

Best Practices for Configuring and Using LanSchool® v7.5 in a 1 to 1 School

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Introduction

Over the past few years we have been working closely with early 1:1 adopters as they've implemented 1:1 programs in their schools. The purpose of this whitepaper is to help other schools implementing classroom management in their 1:1 programs learn the best practices being used at these schools.

America's Digital Schools 2008 reported that 27% of their survey respondents were implementing 1:1 in at least one full grade in at least one school. They also reported that teacher preparedness and buy-in, along with appropriate support and differentiated training were critical factors in 1:1 programs. Without these critical factors many times students use technology for just taking notes and surfing the web.

In the schools that we've worked with, classroom management becomes an important part of the 1:1 learning solution. It is used to train teachers as well as students. Eventually the teachers move past the pure monitoring features and leverage the software to create an interactive, collaborative, differentiated 21st century learning environment.

Background

LanSchool started in 1986 and created the classroom management market. For most of these years LanSchool has used the concept of channels to allow teachers to quickly and easily discover student computers.

This model works great for labs, laptop carts and thin clients. These devices in these environments generally are located in the same place for years. Channels even work well when the teacher is using a laptop because the teacher can easily change the channel to match the classroom or laptop cart where they are teaching.

In a 1:1 environment, the big difference is that the teacher and students are mobile. Every class period a new set of students and computers enters the room. To overcome this new challenge LanSchool worked with schools and came up with the concept of having the students connect to a teacher. In some situations, like schools using iOS devices, we still recommend this model. However, for most schools we highly recommend using the concept of class lists.

Class lists are text files that contain lists of student computers, login names or Active directory names. They can be created manually by teachers or automatically by creating a real-time link with the school's student information system. When a teacher loads a class list the students in that class list are temporarily switched to the teacher's channel from their home channel. Once the teacher dismisses the class list the students are returned to their home channel.

The major benefit of class lists is that teachers can quickly start class. In the earlier model it could take 3-5 minutes to get all of the students to join the class. With class lists and the proper use of LanSchool Profiles, it is possible to get class started in under a minute.

The next section of the whitepaper will help you decide which use case to use in your 1:1 environment and help you configure LanSchool to work properly.

Use Cases

Auto-generated class lists

Auto-generated class lists are the recommended method for implementing LanSchool in a 1:1 environment because it is the simplest method for teachers to use the software. In this model the Class lists are always up-to-date because they are linked back to the school's system that keeps track of teachers and students in a class.

This information is generally kept in a student information system, directory or other database. Because of the variety of vendors and storage systems LanSchool chose to create a web service API that allows LanSchool to link in real-time to the data stored in the school's systems. However, someone at the school, familiar with the system must use that API to connect the two systems.

Once the link is created, teachers simply open the Class list dialog and they are presented with a list of classes to choose from.

Teacher's perspective

As stated before, Auto-generated class lists are the simplest way for teachers to use LanSchool in a 1:1 environment. Instead of having to create and manage lists of computers/students, teachers can simply start class.

To start class follow these steps:

1. Open the LanSchool teacher console
2. Click on *Administer*
3. Click on *One to One*
4. Click on *Load Active Directory Class List*. The teacher is presented with a list of classes.
5. Select the class they want to start and click *Open*.

All of the students that should be in that class are discovered and will be visible to the teacher. The teacher can then use all of the features of LanSchool to teach during that period.

To end the class, follow these steps:

1. Click on *Administer*
2. Click on *One to On*
3. Click on *Dismiss Current Class*

The students are returned to their home channel.

If a teacher forgets to dismiss a class, it will not cause a problem. The next teacher that loads a student from that class can do so and a message will be sent to the first teacher that a student was removed from their class by the second teacher.

Administrator's perspective

Auto-generated class lists create some work for Administrator's up front, but will cause less training and headaches in the long run.

To create the connection between your datastore and LanSchool, there is a web service API that is available. A sample app is available with documented code. To receive this sample app, please email Chris Russell – chris@lanschool.com. Chris will also be able to answer any questions about the web service API.

Things to think about when implementing auto-generated class lists:

1. Class lists cannot be loaded by teachers or administrators using channel 0.
2. A programmer with knowledge of the school's SIS, database or Active Directory must create the connection between LanSchool and the datastore.
3. The refresh feature is not active when using class lists because all students in the class will be shown even if they are missing.
4. Teacher's must be trained to load and dismiss classes
5. Student should be setup with a home channel. Most schools set a home channel for each grade however; you can setup a home channel for the whole school. Choose a home channel that will not conflict with any of the assigned teacher channels.

For example: Set all 7th graders to channel 700, all 8th graders to channel 800 and so on...

6. Teachers should receive a unique channel that is not one of the student's home channels. Most schools assign the teacher's room number as their channel. Teachers do not need the ability to change channels in this model.

By default teachers cannot change their channel. If you want teachers to have the ability to change their channel, run the utility EnableChannelSelect on their teacher computer. If you allow teacher's to change their channel, they will have the ability to affect other classes. They need to be trained so that they do not disrupt other classes.

