your keyboard.



1. Your terminal should be opened up. It should look a little something like the following:



- 1. Type in kalite restart. This should stop the server, then attempt to restart it again. The process may take up to a few minutes.
- 2. Once you see the script that begins with To access KA Lite from another connected computer, try the following address(es): .... you will know that your KA Lite server has been successfully restarted.

## **Configuration Settings**

Once you have deployed KA Lite to a computer, there are a number of ways you can customize the behavior of your installation. Below, you will find a list of these possible customizations with instructions or descriptions on how to do it.

**Warning:** Please follow these instructions carefully! Customizing the server incorrectly can break your installation. It can be very hard to find and undo the error.

## Running KA Lite with your own settings

In a text editor, open up /home/user/.kalite/settings.py (on Windows, locate something like C:\Documents and Settings\<username>\.kalite). That file is where you should put your custom settings, and KA Lite will load them automatically.

You can also run the kalite with a completely different Python settings module by specifying kalite <command> --settings=my\_settings\_module.

**Note:** The .kalite folder may be hidden on some systems, so you have to enable showing hidden files and folders in your file browser.

## **Changing base settings**

By default, /home/user/.kalite/settings.py will load kalite.project.settings.base which are the basic settings. But you can also load Raspberry Pi settings by changing the file to read something like:

```
from kalite.project.settings.raspberry_pi import *
# Put your settings here, e.g.
# MY_SETTING_VAR = 123
```

# **Available settings**

See above for instructions on where to configure these settings.

### Most common settings

- DEBUG = <True or False> (default = False) Enables debug mode. In case you run into technical issues, enable this setting before troubleshooting / reporting.
- CONTENT\_ROOT = "<path to desired content folder>" (default=/home/user/. kalite/content) This is the path that KA Lite will use to look for KA Lite video files to play. Change the path to another local directory to get video files from that directory. NB! Directory has to be writable for the user running the server in order to download videos.
- TIME\_ZONE = <desired time zone> (default = "America/Los\_Angeles") You can set this to be the local time zone for your installation. Choices can be found here.
- LANGUAGE\_CODE = "<desired ISO 639-1 Language Code>" (default = "en-us") You can set this to the desired language code for this installation (All choices can be found here). If there are

translations available, our web server will show them in KA Lite. Soon, we hope to provide support for internationalized content inside the KA Lite interface.

- USE\_I18N = <True or False> (default = True) If you set this to False, our web server will make some optimizations so as to avoid loading internationalization tools. Things might run a little faster, but you won't have support for translated content.
- USE\_L10N = <True or False> (default = False) By default, this is set to False. If you set this to True, Django will format dates, numbers and calendars according to the current locale. For example, January 5, 2000 would be 1/5/2000 if locale = "en-us" and 5/1/2000 if locale = "en-gb"
- USER\_FACING\_PORT = 123 When KA Lite is running behind a proxy (for instance Nginx or Apache), you probably want users to be accessing KA Lite from a different port than the service itself is running from. Setting this option will change certain system messages to use a different port. It does not affect the port that KA Lite is using.

#### **User restrictions**

- LOCKDOWN = <True or False> (default = False) With this setting, users must be logged in order to access videos & exercises
- DISABLE\_SELF\_ADMIN = <True or False> (default = False) Disables user sign ups.

#### **Online Synchronization**

- USER\_LOG\_MAX\_RECORDS = <desired maxium for user log records> (default = 0) When this is set to any non-zero number, we will record (and sync for online tracking) user login activity, summarized for every month (which is configurable, see below). Default is set to 0, for efficiency purposes—but if you want to record this, setting to 1 is enough! The # of records kept are not "summary" records, but raw records of every login. These "raw" data are not synced, but are kept on your local machine only—there's too many of them. Currently, we have no specific report to view these data (though we may have for v0.10.1)
- USER\_LOG\_SUMMARY\_FREQUENCY = <desired frequency (number, amount of time) > (default = (1, "months") This determines the granularity of how we summarize and store user log data. One database row is kept for each student, on each KA Lite installation, for the defined time period. Acceptable values are: (1, "months"), (2, "months"), (3, "months"), (6, "months") separate logged data for every month, 2 months, 3 months, or 6 months, respectively (1, "weeks") separate logged data for every week \*\* NOTE THIS MAY PRODUCE A LOT OF DATA \*\*
- SYNC\_SESSIONS\_MAX\_RECORDS = <desired max records of sync sessions> (default = 10) Every time your installation syncs data, we record the time of the sync, the # of successful logs that were uploaded and downloaded, and any failures. This setting is how many such records we keep on your local server, for display. When you log in to our online server, you will see a *full* history of these records.

## **Coach User Manual**

#### Who is a "coach"?

#### A person who:

- adds, manages, and tracks the progress of groups of students.
- has access to student progress data in the form of coach reports
- provides instructions to students

#### In addition, by default, coaches can:

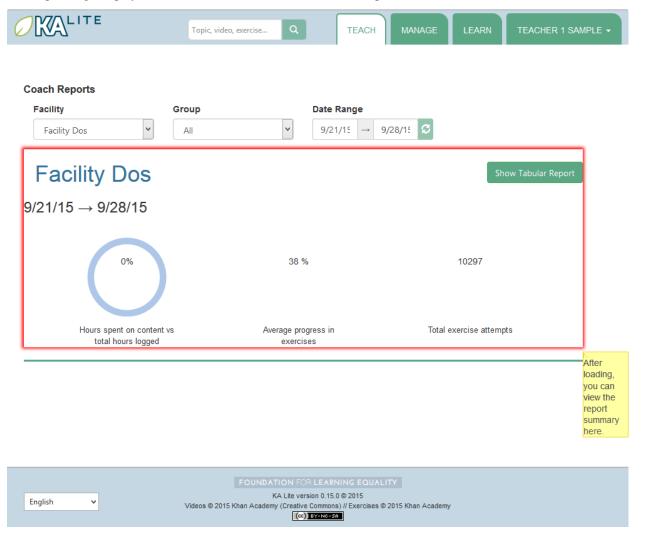
• create coach logins, Learner logins, download videos and language packs

(This can be disabled by the administrator with the RESTRICTED\_TEACHER\_PERMISSIONS setting)

## **Coach Reports**

Coach reports are visualizations of the data generated by your learners. The goal of the coach reports is to put the data into an easy to understand format, so you can understand how learners are progressing and where they need the most help.

The Report Page displays an overview of the learners and a tabular report.



#### **Overview**

- 1. Select the "Teach" tab at the top of the page.
- 2. Select the appropriate facility from the drop down menu to view reports for a specific facility.
- 3. Select a group from the drop down menu to view the overivew for a specific group or leave the group as is.

