Using IBM Lotus Virtual Classroom:  
A Best Practices Guide to e-Learning

Making the most of Virtual Classroom

Tools in Virtual Classroom

Introducing e-Learning into the organization
Using IBM Lotus Virtual Classroom: A Best Practices Guide to e-Learning

February 2003
Note: Before using this information and the product it supports, read the information in “Notices” on page xi.

Second Edition (February 2003)

This edition applies to version 1 of IBM Lotus Virtual Classroom (product number D51J4LL).

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Preface

e-Learning is a fast-growing segment in both the education and computer industries. IBM Lotus has developed a product for this arena, the IBM Lotus Virtual Classroom. A virtual classroom allows users with a personal computer and access to the Internet to enroll in a course. They can follow along with audio and video capability from anywhere in the world.

This IBM Redbook discusses Virtual Classroom features. In this edition we provide new information, such as a test drive of product features from learner, instructor, and administrator perspectives; planning and installation guidance (including troubleshooting information); and a sample LotusScript routine for exporting users.

Changed information includes a description of the architecture, and additional hints and tips on course design and development.

The audience for this book includes e-Learning planners, developers, instructors, facilitators, and learners. Knowledge of e-Learning fundamentals is assumed.

The team that wrote this redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization, Cambridge Center.

Mike Ebbers is a Senior IT Specialist at the International Technical Support Organization, Cambridge Center. He writes IBM Redbooks and teaches classes worldwide. Mike has spent 29 years in IBM doing technical marketing and education. He has been with the ITSO for eight years.

David Balagué is a Technical Specialist at the Lotus Software Product Development division, based in Spain. He is a localization expert working in the Domino environment. He is a Principal Lotus Professional and has four years of experience in Domino development. He has worked on a number of LearningSpace projects and has written on Notes and Domino internationalization best practices and localization processes.

Balaka Ganguly is a Project Leader at HCL Technologies Ltd. located in India. She has been working with Lotus Applications for over five years and has been involved in design, development and implementation of Domino applications. She has also been involved in LearningSpace, Sametime, and Domino.Doc
implementations. She holds a Bachelors degree in Economics and is a Certified Lotus Professional in Application Development.

**Dan Noyes** is an e-Learning instructional designer at the University of Wales College, Newport, United Kingdom. He is a Web and Domino developer and has two years of experience in LearningSpace. He is currently working on a research project that is looking at ways of making e-Learning content available for search and retrieval using the z39.50 search protocol.

**Phil Salm** is an e-Learning Consultant with Berbee Information Networks (www.Berbee.com) in Madison, Wisconsin. He works with clients that have LearningSpace, Sametime, or QuickPlace hosted in Berbee’s data centers, providing them with implementation planning, training, and support in these applications. He also trains clients in courseware development and e-Learning instructional design, and has four years of experience working with LearningSpace.

**Authors of the first edition**
The authors of the first edition of this redbook were:

Mike Ebbers  
International Technical Support Organization, Cambridge Center, USA

David Balagué  
Lotus Software Product Development Division, Barcelona, Spain

Dan Noyes  
University of Wales College, Newport, United Kingdom

Phil Salm  
Berbee Information Networks, Madison, Wisconsin, USA

Harmen van der Kooij  
International Technical Support Organization, Cambridge Center

**Contributors**
Thanks to the following people for their contributions to this project:

Susan Lawler  
Joselin Mane  
Martha Mealy  
Duncan Mewherter  
Marshall Wilensky  
IBM Lotus Development, Cambridge and Westford
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Part 1

Introduction to Virtual Classroom

In this part, we give a brief description of IBM Lotus Virtual Classroom and provide a useful “test drive” of the product. We also discuss the technical implications of its various features and functions.
What is a live virtual classroom

In this chapter, we describe a live virtual classroom environment. We discuss its benefits and limitations as compared with classroom-based and asynchronous learning.
1.1 Definition of a live virtual classroom

The growing popularity of e-Learning (that is, using the World Wide Web and electronic technology for learning) has introduced new terms to education, such as live virtual classroom. In this redbook, we examine this learning method and describe a related product offering, IBM Lotus Virtual Classroom.

Just as the term *virtual* means a simulation of the real thing, so a *virtual classroom* allows learners to attend a class from anywhere in the world and provides a learning experience that is similar to a real classroom.

When you go to school or to a university, you have a schedule of classes you must attend. You must arrive on time, and when you enter the classroom, you may find a teacher, fellow learners, a blackboard or whiteboard, an overhead projector, a library, and a television screen with videos.