7. LanSchool Settings Profiles cannot be used with Auto-generated class lists.

Student's perspective

In this use case students don't have to do anything to connect to a teacher or class. In fact, the student could be setup in stealth mode.

Manually created class lists

Manually created class lists are created within the LanSchool Teacher's console. A teacher browses for students and can create class lists by the Student's login name, machine name, or student name (coming from Active Directory).

The teacher is shown a list of all student computers/names and adds or removes them from the list. Each time a student permanently leaves or adds the class the teacher must modify the class list.

These lists are simple text files with names separated by carriage returns.

Students can be imported into these lists using the import button and selecting a file that contains the student or computer names separated by carriage returns.

With manually created class lists the administrator does not need to create a connection back to the SIS, database or Active directory. However, the teachers will need to manually manage their class lists.

Another benefit of manually created class lists is that a LanSchool Settings profile can be attached to the class list which can help speed the setting up of the class.

Teacher's perspective

Without training, teachers may feel overwhelmed by the prospect of creating class lists. However, it is actually a simple process. To setup a class list follow these steps:

1. Open the LanSchool Teacher's Console
2. Click *Administer*
3. Click *One to One*
4. Click *Manage Class Lists...*
5. Select the type of class list desired. Lists can be based on Student login names, Student machine names, or the Student Name (if available from Active Directory)
6. Click the button *Browse for Students*
7. Select the desired students or computers and click the *Add* button
8. Click the *Save* button and give the class list a descriptive name.

If the student login names, computer names or Active directory names are known beforehand, they can be imported into a class list or added manually through the *Add Student Manually* button.

A LanSchool settings profile can also be associated with the class lists so that when a class is started the appropriate website are allowed, applications limited, etc.

Administrator's perspective

Things to think about when implementing manually generated class lists:

8. Class lists cannot be loaded by teachers or administrators using channel 0.
9. The refresh feature is not active when using class lists because all students in the class will be shown even if they are missing.

10. Teachers must be trained to manually manage their own class lists.
11. Student should be setup with a home channel. Most schools set a home channel for each grade however; you can setup a home channel for the whole school. Choose a home channel that will not conflict with any of the assigned teacher channels.

For example: Set all 7th graders to channel 700, all 8th graders to channel 800 and so on...

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By default teachers cannot change their channel. If you want teachers to have the ability to change their channel, run the utility EnableChannelSelect on their teacher computer. If you allow teacher's to change their channel, they will have the ability to affect other classes. They need to be trained so that they do not disrupt other classes.

Student's perspective

In this use case students don't have to do anything to connect to a teacher or class. In fact, the student could be setup in stealth mode.

Students selecting teacher channels

One of the advanced options on the LanSchool student install on Macs and PCs is to allow students to change their channel and connect to a teacher. We don't recommend that you use this method unless you have a specific reason. For example, one school in Norway felt they could not legally force students to join a class.

If you are using iOS devices in your classroom, this is the only option for implementing 1:1. Students must select the appropriate teacher's channel. LanSchool cannot run as a background task in the iOS operating system, so could not implement class lists on these devices.

Teacher's perspective

In this model teacher's ask students to join their class. This is usually done verbally. The teacher's channel is generally their room number. The students join the class by clicking on their LanSchool icon and selecting the appropriate teacher channel.

One of the positive aspects of this model is that teachers can use these class lists to take roll.

It will take 3-5 minutes at the first of class to get all of the students to actually join the class. But as soon as the students have joined, the teacher can save that class list for future reference.

To save a class list, follow these steps:

1. Open the LanSchool Teacher's console

2. Ask the students to join the class by selecting the teacher's channel
3. Once the students are in the class click *Administer*
4. Click *One to One*
5. Click *Save Current Class List*

This saves a text file of that class. The next day when that class begins, the teacher will ask the students to join the class, but this time they'll be able to compare the current class with the class list created previously.

To compare the current class list with a class list created previously follow these steps:

1. Open the LanSchool Teacher's console
2. Ask the students to join the class by selecting the teacher's channel
3. Once the students are in the class click *Administer*
4. Click *One to One*
5. Click *Compare Class Lists*

The teacher will be shown a list of students that are in class and that are absent from class.

If a student leaves the class the teacher will be notified.

The major downside of this model is that it takes 3-5 minutes at the start of class to get the students to join the appropriate channel. If a student joins the wrong class (either intentionally or by mistake) he will not be managed by the teacher.

Administrator's perspective

Things to think about when having students select their teacher's channel:

1. Administrator and teachers are not required to create class lists.
2. Students must be trained to manually select the correct teacher. There is nothing preventing a student from either purposefully or accidentally selecting the wrong teacher.
3. Student should be setup with a default channel. Most schools set a default channel for each grade however; you can setup a default channel for the whole school. Choose a default channel that will not conflict with any of the assigned teacher channels.
4. Teachers should receive a unique channel. Most schools assign the teacher's room number as their channel. Teachers do not need the ability to change channels in this model. By default teachers cannot change their channel. If you want teachers to have the ability to change their channel, run the utility `EnableChannelSelect` on their teacher computer. If you allow teacher's to change their channel, they will have the ability to affect other classes. They need to be trained so that they do not disrupt other classes.