- 4. The display should refresh with the data requested, for student activity from the previous week onwards.
- 5. To view data over a longer period, select the start and end date using the time picker, and click the 'refresh' icon next to the time picker.

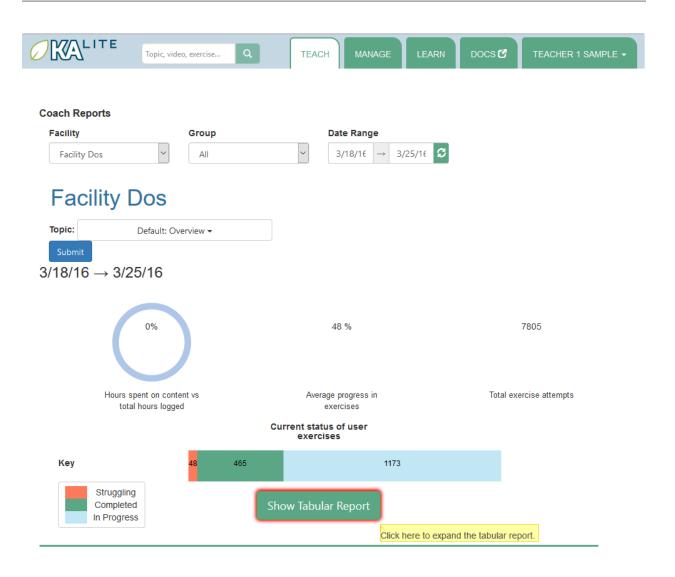
The overview will display the activity of the group: the percentage of hours logged on content versus exercises, the average progress in exercises, and the total exercises attempted.

### **Tabular Report**

A tabular report is a grid that can show how students are doing in specific subjects at a high level. As a coach, you can select which group of students you'd like to check progress for, and which subset of videos or exercises you'd like to see reports on. This allows you to easily identify which areas learners are struggling in, as well as which learners are doing well.

1. Click the "Show Tabular Report" button at the bottom of the page.

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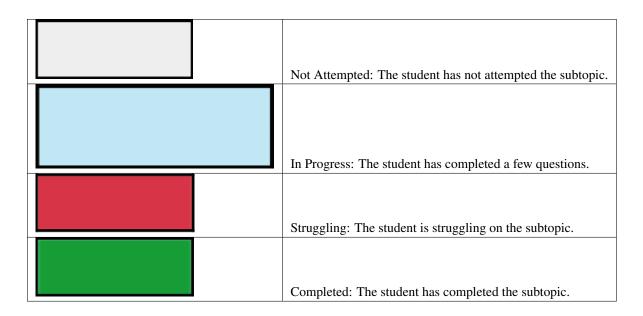




### **Progress By Topic**

- 1. Click on the "Show Tabular Report" button.
- 2. A table should be generated with the data requested.

The color of the rectangles in the table indicate how that student is doing on a particular exercise. The following key explains the color code of the table cells (this information will also be available on the Coach Report page):



#### **Detailed View**

- 1. Click on the colored cells.
- 2. A panel should open up below the cell to reveal the number of questions attempted and the actions made on each exercise.
- 3. Click on the same cell to close the panel.

## Inline Help

KA Lite has an inline help system on some pages. On parts of the site where it is available, you can find a "Show me how!" button. If you click this button, you can view a guided tour of the currently shown interface.

# **Exporting User Data**

On the facility management page, you can find the "Export Data" button. If you click this button, you'll be taken to a page where you can export some user data in CSV format. This is so you can perform analyses on data accumulated in KA Lite using your own methods – in the future such tools may be included in KA Lite itself! You can select which resource you wish to export, and narrow down the list of users to draw data from by selecting facilities and groups. When you have made your selection, click the "Export" button to download a CSV file with the requested data.

#### **Content Ratings**

Select the "Ratings" option in the "Resources" dropdown. Ratings are tied to users and content items – each rating has a unique-together user, content type, and content id. The content id is suppressed in the output as it is not human readable, but is replaced with the title. The title of content items may not be unique – for example a video and an exercise might have the same title. In such cases, you can differentiate using the content type.

## **Learner User Manual**

Who is a "learner"?

Anyone who uses KA Lite primarily for learning. Learner accounts will track individual progress through videos and exercises, and learners will only be allowed to view their own data.

## **Accessing KA Lite**

There are two ways KA Lite can be used:

- 1. **Set up on a network with one main server, having machines connect to this server.** If this is the setup chosen, installation is not necessary on a learner's computer, as it can be accessible through a web browser with the IP address of the server. Simply copy and paste the server's IP address into your web browser any time you'd like to access KA Lite. If you are unsure what the address is, please contact your administrator.
- 2. **Installed for single user, on one machine.** If you are not accessing KA Lite through a network or wish to run KA Lite on your own computer, please follow the *KA Lite Installation Guides* first before proceeding with this user manual. Once you have done so, copy and paste the URL given during the installation process into a web browser to access KA Lite (it should be http://127.0.0.1:8008).

## **How to Sign Up**

Learners may receive their account information from their Coaches or Administrators if their account has been preconfigured. However, it is possible for learners to create their own account. To create an account, please follow the instructions below:

- 1. Open KA Lite.
- 2. Click "Sign Up" at the top right of your screen.
- 3. If you are redirected to a page that asks you to select a facility, please select the facility to which you belong. If you are unsure which facility you belong to, please contact your administrator or coach. Skip this step if you do not see this page.
- 4. Fill out the information.
- 5. Click the "Create user" button when you are finished.

## How to Log In

- 1. Open KA lite.
- 2. Click on the "Log In" tab.
- 3. Enter your username and password, and then click the "Log in" button.

## **Navigating through Content**

To begin engaging with the Khan Academy videos and exercises, first make sure you are logged into KA Lite. Upon log in, you should see a green menu on the left that lists the content. If you do not see this green menu, please start by clicking on the "Learn" tab on the home page.

Start by selecting the subject you'd like to explore. This will expand the side menu, displaying subtopics within that subject.

The icons to the left of the menu selections describe whether or not it is a video, an exercise, or a menu that can be further expanded:

• 🗵 icons designate that the selection can be further expanded into subtopics

- icons designate that the selection is an exercise for that topic.
- La icons designate that the selection is a video for that topic.

Once you have found the video or exercise that you'd like to engage with, simply click on that selection.

#### **Content Recommendation**

The content recommendations based off of your current progress are on the homepage and becomes visible after you have made some progress on at least one exercise. After you have made any form of progress, this is the first page you should see after logging in. If at any point you would like to get to your homepage, please click on the KA Lite logo in the top left hand corner.