Likewise, a live virtual classroom is a scheduled, online, teacher-led training session where teachers and learners interact synchronously using computers linked to a network such as the Internet.

As in any ordinary classroom, in a live virtual classroom you can interact with your teacher and fellow learners by way of a variety of virtual tools and technologies such as audio, video, or chat; see Figure 1-1 on page 5. You can also receive information using other tools such as a whiteboard, application sharing, multimedia files, and access to Internet URLs.

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1.2 Features of Virtual Classroom

Virtual Classroom provides a framework for designing, scheduling, managing, and delivering virtual classroom courses, as well as managing participants. In this section we briefly describe some of the tools and features of the product. For more detailed information about these, refer to Chapters 2 and 3.

IBM Lotus Virtual Classroom offers the following functions:

- Course builder – provides the framework for building outlines, selecting virtual classroom tools, authoring assessments.
- Course scheduling – allows you to schedule courses.
- Notifications – handles course invitations and reminders.
Course catalog – lists all available courses, or the courses in which a learner has enrolled

Enrollment manager – administers the enrollment and admission of learners in courses.

Administrative tools – includes user management, enrollment reports, security settings, and the like.

Not all the functionality of Virtual Classroom is based on synchronous technology. The synchronous functionality is delivered by Lotus Sametime technology, while the asynchronous functionality is based upon Lotus QuickPlace technology.

Virtual Classroom can be used either as a standalone product or in combination with a learning management system.

Virtual classes can be scheduled as either moderated or broadcast sessions. Moderated sessions are more suitable for smaller groups. All participants can interact and communicate with each other. Broadcast sessions allow less interaction. However, they are more efficient (and require less bandwidth) and are therefore more suitable for a larger audience.

For an overview of IBM Lotus Virtual Classroom written by a Lotus developer, see:

http://www-10.lotus.com/ldd/today.nsf/a2535b4ba6b4d13f85256c59006bd67d/bcbcf711b3ae60385256cbb004fed9370openDocument

1.2.1 Virtual Classroom standalone mode

Virtual Classroom used in standalone mode offers a simple catalog and enrollment functionality. The catalog displays only virtual classroom courses, so no other types of e-Learning can be accessed through it. Learners can search the catalog and enroll in a course (enrollment can also be managed centrally in a Learning Management System, or LMS). Learners and instructors have an overview of the virtual classroom session for which they are enrolled. Course participants can launch the virtual classroom session from this place. Figure 1-2 shows the elements of this product.
1.2.2 Virtual Classroom integrated with LMS

Virtual Classroom can also be integrated with the new IBM Lotus Learning Management System (LMS). In such situations, the Virtual Classroom session is accessed and managed from the LMS environment. Virtual Classroom can also be integrated with other third-party LMS products like Docent, Isba, or mySAP Learning Solution. Figure 1-3 on page 8 shows what the integration with an LMS looks like from a functional point of view.
Integrating Virtual Classroom with an LMS has many benefits:

- Live virtual classroom sessions can be part of a blended e-Learning approach.
- All learning activities, including virtual classroom sessions and classroom-based training, can be managed from one place.
- All learning activities, including the virtual classroom sessions, can be launched from one place.
- Tracking and scoring information of all learning activities is stored in one place.

**Note:** IBM Lotus Virtual Classroom cannot be integrated with the current LS 5 Core module.

### 1.3 Differences from the Sametime product

IBM Lotus Virtual Classroom is based upon Lotus Sametime 3.0. They both offer e-meeting functionality, but the Virtual Classroom product adds some additional e-Learning capabilities. Functions that exist in the Virtual Classroom product but not in Sametime include:

- Course catalog
- Enrollment management

---

**Figure 1-3** Virtual Classroom integrated with an LMS
Lotus Sametime does offer some functionality that is not part of the Virtual Classroom license. Some of this functionality can be interesting for integration with an e-Learning solution, such as:

- Sametime WebConnect client (instant messaging and awareness)
- Asynchronous discussion forums

### 1.4 Live virtual classroom benefits

In this section, we discuss the benefits of a virtual classroom by comparing it with both traditional classroom-based and asynchronous Web-based training. We do not discuss cost analysis here, since these benefits are discussed in Chapter 15, “Making the case for e-Learning” on page 217.

#### 1.4.1 Benefits versus classroom-based training

A virtual classroom offers benefits when compared with the same course delivered in a traditional physical classroom.

**Removal of geographical barriers**

Similar to other e-Learning technologies, a virtual classroom allows learners and teachers to attend a single live training session from any place in the world, as long as they are connected to a corporate network or to the Internet. This solution offers a much broader audience and cheaper solution than a single traditional classroom-based training session; for example, the ability to instantly share the expertise of a research and development department with sales employees across the world.