Student's perspective

In this model, students are required to select the appropriate teacher to join a class. There is nothing that forces a student to join the right class or stay in the right class in this model.

LanSchool Settings Profiles

LanSchool Settings Profiles are settings that can be saved in order to start classes quicker. Settings profiles can be loaded with or without class lists. However, they can be attached to a manually generated class list in order to speed up the starting of a class.

To create a LanSchool Settings Profile, follow these steps:

1. Start the LanSchool Teacher's console
2. Setup the teacher's console the way you'd like it for a particular class. You can setup the classroom thumbnail layout, limiting settings such as web limiting and app limiting, and the settings on the preferences tabs.
3. Once the console is how you like, click *View*
4. Click *Save LanSchool Profile*
5. Give the profile a descriptive name and click *Save*

To load a LanSchool Settings Profile, follow these steps:

1. Start the LanSchool Teacher's console
2. Click *View*
3. Click *Load LanSchool Profile*

This will load the settings that you saved in the creation step.

Computer Hardware

LanSchool will work with almost any type of computer hardware that you've selected as your 1:1 platform as long as the operating system is supported.

If you are using stationary desktops, laptop carts or thin client devices then you can use the traditional channel model. Teacher's will generally bring in their laptops, change the channel to the channel for that room and the student's will automatically appear.

Recommendations:

1. Keep NIC drivers and OS patches up-to-date
2. Turn off Power save on the NIC when using wireless. In our testing we've found that turning off power save actually increases battery life in a wireless environment. We've seen this phenomenon with several different brands of netbooks. Turning off power save will also help LanSchool perform better.
3. Configure the Teacher's console to use "Color Reduction". Click Preferences, Teacher tab and check the "Color Reduction" setting. That is the default setting, but if it is changed, the Teacher console will send considerably more data when showing a desktop to students.

Networking Hardware

Most 1:1 environments are using wireless or a mixture of wireless and wired networking. We recommend that enterprise class access points are used. Most consumer access points will shutdown, reboot or fail when 20+ computers connect to it without even running LanSchool.

Wired

If you are using a wired network, we don't have any configuration recommendations. Just be aware that by default LanSchool uses broadcast packets which do not cross subnets. If your classrooms cross subnets select either Multicast or Directed Broadcast in the Network tab of the preferences menu. If you have VLANs, please email support@lanschool.com and we'll send you a document that describes how to setup LanSchool with VLANs.

Wireless

In LanSchool v7.5 we added a new protocol for wireless networks. When LanSchool detects a student is using wireless it will automatically switch to this new protocol. Wireless access points send broadcast or multicast packets out at 1-2 mbps, where a Unicast-UDP packet is sent out at the speed of the connection. By replacing a single Broadcast-UDP packet to multiple Unicast-UDP packets the packets go out faster and more reliably. Because of the decrease in retries we actually end up sending out less data.

Here are some recommended settings for wireless networks:

You'll need to consult your Access Point's manual to see how to actually make the changes on your particular Access Point.

1. Drop the Beacon Interval as low as possible (generally, this can go down to 50ms).
2. Set the DTIM to ZERO. (This allows broadcast and multicast packets to be EVERY beacon packet.)
3. Increase the Broadcast or Multicast speed. (Not all AP's allow this to be set)

1:1 implementation with Apple iPad, iPod and iPhone devices

The LanSchool student app for iOS3 and iOS4 is available as a free download in the Apple iTunes app store. Just search for LanSchool and you'll find both the teacher and student apps.

The Teacher's app, called the Teacher's Assistant is also free, but must pair with a LanSchool Teacher's console running on a Mac or Windows computer.

The LanSchool student app allows teachers to perform the following features:

- See a thumbnail of the students iOS device
- Send a vote (question) to the student
- Allow the student to send a question to the teacher
- See the charge state of the battery

In both iOS3 and iOS4 the LanSchool student cannot run as a background task. Many of the features that LanSchool performs in Windows and OSX are not available. As soon as Apple allows 3rd party applications to run as a background task, we'll enhance the student to perform more features. Right now, it works well as a classroom response app. iOS4 does support multi-tasking, but only for VOIP or music apps.

Due to these limitations, Class lists are not available for the iOS devices. The only method of 1:1 class creation in LanSchool v7.5 is for the student to join the teacher's channel. This is accomplished by clicking the RM# icon in the upper left hand of the LanSchool student app.

Once the student selects the correct channel number for a teacher, the iOS device will be visible in the Teacher's console.

To allow for classroom management to occur outside of the LanSchool Student app, LanSchool has created a program called EdApp certified. This is a free SDK that allows app developers to embed LanSchool functionality into their applications. A list of EdApp Certified products can be found at the following URL:

http://www.lanschool.com/support/ed_app

If you have a favorite educational app that would be a candidate for EdApp, please send an email to jerry@lanschool.com and we'll contact the application developer.