The homepage now provides you with three cards:

**Resume:** This card allows you to navigate to the last exercise you were on. This includes both videos and written exercises.

**Next Steps:** This card allows you to navigate to excercises you have begun; you can also to navigate to the over-arching topic to which that exercise belongs to.

**Explore:** This card recommends content for you based on topics you have completed and begun. This card also recommends random content from our collection of topics to encourage learning from multiple fields.

#### **Content Rating**

You can leave feedback on each content item. When you are logged in, you'll find a rating box below each content item. You can rate each content item on *Quality* and *Difficulty* on a 1 to 5 scale by clicking on the star icons. 1 represents the lowest rating, and 5 represents the highest rating. You can alter the ratings at any time by clicking on a different star icon.

After rating *Quality* and *Difficulty* you'll be able to leave any comments you wish. Simply click on the text box labeled *Your Comments* and type away! You can edit your comments freely.

At this time, you are only able to view your own ratings.

Coaches can export the ratings of all users in csv format.

#### **How to Practice Exercises**

First, please log into KA Lite. Then, navigate to the topic that you'd like to practice exercises for.

To answer a question, enter the answer in the box on the top right of the module, or select the bubble next to the answer choice in the exercise panel. Once you have decided on your answer, click "Check Answer".

After answering a question, the exercise module will not advance to the next question until you click the "Next Question..." button on the right hand side of the module.

The bar on the top right will display your progress as you go through the exercises. After 8 correct answers out of the last 10 answered, your points for the exercise will be added to our total and you will have mastered the exercise. If you get an answer wrong or ask for a hint, you will be unable to earn points from that question until it is presented again.

**Hint:** If you are stuck on a problem, you can ask for a hint by clickin on the "Show hints" button! Use your hints wisely, for there are a limited number of them for every section.

#### **Saved Progress**

If at any point during an exercise you wish to watch a video to refresh your memory, feel free to navigate to the video by expanding the green tab which will bring up the content menu. Your progress for that exercise will be saved and you will not lose your work.

## **How to View Your Progress**

At any point in time, you should be able to view your progress on any topic. In order to do this,

- 1. Log into KA Lite.
- 2. Then, click on your name in the top right of the page.
- 3. It will then show a drop-down menu, from which you can click on "My Progress".

On the progress page, you will be able to view your progress on each topic. There will be two bars for each topic. The top bar represents your progress on the videos for that topic, and the bottom bar will represent your progress on the exercises for that topic.

This guide assumes that you have already downloaded and installed the KA Lite software on your computer. If you have not yet completed these steps, please see the KA Lite Installation Guides.

### Introduction

KA Lite is a lightweight web application software that allows users without Internet access to engage with Khan Academy videos and exercises in completely offline settings. It brings the flipped classroom model to some of the most remote areas in the world. Users can track their progress through videos and exercises, and coaches can log in to check students' progress, identifying which areas the students need the most help in. If KA Lite ever reaches an Internet connection, it can sync this usage data with the KA Lite Hub – an online data repository that allows project administrators to view data and manage accounts remotely of offline deployments.

## What are the goals of KA Lite?

Learning is fundamental to human flourishing, and at Foundation for Learning Equality, we strive to support learning opportunities on every front. That's why we created KA Lite, with the goal of making high-quality educational resources and tools provided by Khan Academy accessible to the estimated 65% of the world that don't have access to Internet.

#### How KA Lite works

KA Lite can be used in two different ways, depending on your needs:

- 1. KA Lite can be installed on one local computer which acts as a server, with client devices connecting to this local server to watch the Khan Academy videos, and to work on practice problems. A coach/teacher can then check on each student's progress. This method is typically used by schools and other educational institutions.
- 2. KA Lite can be installed on the client device itself, and be used to download Khan Academy videos for offline viewing. In this way, KA Lite is almost like a piece of software that you'd install on your computer, except it runs in the Internet browser.

### Who can use KA Lite?

Reaching offline or low-bandwidth communities with KA Lite is a team effort, and we find that a wide variety of people come together to make that happen. In a typical KA Lite deployment, there are 3 types of people involved with the project, which are organized into user types:

- 1. **Administrators** Administrators plan out the deployment and logistics, procure the devices and installs KA Lite, and oversee their delivery and integration into the classroom or community. They can also update the software, add content, customize configuration settings, and manage user accounts.
- 2. **Coaches** Coaches (also referred to as 'facilitators' or 'teachers') are users who add, manage, and track the progress of groups of students. They have access to student progress data in the form of coach reports, and can step in and provide individualized instruction when the student needs it.
- 3. **Learners** Learners (also referred to as 'students') are users who use KA Lite primarily for learning. They earn points for watching videos and answering exercises correctly, and their progress is tracked by the system.

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# Frequently Asked Questions

## How do I install KA Lite?

Information on how to install KA Lite is available via our user guides.

## How much does KA Lite cost to install?

It is **FREE** – both free as in "free speech" and free as in "free beer"! To learn more about free software, see this Free Software Foundation article.

# How do I report a problem?

Please follow the instructions on our Github Wiki for reporting bugs.

# How do I change KA Lite's content folder?

If you want to change your installation's content folder from the default (say, to point to a shared folder across installations), see how to configure CONTENT\_ROOT in the "Configuration Settings" section.

# How do I change the directory where *all* of KA Lite's runtime files go, including content?

You can change this directory by setting the KALITE\_HOME environment variable to the path of your choice.

If the variable is left unset (default), KA Lite's runtime files will be placed in your user's home directory under the .kalite subdirectory. Typically, it is /home/user/.kalite/ (on Windows, locate something like C:\Documents and Settings\<username>\.kalite).

There are many ways to set an environment variable either temporarily or permanently. To start kalite on OSX or Linux with a different home, run:

KALITE\_HOME=/path/to/home kalite start

The change requires that you first stop the server, change the KALITE\_HOME environment variable, and then copy the contents from the default .kalite directory to the new directory you just specified. When you start the server again, all your files should be seamlessly detected at that location.

# Is there somewhere I can find Spanish language content organized by topic?

Yes! Thanks to the efforts of an awesome volunteer deploying KA Lite and other OER in the Sacred Valley in Peru, you can download blocks of Spanish Lanugage content from his public Google Drive folder. You can also follow his deployment at http://www.huacamayu.org/.

# I would like to download the videos for KA Lite via BitTorrent, is this possible?

Yes! Please see the instructions for "Downloading Videos in Bulk".

# How can I install a language pack without a reliable internet connection?

In version 0.16 we changed the proces for making KA Lite available in other languages. For more technical background about the new **contentpacks**, please refer to our Wiki page.

You can download from our server the new contentpacks for all the languages, and carry around the zip file to computers you want to install the contentpack to.