**More dynamic resource model**

Traditional learning environments are very resource-intensive and relatively inflexible. They usually require classrooms, furniture, writing materials, and the like. Both under-capacity and over-capacity classes can be very expensive in the traditional environment. For example, near-empty classrooms carry overhead, while overflowing physical classrooms leads to expensive outsourcing.
The virtual classroom has a very different resource model. The marginal costs of adding virtual classroom training are relatively insignificant compared to the traditional model.

**Quicker to organize**
The speed of virtual classroom session deployment offers the competitive advantage of bringing new training to market a lot faster than before. Training can be organized more quickly than traditional classroom-based training. Classrooms and projectors do not need to be reserved, materials do not need to be distributed, route descriptions do not need to be sent out, and so forth. The sessions are easier to schedule since attendees do not need to travel. If teacher-led training needs to be delivered in other countries, the benefit of the virtual classroom will be even greater.

**Can be recorded**
If learners miss a traditional classroom-based training session, they have little opportunity to engage in the learning experience that took place.

If a virtual classroom session is recorded, learners or teachers can replay it afterwards. Learners can revisit the session, perhaps making connections and understanding ideas or concepts they had missed at the time of the session. Teachers have the opportunity to review their own or their colleagues’ performance.

Of course, this should not be considered as a replacement for active participation in a virtual classroom session. For example, once recorded, a virtual classroom becomes an asynchronous activity without the possibility of interaction.

**Increased computer skills**
Just as the traditional classroom provides learners with a set of communication skills applicable to a specific task, the virtual classroom provides them with new information and technical skills that benefit both individuals and their organizations, such as the usage of Web cams and audio. In general, it will make the participants more familiar with Internet capabilities.

### 1.4.2 Benefits versus asynchronous Web-based training

A virtual classroom also carries benefits when compared with an asynchronous course delivered over the Web.

**Just-in-time development**
Preparing materials for a virtual classroom session takes much less time than developing an asynchronous Web-based training session. Innovative or complex
knowledge that is not yet published can be shared immediately with the rest of
the organization. Scheduling an virtual classroom session, creating an outline,
and preparing presentation materials takes a matter of hours. When training
needs to be delivered quickly, the virtual classroom can be the perfect tool for the
job.

**Fast response to learner needs**
Since the virtual classroom is a facilitated activity, teachers can respond
immediately to learner questions and feedback. In an asynchronous
environment, the learner usually has to wait at several hours or more to receive
an answer to a question.

**Encourage participation**
Asynchronous environments are notoriously difficult to maintain when learner
participation is poor.

When working in a virtual classroom environment, the teacher has a variety of
tools and methods to monitor and stimulate participation in real time.

**Rich interpersonal communication**
Many types of e-Learning do not offer any communication or collaboration.
Asynchronous collaboration can allow learners and teachers to interact, but it is
not as direct as in a traditional classroom.

In contrast, a virtual classroom does offer this kind of interaction. Learners can
talk to the teacher and to each other, and although this communication is not as
intuitive and rich as in a traditional classroom, it still can help learners to learn.

**Teacher guidance**
Teachers are key to facilitated learning. They motivate learners, introduce new
topics, take care of group processes, and so forth. The virtual classroom allows
them to immediately respond to learners’ needs.

**More intuitive**
The virtual classroom uses many metaphors from the traditional classroom with
which learners are familiar, including classroom, whiteboard, and hand-raising.
Through the use of audio and video, communication is more natural and open.

1.5 **Live virtual classroom limitations**
Depending on the situation, some of the benefits may become disadvantages.
Consider the following issues before opting for the virtual classroom.
1.5.1 Limitations versus classroom-based training

Here are some situations where a physical classroom has an advantage.

Learners and teachers need to become familiar with the tools
Learners and teachers are already familiar with the workings of a traditional classroom; that is, they understand the concepts of hand-raising, the whiteboard, assignments, and so forth.

With a virtual classroom, organizations need to realize that all participants must become familiar with the way the virtual classroom works before virtual classroom-based training can be effective. Participants in an virtual classroom session should have at least some computer literacy.

Not suitable for hands-on training
There are many situations in which the learner needs to interact physically with elements, tools, situations, and the like. In this case, the virtual classroom cannot provide such service. For example, a virtual classroom could be used for discussing the theory about how to build a house, but learners will still require hands-on training.

Difficult to verify if everybody is paying attention
Compared to the traditional classroom, it is more difficult in a virtual classroom session to see if everybody is paying attention; participants can walk away from their computers without anybody noticing. There are several ways to keep people's attention and make sure they interact, but it will always be more difficult than in the traditional classroom.

Not suitable for sessions longer than two hours
If a teacher-led training session needs to take longer than two hours, you should consider organizing a traditional classroom-based session. However, you can always consider splitting up the training into multiple shorter virtual classroom sessions. Of course, even traditional classes face attention span challenges when they run over two hours.

No incentive effect
Training attendance sometimes requires some additional incentive. Traditional classroom-based training is often located at interesting sites, which makes it more attractive to potential audiences. After an online class is over, however, you cannot have a reception, nor can you hold it in a nice hotel.
Technical issues
The virtual classroom relies more heavily on technology than the traditional classroom, both on the client site (the PC) and with respect to the infrastructure (server, network, or the Internet). Technical problems can disturb the progress of virtual classroom training. Various tips to avoid technical glitches during virtual classroom sessions are discussed in Chapter 11.

1.5.2 Limitations versus asynchronous Web-based training
Here are some situations where an asynchronous class has an advantage.

Time dependency
One of the advantages of asynchronous Web-based training is that people can take the training at any time they want. Attending virtual classroom training, however, is restricted to a certain scheduled time. This is a result of the virtual classroom being a synchronous activity where all participants need to meet together at the same time.

This is a particularly difficult problem when training is delivered across time zones. If time independency is an important issue, consider an asynchronous solution.

Not self-paced
A virtual classroom session is teacher-led training. It is a synchronous group activity and as such it has a start time and an end time. The teacher establishes the tempo and sets the appropriate level; learners thus do not have the ability to work through the materials at their own pace.

More logistic considerations
Running training in a virtual classroom involves more logistics than asynchronous Web-based training. Virtual classroom sessions need to be scheduled, teachers need to be booked, and participants' PCs need to be prepared.

Facilitator, subject matter expert, or instructor is needed
Live virtual classroom sessions are led by a facilitator, subject matter expert, or instructor. These players need to be available, and they cost money. The time they need to prepare the session in advance must be scheduled, as well.

In short, each method has advantages that you will want to consider when planning a course.
Chapter 2. Tools of the IBM Lotus Virtual Classroom

A teacher in a traditional classroom has a variety of tools and methods to use during a class. IBM Lotus Virtual Classroom is also based on a set of tools, many of which are metaphors for traditional classroom tools and practices. This chapter describes the virtual classroom tools and explains their benefits and limitations.

This chapter does not discuss navigation in the Virtual Classroom. This information can be found in Chapter 3, “Let’s take a test drive” on page 35, and in the online help.
2.1 Communication tools

In this section we discuss the Virtual Classroom tools that involve communication.

2.1.1 Real-time audio

Using real-time audio in a virtual classroom session allows participants to speak to each other as if they were in a traditional classroom or using phone conferencing. You might be surprised by the good quality of the audio when using headsets, even when limited bandwidth is available (a standard 64k ISDN line should be fine).

In order to enable this communication, the workstation of each participant needs to have:

- A sound board
- Speakers and microphone (preferably combined in a headset)

The session facilitator or producer controls who can speak. In smaller groups, they might wish to leave the microphone open for participants to comment more spontaneously. The Virtual Classroom user interface allows each participant to see who is speaking at any particular moment of the session from the icons in the participant list shown in Figure 2-1.

![Participant list](image)

*Figure 2-1  Participant list*

The participant list shows the activity and permissions for every person in the session.
These are seen to the left of each name under the appropriate symbol (from left to right in Figure 2-1):

- The moderator
- Who is sharing or editing an application
- Hand-raising
- Who is speaking
- Who has permission to speak
- Who has permission to edit the whiteboard

In order to improve communication, participants can mute their own microphones, thus avoiding interference from external noise.

When the teacher or facilitator sets up a virtual classroom session, they can choose between two audio conferencing modes:

- **Automatic microphone mode** allows all participants to talk whenever they want to ask a question or express an idea, which simulates a normal discussion environment.

- **Request microphone mode** is like a debate or a more formal classroom environment, where the teacher gives permission to speak to the learners in turn.

  In a virtual classroom session, the teacher or facilitator hands over the microphone to whomever requests it, and any participant can request the use of it at any time, although the facilitator is the only one who can hand it over. This is a more organized way of running a session, particularly in the initial stages, when people are not familiar with the technologies.

![Figure 2-2  Request microphone mode](image)

In request microphone mode, the authority to speak is requested by the participant and granted by the facilitator. It is then released by the participant, as shown in Figure 2-2.