Once you have downloaded the contentpack for install on a computer without a reliable internet access, use the following command:

kalite manage retrievecontentpack local <language code> <path to zip file>

Use the language code indicated below:

Language name	Code
Arabic	ar
Bulgarian	bg
Burmese	my
Danish	da
English	en
French	fr
German	de
Hindi	hi
Kannada	kn
Lao	lo
Polish	pl
Portuguese, BR	pt-BR
Spanish	es
Swahili	sw
Tamil	ta
Xhosa	xh
Zulu	zul

An example invocation for installing the French *contentpack* on Windows would be:

C:\Python27\Scripts\kalite manage retrievecontentpack local fr fr.zip

After starting up your server, you should now see your new language in the Manage > Language page.

## Do I need the internet to run KA Lite?

No. The only time you need an internet connection is for the initial download of the content (either to the target device, or to a USB stick that can then be carried or mailed). After installation, you can serve the content from a local server or use it directly on the server device without an internet connection.

# How do you operate in the field?

The Learning Equality team primarily works in our San Diego offices, building software and shaping our roadmap based on our interactions with our partners around the world. We work with individual humanitarians and NGOs of all sizes to help them distribute KA Lite to offline communities around the world.

# What are the typical deployment scenarios?

A typical school deployment varies depending on whether or not a school already has a computer lab.

School with an existing computer lab: In this case, KA Lite would be deployed as a server on one of the existing computers. Students would connect using client devices over the local intranet.

School with no existing computer lab: For schools that do not have an existing computer lab, a KA Lite deployment would involve obtaining a device that can run as a KA Lite server (most computers) and other devices to be used as clients. One common configuration is using a Raspberry Pi or other inexpensive computer as a server and relatively cheap tablets as client devices.

# What are some possible hardware configurations for deploying KA Lite?

You will need:

- 1. A computer that is running the KA Lite software (e.g. a desktop computer, laptop, or Raspberry Pi).
- 2. One or more client devices that have web browsers (laptops, tablets, desktop computers, etc)

Note that for a single-user deployment (1) and (2) can be the same computer, with the browser connecting to the locally running KA Lite server software. To make the software accessible to multiple client devices, you will need to put them on the same local network as the KA Lite device (1), e.g. through a router.

# What sort of processing power is required for KA Lite?

KA Lite has very low processing requirements, and can be run as a server on devices with processors as low-powered as the \$35 Raspberry Pi, using about 100MB of RAM. There is also low processing power required for client devices as well, and any browser that supports HTML5 video with h264 encoding or Flash Player should be able to function as a client device.

# What are the operating system (OS) and software requirements for running KA Lite?

KA Lite can run on almost any major operating system: Windows, Linux, and Mac/OSX. The only software dependency is the Python 2.7 runtime.

# What is data syncing?

KA Lite is capable to share your student progress data with a central data repository when you are online. This enables the system to have an online backup of your data, allows you to view your student progress online, and to share your data across multiple KA Lite installations.

# Who maintains the KA Lite project?

KA Lite is created, maintained, and operated by the Foundation for Learning Equality, Inc, a California-based nonprofit organization.

# What is KA Lite's affiliation with Khan Academy?

KA Lite is an independent, open-source project maintained by Learning Equality, and is not officially affiliated with Khan Academy, although they are very supportive of the KA Lite project, and are one of our key partners.

# How can local curriculum be generated?

Local content creation is something that Learning Equality intends to build into future platforms. If you would like to be notified when it is available, subscribe for updates, or if you would like to help fund this project, please click here.

# How is it possible to compress the content into KA Lite?

Users are able to select which videos they wish to download through the user-interface, allowing to customize the amount of space used.

# What languages is KA Lite available in?

KA Lite was released with internationalization support on 2014/03/07, including support for a translated interface, dubbed videos, subtitles, and translated exercises. Currently we have varying levels of support Portuguese, Danish, French, Polish, Spanish, and many others. Please visit our blog for the latest information about language support.

# Can I contribute to KA Lite as a developer?

Yes! KA Lite is an open source project, and developers are encouraged to contribute! If you are interested in developing for KA Lite, check out the instructions for getting started.

# Can I contribute to KA Lite as a translator?

Yes, absolutely! If you would like to contribute to KA Lite as a translator, you can get started over on our translations and internationalization page on our GitHub Wiki!

## Can I contribute even if I don't know how to code?

Yes! There are many ways!

### How do I find out more?

To stay up-to-date on all our activities, follow our blog, Twitter, and Facebook!

# How does Learning Equality measure the impact of KA Lite?

Because KA Lite is freely available and designed to run offline, collecting impact data can be challenging.

KA Lite is capable of synchronizing data with our central data repository when an online connection exists.

For the deployments in which we do have direct involvement, we receive updates from our partners with quantitative data from the built-in coach reports and attain qualitative data from our on-site visits. For example, we know that 20 out of 20 students in the Idaho Department of Corrections deployment have passed their GED using KA Lite.

# Backing up data: is there any easy way to do it locally?

Yes! Just copy the .kalite folder, typically located in /home/user/.kalite. To restore, simply copy the backup data file to the same location. If you have changed versions, please run:

kalite manage setup

to guarantee your database is compatible with the current version of KA Lite you have installed! Note that online data back-ups occur if you "register" your KA Lite installation with an online account on our website.

If you only want to backup the database, locate the .kalite/database/ folder and copy and restore that one.

# I can't get KA Lite to work on Windows! The installation succeeded, but nothing happens!

KA Lite on Windows is controlled through a task-tray program. See the *installation guide* for some more info.

## I can't see videos in Firefox on Ubuntu/Debian!

Install Ubuntu restricted extras package in the Ubuntu Software Center.

# Contributing and Development

Want to contribute? You can check us out on github, or browse the link(s) below.

### How can I contribute to...

#### How to contribute to documentation

You can propose changes to the docs directly on Github (instructions below) or email your recommendations to info@learningequality.org.

To propose changes directly, you'll need to create an account on github and open a pull request. This document assumes you are somewhat familiar with that process, and will not explain all the steps in detail. For full instructions on how to make a pull request, see Github's help section.

#### **Documentation development**

- 1. Work from the *develop* branch.
- 2. From the base directory, the documentation can be found in the docs/subdirectory. Specific pages of the docs are each associated with a different .rst file, potentially in a subdirectory of docs/.
- 3. The documentation is written in ReStructured Text format, so please see the primer!
- 4. After making your changes, try to build the docs to review them. This process can take some time, as an instance of the server and a browser may need to be started. To build the docs:

```
pip install -r requirements_sphinx.txt # To install software for building docs
cd docs
make html
```

- 5. You can view the docs in a browser by opening docs/\_build/html/index.html.
- 6. After you are satisfied with your changes push them to your fork of the ka-lite project, and then open a PR.