Virtual Classroom includes functions such as the Test Audio/Video feature, which allows you to fine tune the audio or video settings of the participants. They can also set the volume of their microphones and sound.
Benefits

- This tool allows quick real-time interaction.
- Learners and teachers use verbal communication in a natural way.
- It is informal.
- It makes it easy to convey and sense moods, tones, and intonation.
- Audio can be used in parallel with other virtual classroom tools.
- It does not penalize learners who are weak writers or readers.
- It encourages social interaction.
- No telephone conference system is needed.
- There are no call costs above joining the session.
- There is no need to keep lists of telephone numbers to call.
- It allows the use of voice in multiple breakout sessions (this is not possible if a standard telephone conference system is used).

Limitations

- Busy Internet or network traffic can affect performance and quality.
- Additional hardware is needed (the use of standard laptop speakers and microphones is not advised).
- The use of real-time audio might require adjustments to firewall settings.

Tips for using audio

- Try to work from a place that has a minimum of noise.
- Do not ask open questions.
- Use short sentences.
- Do not cover your mouth.
- Use a headset.
- If you do not like a headset, use a standard Walkman earplug instead of your laptop speaker (in combination with your laptop microphone).
- Use a conferencing microphone if you attend an virtual classroom session with multiple participants in a room.

2.1.2 Real-time video

If you have a Web camera (Web cam) attached to your workstation, you can use real-time video during a virtual classroom session. A small animated image shows the person who is speaking at any given
moment. The video image changes when the speaker moves. The use of real-time video in an virtual classroom session makes communication even richer because it adds a face to the voice, and helps strengthen relationships with colleagues and fellow learners.

Due to bandwidth considerations, real-time video is limited to one person at a time. If the network efficiency deteriorates, and the image quality is not acceptable, the participants can opt to pause the image, thus increasing the overall performance of the system.

![Real-time video adds a face to the voice](image)

**Benefits**
- This tool adds a face to the voice (Figure 2-3 shows a good example).
- It allows richer communication through facial expression and body language.
- No video conference system is needed.
- Facilitators can view and assess their own performance, expression, gestures, and so forth.
- Quick sharing of materials is possible when using a special document camera.

**Limitations**
- Most people are not yet familiar with using real-time video.
- Video images can be a distraction.
- The speaker does not see the audience when speaking.
- Video cannot be used to check for learners paying attention.
- Only the speaker’s image is displayed.
- It requires a Web cam.
- Image quality is not perfect.

**Tips for using video**
- Experiment with different camera positions.
- Do not pay too much attention to the camera.
- Try to work from a place without other people walking around.
- Make sure that the room or place where you are sitting is well illuminated.

### 2.1.3 Chat

Chat is a way of instant messaging based on short text messages. These messages are displayed in the public chat area at the bottom of the virtual classroom screen. Others can respond right away or park the question and respond later. Chat can be used in parallel with real-time audio and video. A group chat window is shown in Figure 2-4. This area can be collapsed when not in use.

![Group chat area](image)

*Figure 2-4  Group chat area*

Virtual classroom participants can also start private chat windows with other individuals. A private chat window is only visible to the people within the chat.
meeting—which means that learners might chat without the facilitator’s knowledge. Once a private chat is started, others can be invited to join in. A private chat window is shown in Figure 2-5.

![Private chat window](image)

**Figure 2-5  Private chat window**

**Benefits**
- With this tool, text can be saved for later reference.
- It uses a limited amount of bandwidth.
- It allows participants to discuss issues as they arise, without disturbing the session.
- The facilitator or producer can “park” questions until the right moment to respond.
- Private chat allows participants to communicate without disturbing others and without needing to leave the virtual classroom.
- It encourages short and direct communication.
- It can be integrated with the translation server, so participants can write and read in their preferred language.

**Limitations**
- This tool is not adequate for those who read or type slowly.
- It is slower than voice.
- Communication is less rich than audio.
- It needs careful moderation with large groups.
- It can cause distraction.
- You can be involved in multiple chats, but they cannot be “merged”.
- Chat cannot be suppressed from within the session, or on an individual basis. It is an all-or-nothing feature.
- It requires concentration.
- It is not threaded, but chronological.

**Tips for using chat**
- Paste URLs in chats, and they convert automatically to links.
- Keep a specific purpose in mind when opening a chat, and close it as soon as you can once this goal has been achieved.
- “Leave” chats rather than closing the window (which will result in you being prompted to rejoin if others continue chatting).
- “Chatters” develop their own acronyms and shortcuts (c u l8r for “See you later,” for example). Keep a list of commonly used and useful terms and send them out to participants before joining the session.
- Facilitators should try to only use the group chat area; participating in private chats with class members will take a lot of time.
- Using yes/no questions is desirable.
- Split long responses, and press Enter between the different parts so that others can see sentences/arguments develop.
- Do not leave your audience waiting for a long time, as they may become distracted.

### 2.2 Other live virtual classroom tools

In this section we discuss live virtual classroom tools that simulate activities in a traditional classroom.

#### 2.2.1 Whiteboard

The whiteboard represents the biggest part of the screen in the virtual classroom and is used to display additional materials. Participants can write on the whiteboard during the session, and the facilitator can display materials that are prepared in advance. Participants can choose to maximize the whiteboard screen.
The whiteboard toolset includes:

- Pointers
- Text tools
- Drawing tools
- Markers

The whiteboard's toolbar allows you to control the appearance and elements for a whiteboard session, as shown in Figure 2-6.

![The whiteboard toolbar](image)

**Figure 2-6  The whiteboard toolbar**

Not all materials can be uploaded automatically for use on the whiteboard. You can use the Sametime Print Capture tool for document types that are not supported. This converts files into an fst file which can then be uploaded.

**Benefits**

- This tool allows reuse of existing materials.
- It requires less bandwidth compared to screen sharing.
- The teacher can prepare presentation materials in advance.
- It can show a variety of digital files.
- It enables highlighting and adding text to the materials during the session.

**Limitations**

- Handwriting and drawings are limited, without the use of a graphics tablet.
- Whiteboard sessions cannot be saved separately.
- The whiteboard area is fixed in size.
- You cannot zoom into the whiteboard.
- There is only one whiteboard area; you cannot have multiple boards.
- You are unable to group objects on the whiteboard.
- You cannot paste text or other objects onto the whiteboard.
- You are unable to edit text after leaving the text box.
The producer or facilitator has to delegate control over the whiteboard (participants cannot request rights to edit, as they would request the microphone).

- It is limited by the screen settings of each participant.
- Whiteboard content splits up multiple objects.

**Tips for using the whiteboard**

- Follow the 7x7 guideline: no more than 7 lines of text per screen, or 7 words per line.
- Use simple graphics and charts.
- Control the total whiteboard file size, and limit its use to essential files.
- Control the screens shown to about one slide every three minutes.

However, the whiteboard shouldn’t be a static presentation of content. For example, don’t just pull up a slide and speak over it. Use specific whiteboard tools to direct the participants’ attention or add to the content of the screen.

Here are a few whiteboard interactions you can include:

- Use the pointer or arrow tools to draw attention to a bullet point or portion of a graphic.
- Draw in bar or line charts as you discuss them.
- Add labels to pie charts you discuss.
- Lead into a whiteboard activity with a poll. Enter data from the poll onto a table in the whiteboard to compare against other statistics.
- Draw an item once, and move it around the whiteboard to draw attention to other locations.
- Select an item on the whiteboard and cycle through colors for a neon lighting affect.
- Conduct a brainstorming activity where everyone can contribute to a topic.

For more information, see “Presentation files” on page 156.

### 2.2.2 Screen sharing

Screen sharing is a powerful learning tool for demonstrating software procedures. It allows all class participants to see an application that is opened on any given participant’s PC. Everyone can see the shared application or screen as if it were running on their own PC. Control of the application can also be handed over, so others can use the application from their
own machine, and to troubleshoot participant difficulties in performing activities in applications on their own PCs.

There are three basic types of screen sharing (or application sharing):

- **Share the entire screen**
  
  Sharing the entire screen works best when you plan to switch between multiple applications, or if you need to show something at the desktop level. Sharing the entire screen is the most bandwidth-intensive type of screen sharing, so performance may be slower than other screen-sharing methods.

  **Note:** Be extremely careful with scripting permissions, because participants with control over sharing the entire screen have the same access and rights to the screen sharer’s PC as the screen sharer does.

- **Share a resizable frame**
  
  This method is best when you need to limit sharer access to features or information in the application that you are sharing. If you flip between applications, whatever application is within the frame continues to be shared. You can also share the desktop using this method. Keeping the frame small will result in the fastest screen-sharing performance.

- **Share a program**
  
  This method is best for sharing a specific application, such as Macromedia Dreamweaver or a Web browser window. Pop-up and spawned windows will appear in the shared area, but new applications that are launched by the shared application will not appear. Also, when the screen sharer leaves the shared application without turning off screen sharing, the shared space turns gray for all meeting participants.