#### **Screenshots**

Screenshots are made automatically following the screenshots directives. They are stored in a folder docs/\_static/, which is also sync'ed to Github (TODO: This is a temporary procedure).

To grab new screenshots, you have to have Firefox installed and run:

```
cd docs/
SPHINX_SS_USE_PVD=true make SPHINXOPTS="-D screenshots_create=1" html
```

You can also refer to docs/SCREENSHOT\_USAGE.MD for more info about the screenshot RST directive.

#### Contribute to make KA Lite accessible to all

#### Why

Because inclusive design benefits all users!

- Ensuring that KA Lite is easily navigable with the keyboard will help blind users AND those who cannot use the mouse (or just prefer using the keyboard most of the time).
- Using the appropriate color contrast or making available a high contrast version of KA Lite content will benefit the users with low vision AND all those who need to use it in highly illuminated settings.
- Offering captions and transcripts for KA Lite video content will benefit auditory challenged audience AND improve its comprehension for everybody.
- Maintaining consistent structure, navigation and language will reduce cognitive load for all the audiences AND
  make it easier for KA Lite content to be localized.

#### How

For general introduction check the **Accessibility** resources, tools and tips on KA lite GitHub Wiki pages:

- Accessibility Resources (Articles & Links)
- Accessibility Resources (Tools)
- Accessibility Tips & Tricks

To make sure you catch the most common ally pitfalls, use totally, an accessibility visualization toolkit made available by Khan Academy.



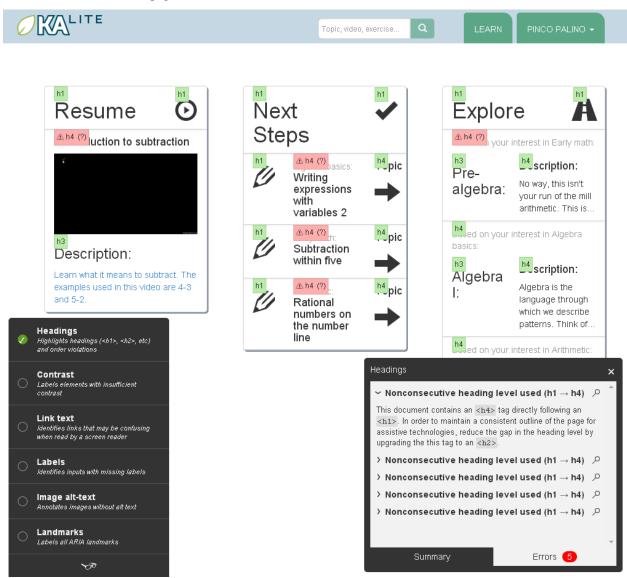
#### **Using tota11y**

**tota11y** is integrated into KA Lite that you cloned from GitHub and will be visible in all the pages of your development server **IF** you include DEBUG = True in your local settings (edit your ~/.kalite/settings.py file).

tota11y presents as a small button in the bottom left corner of the document you are viewing.



Once you press the button, it will open a menu of seven checkup-choices each of which you can activate by using the corresponding circle checkbox on the left. In the image bellow you can see the **Headings** activated that "annotates" all the <H> elements in the page and their issues.



This will allow you to keep correcting the annotated issues, and reload the page to check weather they are solved.

#### What can you check with tota11y

With totally you can easily visualize for:

- Inconsistent and nonconsecutive heading levels (find out more about the accessible headings)
- Insufficient contrast ratio (aim for 4.5 at least; you can use Color Contrast Tools linked in the Wiki)
- Unclear text links (consider making use of Bootstrap screen reader classes if necessary)
- Missing labels on form or button elements (good read about Forms & Labels)
- Images without an ALT attribute (always include the alternative text for images, but remember to tag the purely descriptive content accordingly)
- All the ARIA landmarks included in the page (reed more about ARIA landmark roles)

**Tip: totally** is an open source project made available by Khan Academy, remember to report any issues you may find on their GitHub page!

# CHAPTER 5

**Developer Docs** 

Useful stuff our devs think that the rest of our devs ought to know about.

# Setting up your development environment

**Warning:** These directions may be out of date! This page needs to be consolidated with the Getting Started page on our wiki.

# **Recommended setup**

KA Lite is like a normal django project, if you have done Django before, you will recognize most of these steps.

- 1. Check out the project from our github
- 2. Create a virtual environment "kalite" that you will work in:

```
sudo pip install virtualenvwrapper
mkvirtualenv kalite
workon kalite
```

3. Install kalite in your virtualenv in "editable" mode, meaning that the source is just linked:

```
cd path/to/repo
pip install -e .
```

4. Install additional development tools:

```
pip install -r requirements_dev.txt
```

5. Run a development server and use development settings like this:

```
kalite manage runserver --settings=kalite.project.settings.dev
```

You can also change your ~/.kalite/settings.py to point to kalite.project.settings.dev by default, then you do not have to specify -settings=... every time you run kalite.

Now, every time you work on your development environment, just remember to switch on your virtual environment with workon kalite.

## Running directly from source

KA Lite can also be run as a "source distribution" for development purposes. By this, we just mean a git checkout (from our github).

**Note:** Running directly from source will also maintain all user data in that same directory! This is convenient for having several versions of kalite with different data on the same computer.

If you are able to use pip and install conventional python packages from an online source, then the quickest option to install the latest stable release of KA Lite is pip install ka-lite` or `pip install ka-lite-static.

## Static vs. Dynamic version

Apart from Python itself, KA Lite depends on a couple of python applications, mainly from the Django ecology. These applications can be installed in two ways:

- Dynamic: That means that they are automatically installed through *PIP* as a separate software package accessible to your whole system. This is recommended if you run KA Lite and have internet access while installing and updating.
- Static: Static means that KA Lite is installed with all the external applications bundled in. Use this method if you need to have KA Lite installed from offline media or if KA Lite's dependencies are in conflict with the system that you install upon.

#### Virtualenv

You can install KA Lite in its very own separate environment that does not interfere with other Python software on your machine like this:

```
$> pip install virtualenv virtualenvwrapper
$> mkvirtualenv my-kalite-env
$> workon my-kalite-env
$> pip install ka-lite
```

## **Front End Code**

All of our front end code is written in Javascript, with much of it using Backbone.js (and its dependencies jQuery and Underscore.js).

All new code, where possible, should be written using Backbone.js to modularize functionality, and allow code to be reused across the site.

Inline Javascript (i.e. Javascript directly in the Django templates inside *<script>* tags) should be avoided except where absolutely necessary (such as to initialize some master object on a page).