**Benefits**

- With this tool, there is no need to distribute software to all participants to see and use an application.
- The teacher can easily switch to a local application during a virtual classroom session.
- It provides an authentic experience of using an application.
- Permissions can be managed centrally by the producer.
- It enables participants to work collaboratively on a document in real time.

**Limitations**

- It requires reasonable bandwidth.
- Security should be carefully considered when allowing other participants to control your PC.
It requires a good plan (scenario) by the producer and facilitator.

**Tips for working with screen sharing**

- Prepare a detailed scenario in advance.
- Select the appropriate screen-sharing method to maximize performance of the live virtual classroom and focus participant attention.
- Test your screen sharing script to verify that everything will come through accurately.

**Note:** If you allow participants to control screen sharing in this mode, they will have access to *all* the application features that the screen sharer has. If you need to insure against participants saving documents or using other application features, share a *frame* instead. Limit which menus and buttons the participants can access by appropriately sizing the frame.

No matter which screen-sharing method you select, there are several things you should consider:

- Schedule screen sharing at a late stage in your session. The arrival of late-comers to a meeting during screen sharing can slow performance.
- Set the screen sharer’s color palette to the lowest number of colors necessary. This will improve the speed of the screen sharing.
- Set the screen sharer’s mouse pointer to a large size to make it easier for participants to follow its movement.
- Screen sharers should arrange to be at the best PC available to them—the performance of the screen sharer’s PC will affect everyone’s experience of the screen sharing.
- Avoid using shortcuts and smart keys. Learners find it easier to follow you through a series of pull-down menus.
- Have the screen sharer instruct participants where to look.
- Have the screen sharer close all unnecessary windows and applications.
- Include pause points during screen sharing to minimize the effect of latency. Latency describes the effect of screens repainting at different speeds for different users.

For more information, see 10.6.4, “Screen sharing” on page 161.

### 2.2.3 Polling

Polling is a very useful tool for gathering feedback from all participants in a quick and easy way:
The facilitator or producer can send out multiple-choice questions to learners during the virtual classroom session.

These questions can be created in advance or during the session, as shown in Figure 2-7.

A variety of question types is available.

The learner responses are automatically corrected by the system and displayed to the teacher. Figure 2-8 on page 28 shows this.
Here are the responses to the question you just asked.

Questions asked
How many types of collaborative e-Learning are there?

Responses
A check mark indicates a correct response.

<table>
<thead>
<tr>
<th>Raw Number</th>
<th>Percentage and Bar Graph</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0%</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>100%</td>
<td>✓ 2</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
<td>3</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
<td>4</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
<td>Did not participate in the poll</td>
</tr>
</tbody>
</table>

Show Responses to Everyone  View Individual Responses...

Chat  Web Pages  Poll

Figure 2-8  The system automatically shows responses

Benefits
- This tool allows you to determine the knowledge level of the learners quickly.
- Responses can be checked by the system and collated; refer to Figure 2-8.
- Questions can be prepared in advance.
- Multiple choice questions allow for quick responses.
- Questions can be reused.

Limitations
- It takes time to define good questions.
- It takes time to create questions on the fly.
- Answers are not saved after closing the session.

Tips for using polling
- Prepare questions in advance.
- Choose the best moment to send the questions.
Ask a poll question related to content that will be covered next in the session. Share the poll results with the class, and use it as a lead-in to the next section.

Ask a poll question on material that you have just covered, as a spot check. Use teaching assistants and breakout sessions to provide individualized follow-up with those having difficulty.

Use a poll to have participants rate Web sites they have explored, or to judge the value of a particular resource.

Use a series of poll questions (such as, Do you own a cat? Do you work overtime every week?) to create a quick demographic of your audience. This can be made into a fun ice-breaker activity.

For yes/no questions, use hand-raising instead of polling.

Use anonymous polling to allow participants to vote.

Let participants know, before sending a poll question, that the facilitator will be able to see their individual responses when not using an anonymous poll.

For more information, see “Question sets” on page 163.

2.2.4 Web tour

The producer or facilitator can “push” Web pages out to class participants. This results in a new browser window opening on each person’s machine. Unlike whiteboarding or application sharing, class participants then independently view the Web page and navigate through it.

With Web pages, remember that when you push an additional Web page, it will replace the Web page being viewed; it does not create an additional window. Also, include instructions to close the Web page window when you want participants to return to the main virtual classroom window.