For templating on the front end, we use Handlebars.js to render templates with a restricted set of statements and access to all variables passed into the template context.

# **Modularity**

In order to maintain modular code and be explicit about our dependencies, we use Browserify to build Javascript code into bundles for use on the client side.

To specify a bundle to be imported into the page, you need to create a 'bundle module' - this will be automatically detected by our Javascript build script, and be built into a bundle that can then be included as a script tag in a Django template.

'Bundle modules' are specified inside the static/js directory of a Django app - e.g. 'bundle modules' in distributed are under kalite/distributed/static/js/distributed/bundle\_modules. Here is a simple example of a bundle\_module:

```
var $ = require("base/jQuery");
var TopicChannelRouter = require("topics/router");
var Backbone = require("base/backbone");

module.exports = {
    $: $,
    TopicChannelRouter: TopicChannelRouter,
    Backbone: Backbone
}
```

This is the 'learn' bundle module (a file called learn.js in the above directory) - all it specifies is a set of top level objects that need to be exposed to be run within the context of the Django template (because we need Django template context variables to be passed into the Javascript) - here are the relevant <script> tags from the template:

Here, we require the learn bundle (all bundles can be referenced by their name in this way), and are then able to access the objects defined in its module.exports.

For more information about using Browserify to handle dependencies, please refer to the Browserify Handbook.

# **Building Frontend Code**

The build script uses node.js - to run the build server for production simply run node compile\_javascript.js.

Alternatively, for development, running bin/kalite start with the --watch flag will automatically run the build process in watch mode, recompiling Javascript as it changes, on the fly.

If you prefer to run the compilation process separately, it has the following flags:

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```
--watch Run in watch mode - automatically recompile Javascript when modules_
imported into bundles are changed (N.B. this will not detect new bundles being_
increated.)
--debug Compile in debug mode - do not minify source code, and create source_
imported into bundles are changed (N.B. this will not detect new bundles being_
increated.)
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```

# Implementing with Backbone

Most of our front end code uses only three kinds of objects, Backbone Models, Collections, and Views.

Backbone Models contain data that we use to render the page - in the case of a coach report, for example, this might be data about each student.

Backbone Collections are groups of Models - so you might have a Collection where each model represents the progress data for an individual student.

The Views define how this data is displayed in the browser, and also defines responses to user interaction to the current display.

Most Views also have an associated Handlebars template, which defines the HTML and how the data passed into the template is displayed in the rendered View.

Often the data contained in a Backbone Model can change while the user is still on the same page (for example, a student's total points can change while they are interacting with an exercise, so we want their displayed points to update whenever the 'points' attribute of the model updates too).

Here is an example of a Backbone View in KA Lite that does just that:

```
var TotalPointView = Backbone.View.extend({
    initialize: function() {
        _.bindAll(this);
       this.listenTo(this.model, "change:points", this.render);
       this.render();
   },
    render: function() {
        var points = this.model.get("points");
        var message = null;
        // only display the points if they are greater than zero, and the user is_
→logged in
        if (!this.model.get("is_logged_in")) {
            return;
        }
       message = sprintf(gettext("Points: %(points)d "), { points : points });
        this.$el.html(message);
        this.$el.show();
    }
});
```

The initialize method is called whenever a new instance of TotalPointView is instantiated (by calling e.g. my\_total\_point\_view = new TotalPointView({model: model})). There are several arguments that will automatically get set on the view if passed in to the constructor, model is one of them. See the Backbone.js for more details.

\_.bindAll(this); is included in many initialize methods we use, this helps to ensure that whenever a View method is called, then the this variable inside each method always refers to the view itself - without this, especially when methods are called due to being bound to events, the this variable can refer to something completely different.

this.listenTo(this.model, "change:points", this.render); is an example of such an event binding. Here, the view is being told that whenever its model fires the event "change:points", then it should call its own render method (this.render). Backbone models fire "change" events whenever one of their attributes changes, and also a specific event like "change:points", which would only fire when the 'points' attribute of the model changes.

Finally this.render(); calls the render method of the view. This method is generally reserved for creating and modifying DOM elements that we will insert into the page.

Inside the render function var points = this.model.get("points"); locally defines the points - as you can see from this example, to access the attributes of a Backbone Model, the get("<attribute>") method is used.

The content to be rendered into the DOM in this instance is so simple that a Handlebars template is not used. Rather message = sprintf(gettext("Points: %(points)d"), { points : points }); simply fills in the %(points)d with the 'points' attribute of the second argument of sprintf. See the sprintf docs for more information.

The part of the page that the view is scoped to can be refered to by this.\$el - this is a jQuery object for the subsection of the DOM of the view, so any whole view operations (such as this.\$el.html(message); or this.\$el.show();) will change the entire subsection of the DOM for that view (but will normally only be a subset of the DOM of the entire page). this.\$el.html(message); sets the entire HTML content of the view DOM subsection to the content of the message variable, and this.\$el.show(); makes the DOM subsection visible.

# **Creating Your Own Backbone View**

To create a new Backbone View, you will either add to an existing Javascript file in the project, or create a new file. For example if you were to add a new View to the coachreports app you could create a file under kalite/coachreports/static/js/coachreports/hexagon\_report.js. Some boilerplate to start off with might look something like this:

```
var HexagonReportView = BaseView.extend({
    template: HB.template("reports/hexagon-counting")
    initialize: function() {
        _.bindAll(this);
        this.listenTo(this.model, "change:number_of_hexagons", this.render);
        this.render();
    },
    render: function() {
        this.$el.html(this.template(this.model.attributes));
    }
});
```

this.\$el.html (this.template (this.model.attributes)); this line will insert all the attributes of the model into the template for rendering, and then set the HTML of the subsection of the DOM for the view to the resulting HTML.

For this to work, there must be a file kalite/coachreports/hbtemplates/reports/hexagon-counting.handlebars that contains the Handlebars.js template for this view. For a simple report, the template might look something like this:

```
<div class="hexagon-report">
    <h3>{{_ "Hexagon Report" }}</h3>
    {{_ "Current number of hexagons:" }}{{number_of_hexagons}}
</div>
```

To have this render in a particular Django template, both of the above files would need to be imported through <script> tags in the Django template. The relevant tags to add in this case would be:

Note that for the Handlebars importing, only the folder name is necessary to be imported, not each individual template. It is also important that you do not place this script tag inside a Django-Compressor compress block.

Finally, to actually have this render on the page, we would need to have a Backbone Model that is able to fetch the data from an API endpoint on the server, and when the fetch is successfully completed, prompt the view to be created. Assuming we have a HexagonReportModel already defined, we could insert the following code into the template to initialize this report:

Line by line this means - \$(function() {<code here>}); wait for the browser to finish rendering the HTML before executing the code inside this function. window.hexagonReportModel = new window. HexagonReportModel(); make a new instance of the HexagonReportModel. hexagonReportModel. fetch().then(function() {<code here>}); get the data for this particular model from the server, and when that has finished, then execute the code inside the function.

```
window.hexagonView = new HexagonReportView({
    el: $("#student-report-container"),
    model: hexagonReportModel
});
```

make a new instance of the HexagonReportView. This will automatically call initialize and so the view will render. In addition, el: \$("#student-report-container"), tells the view that it should set its subsection of the DOM to be the DOM element selected by \$("#student-report-container") (i.e. the element with the id 'student-report-container'), and model: hexagonReportModel tells it to set its 'model' attribute to the hexagonReportModel we instantiated and fetch before.

# TL;DR (or 7 quick steps to creating a Backbone View in KA Lite)

- 1. Find the appropriate app folder inside KA Lite inside <folder>/static/js/<folder>/ either create a folder for your Backbone files, or find an existing one with a name that fits.
- 2. Inside this folder either create or open views.js.
- To start creating a view, type: var MyViewNameView = BaseView.extend({});
- 4. Define at least an initialize method, and a render method.
- 5. If you want a Handlebars template for your View, look inside <folder>/hbtemplates/ and either create a folder for your Handlebars templates, or find an existing one with a name that fits.
- 6. Inside this folder create a new file for your handlebars template mytemplatename.handlebars.
- 7. Add this to your View definition code (inside the curly braces and don't forget commas to separate key/value pairs!): template: HB.template("<templatefolder>/mytemplatename").

# Purpose and creation of Javascript Unit Tests in KA Lite

## **Purpose**

Our Backbone Models and Views can end up having a lot of methods. It is important that all of those methods observe the correct input output characteristics. Hence it is important that we write tests that guarantee that our methods either take the correct input and produce the right output, or, as is often the case, produce the right side effects on models, views, or the DOM.

In pursuit of this lofty goal of having every method and object testable and tested, there will be some requirements of refactoring along the way. Some of the code that has already been written for the KA Lite project is not conveniently parcelled in such a way as to be conducive to testing individual components in an atomic fashion. In order to ensure that functionality does not break as a result, we have integration tests (which are currently only implemented using Selenium scripted by Python) - for now we are avoiding writing such integration tests in Javascript as well so as to avoid duplication.

# **Setting up your Test Environment**

- 1. Install requirements:
  - install node if you don't have it already.
  - install pip if you don't have it already.
- 2. Install the dependencies listed in requirements.txt: pip install -r requirements.txt
- 3. Install the dependencies listed in packages.json: sudo npm install

# Getting Your Javascript to be Testable in KA Lite

Before you can test your javascript, it must be capable of being bundled in such a way that django-compress (the asset compression package we use) is able to write it to a Javascript file which can then be loaded by the Javascript test runner, karma.

In order to make this happen, use compression tags around blocks of Javascript script imports inside django templates for example, from learn.html:

```
{% compress js file learnjs %}
<!--[if !IE]> -->
<script src="{% static "video-js/video.js" %}"></script>
<script src="{% static "video-js/video-speed.js" %}"></script>
   _V_.options.flash.swf = window.flash_swf;
</script>
<!-- <![endif]-->
<script src="{% static "soundmanager/soundmanager2-nodebug-jsmin.js" %}"></script>
<script src="{% static 'js/distributed/content/models.js' %}"></script>
<script src="{% static 'js/distributed/content/views.js' %}"></script>
<script src="{% static 'js/distributed/video/models.js' %}"></script>
<script src="{% static 'js/distributed/video/views.js' %}"></script>
<script src="{% static 'js/distributed/audio/views.js' %}"></script>
<script src="{% static 'js/jquery.slimscroll.min.js' %}"></script>
<script src="{% static 'js/distributed/topics/models.js' %}"></script>
<script src="{% static 'js/distributed/topics/views.js' %}"></script>
<script src="{% static 'js/distributed/topics/router.js' %}"></script>
{% endcompress %}
```

You will also need to inclue the tag {% load compress %} at the top of a template in order to make use of the compress template tag.

Let's examine the important details of {% compress js file learnjs %} - the compress tag name is followed by the kind of file being compressed (js), then two optional parameters. The first tells django-compress to compress the assets to a separate file (rather than rendering the concatenated Javascript inline in the HTML), the second gives a name to the code block. This should be a unique name across the entire code base. At current there is no way to know what names have already been used, except by examining karma.conf.js in the root of the project.

The name of the block is important for making it available for Javascript testing - it needs to be manually added to the karma.conf.js here:

```
// list of files / patterns to load in the browser
files: [
  file_map['basejs'].slice(1),
  file_map['perseusjs_1'].slice(1),
  file_map['perseusjs_2'].slice(1),
  file_map['learnjs'].slice(1),
  file_map['pdfjs'].slice(1),
  // INSERT NEW JAVASCRIPT BUNDLES HERE
  '**/tests/javascript_unit_tests/*.js',
  'testing/testrunner.js'
],
```

So if you had created a new compression block called 'exparrotshop' then you would add the element file\_map['exparrotshop'].slice(1) to the array.

## Writing a Test

You are now ready to write a test. All Javascript unit tests live inside the appropriate app. For example, if you were writing a unit test for Javascript code for the coachreport app, you would put your test file in

kalite/coachreports/tests/javascript\_unit\_tests/. Call your file the name of the Model, View, or Router you are testing, or use an existing test file if you are extending an already tested Model or View. For example, the Session Model test file is called:

```
session_model_test.js
```

Each test file should start with a definition statement:

```
module("Session Model Tests", {
   setup: function() {
    return this.sessionModel = new SessionModel();
   }
});
```

The text gives the name of the suite of tests you will be writing in this file. The setup method defines something that happens prior to every single test being run. this gets returned to every subsequent test as this also, so anything set as an attribute of this will be available inside each test.

After the module definition, you can define any number of tests. Here is a simple example:

```
test("Default values", function() {
  expect(2);

  equal(this.sessionModel.get("SEARCH_TOPICS_URL"), "");
  equal(this.sessionModel.get("STATUS_URL"), "");
});
```

This simple test is checking the default values for the Session Model defined during the setup method above. At the beginning of the test, we declare how many assertion statements will be made during the course of the test. Not specifying this number correctly will cause a failure. The tests are written in QUnit whose docs can be referred to for a complete set of assertions.

## **Running Tests**

When you have written your tests, before you can run them, we need to bundle the Javascript for testing. In order to do this, from the root of the project run:

```
bin/kalite manage bundleassets
```

This will bundle all the django-compress tags and make concatenated files. It will also update the file\_map that our Karma config uses to find these files. When this is complete, simply run:

```
karma start
```

This will run through all the Javascript tests and report on failures. N.B. Karma is often, and most helpfully, run in continuous integration mode - our code base does not currently suppor that, but hopefully will in the future.

# **Behavior-Driven Integration Tests**

Part of our comprehensive testing intiative is to write better integration tests. The goals are to:

- 1. Stop using browser driven integration tests as unit tests. (Such slow...)
- 2. Have robust integration tests that don't fail randomly.
- 3. Use behavior-driven tests to clarify design goals of features.

We're using behave 1.2.4 to run our integration tests. Behavior driven tests are specified using the Gherkin specification language, and then behave builds a test suite from step implementations that are directly mapped to clauses from the Gherkin specification.

## Running the integration tests

To get the dependencies run `pip install -r dev\_requirements.txt`. This should install the correct version of behave. Selenium is also required but is currently included in our python-packages directory.

To run the tests simply run `python kalitectl.py manage test` just like you used to. This will automatically search out tests using both the unit test framework and the behave framework. You can specify apps, but right now there's no way to just run integration tests.

#### Running a specific test

If you want to run for instance the set of tests in kalite/distributed/features/content\_rating. feature, use this command, applying the app label distributed and the name of the feature content\_rating:

bin/kalite manage test distributed.content\_rating --bdd-only

## Anatomy of the integration tests

The test command will look inside each app for a `features` directory. Inside that directory should be one or more `[name].feature` files written in the Gherkin specification language. See the behave docs for more details on Gherkin, or look in the `control\_panel` app, where your humble author has attempted to provide some examples.

The test runner will parse the `.feature` files and attempt to build a test suite from step specifications found in any python files (the name is irrelevant) in the `steps` subdirectory. There is a 1-to-1 mapping between the clauses you write in the Gherkin specification and the steps you implement, so it can save you time to reuse clauses. Steps can also be templated to match clauses that follow a pattern.

You can also set up the test environment at key stages in the testing process by writing hooks in an `environment.py` file in the `features` directory. In the `control\_panel` example, the `before\_feature` function is defined to log the testing user in as an admin before each feature tagged with the `@as\_admin` tag in the specification. In `testing/base\_environment.py`, the `before\_all` and `after\_all` hooks are defined to set up a Selenium WebDriver instance on the context object that is passed around by the test runner. This file is intended to be used as a base for all the integration tests, so if there is some setup common to all integration tests then put it there. You can then import those functions in the `environment.py` of specific apps, and extend or overwrite as necessary.

Finally, in `testing/behave\_helpers.py` you'll find various functions that should be generally useful for all integration tests. If you find yourself wishing you had a nice useful function, add it here. In order to avoid reproducing functionality while we phase out the old integration tests, if some functionality already exists in the form of a mixin, you should import it into that file and wrap it in a new function. Be very reticent about importing mixin code! A good rule of thumb is to glance at how something is implemented in the mixins first, and only import it if it's not trivial to reproduce. Only re-write if there's *no* chance of the new code producing an error! The main goal is to avoid maintaining two sets of code.

# Suggested workflow for writing new features

Ideally you should:

- 1. Specify your integration tests.
- 2. Write failing steps.
- 3. Write code that makes your tests pass.

In practice, at least try to specify the tests first. Then you can seek out assistance implementing the steps.

## Selenium gotchas (aka race conditions)

Finding elements on the page can be subject to race conditions if the page is not yet completely loaded, or if the DOM changes in response to AJAX stuff. Selenium provides methods for finding elements with and without explicit waits. When in doubt, use a wait. If your app is AJAX-y, write testable code by putting in events or flags that Selenium can explicitly wait for. The Selenium `get` method of browsing will wait for the page to fully load. *Do not assume* that following links using e.g. the `click` method will wait for the page to load – *it does not*. To summarize:

- 1. Incorporate explicit flags in your code that Selenium can use in waits.
- 2. Don't use unsafe methods that don't wait unless you're 100% certain there's no possibility for a race condition.

# **Profiling KA Lite**

## Getting a general overview of resources used

To get a sense of the resources used by KA Lite over a period of time, run the *kalite* command with the *PROFILE* environment variable:

```
PROFILE=yes kalite <command>
```

Upon normal exit, the program will write to a file called *memory\_profile.log* containing the time and resource utilization. For now we only log memory usage.

# **Developer Utility Commands**

# **Django Management Commands**

All Django management commands can be run by typing:

```
kalite manage <command name>
```

in the root directory of the KA Lite project.

## generaterealdata

This function is designed to produce example user data for testing various front end functionality, such as coach reports and content recommendation. It does take some shortcuts, and will not produce accurate answer data for exercises. This is a Django management command and can be run with the following command:

kalite manage generaterealdata

# Logging

If you wish to view output from the server, you have a few options:

- Start the server using the command kalite manage runserver (this doesn't start the job scheduler).
- Start the server with kalite start ——foreground. This will start the server using CherryPy and a single thread, with output going to your terminal.
- Run the normal mode kalite start, and check  $\sim$  /.kalite/server.log for output.

# CHAPTER 6

**KA** Lite

#### by Learning Equality

Khan Academy's core mission is to "provide a free world-class education for anyone anywhere", and as 70% of the world's population is without access to the internet, primarily in the developing world, providing an alternative delivery mechanism for Khan Academy content is key to fulfilling this mission.

KA Lite is a lightweight Django web app for serving core Khan Academy content (videos and exercises) from a local server, with points and progress-tracking, without needing internet connectivity.

# Primary use cases include:

- For servers/computer labs located in remote schools, which could be slowly syncing with a central server over a cell/satellite network or via USB keys.
- In **correctional facilities** and other environments where providing educational materials is of value, but users cannot be given general internet access.
- Mobile school "vans", which transport a server and multiple laptops/tablets between a number of schools (or
  orphanages, community centers, etc) in remote communities on a rotating basis, and syncing up with a central
  database (to download new content and upload analytics) when in an area with internet connectivity.

### Get involved!

- Learn how you can contribute code on our KA Lite GitHub Wiki
- Report bugs by creating issues
- Read more about the project's motivation at Introducing KA Lite, an offline version of Khan Academy.

### **Connect**

• IRC: #kalite on Freenode

• Twitter: @ka\_lite

• Mailing list: dev@learningequality.org on Google Groups

#### **Contact Us**

Tell us about your project and experiences!

• Email: info@learningequality.org

• Add your project to the map: https://learningequality.org/ka-lite/map/

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