Web pages are not well-suited for instructing participants on Web site navigation. This is because the facilitator does not control what links a participant clicks in the Web pages window. Therefore, there is no guarantee that participants will click the appropriate link, or that they will know what you are referring to on the screen. Screen sharing is much better suited for this type of activity. You can follow a screen-sharing activity with a Web-page push to allow participants an opportunity to practice navigating on their own.

Benefits

- This tool allows direct access to Web resources.
- It allows active interaction with information.
Limitations

- Learners cannot use this tool to push pages to one another. Instead, they can use the chat window to send the URLs.
- Not suitable for structured group “tours” because navigation is independent

Tips for using Web tours

- Always set a time limit.
- Ask participants to paste URLs they find in the group chat area.
- Send participants to a FAQ or help site they can use on the job, and have them bookmark the URL.
- Send participants to one Web site to explore. Send them to another Web site five minutes later. Have them contrast the two sites (for usability, content, marketing, and so forth.)
- Send participants to a Web application to perform a lab activity.
- Send participants to another virtual class entry in the catalog and have them register.

For more information, see “Web pages” on page 159.

2.2.5 Breakout sessions

In a traditional classroom, a teacher often divides the learners into groups to discuss a specific topic or to work on a group assignment. This concept can be used within a virtual classroom session, as well. At any moment, a breakout session can be started. After learners have entered the breakout session, it is as if they are in a different room. The facilitator or producer can add learners to breakout rooms manually or automatically. Or they can allow the learners to choose a room themselves. The facilitator or producer has the opportunity to walk through the various breakout sessions to see how the learners are doing.

A breakout session can be difficult for new users who aren’t particularly PC-savvy, since it involves managing multiple windows and working closely with all of the session tools. It is a good idea to include a teaching assistant in each breakout session. Alternatively, you can designate an experienced participant to be the group facilitator. Be sure to instruct participants not to close the main session window, and you may want to briefly explain how to switch back and forth. Provide specific instructions for how long people have in their breakout sessions, and when they are to close them.

Benefits

- This tool allows the facilitator to break the class into smaller groups.
It allows learners to discuss multiple topics at the same time, during the same virtual classroom session.

**Limitations**

- It requires good organizational skills.
- It is not effective when participants communicate using a separate telephone conference system.

**Tips for using breakout sessions**

- Carefully plan the use of breakout sessions.
- Experiment with individual learners in breakout sessions (each learner working alone for some time while the teacher virtually walks around).
- Pair inexperienced participants with experienced ones, and use the breakout session for one-on-one mentoring.
- Have a competition among teams to come up with the solution to a problem or a puzzle. The first team to report back to the facilitator with the correct answer wins.
- If you have participant groups attending jointly from conference rooms at remote sites, create breakout rooms as site workspaces. They can be used in parallel to the main session, to take notes on the whiteboard or for group teamwork.
- Break participants into “chat huddles” (breakout sessions that only use the chat feature) to quickly confer and report back a team response to a question or issue raised in the session.
- Use breakout sessions to create “study groups” that exist over the course of the entire main presentation.
- Use breakout sessions at the end of the main session for review. Have participants come up with a list of the top ten things they learned in the session, return to the main session, and share three with the whole group.

For more information, see “Effective use of breakout sessions” on page 164.

### 2.2.6 Outlines

The outline function allows the teacher to define the agenda of the virtual classroom session. The outline is usually defined before the start of the meeting. However, the facilitator or producer can modify the outline during the session.

The outline can either consist of static text lines or links to activities in the virtual classroom. You can, for example, add a line that launches a presentation on the
whiteboard. While creating the outline, you can add time estimates for each part of the outline.

**Benefits**
- This tool allows a more structured approach.
- It can be defined before the start of the session.
- It shows the learners a clear overview of the structure of the session.
- It guides the teacher.
- It provides an easy way to send learners to areas in the virtual classroom.
- It makes it easier to adhere to the time plan.

**Limitations**
- The outline has to be created online in the virtual classroom environment.
- The session may become too formal.

**Tips for using outlines**
- Try to use multiple virtual classroom tools during the session.
- Always discuss the outline at the start of a session (ask if items are missing).
- Minimize the outline screen while working in other areas of the virtual classroom.

### 2.2.7 Hand-raising

Hand-raising in the live virtual classroom is simply a button that a participant can push, resulting in an icon representing a hand appearing next to their name in the participants list. It can be used to indicate a positive response to a question, or as an indication that a participant would like attention of some sort.

The order in which participants responded can be viewed by clicking the header above the hand-raise column on the participant list; this sorts names in the order in which their hands were raised.

The number of raised hands is tallied for the facilitator in the margin below the participant list. The facilitator can erase this tally and lower all raised hands at any point.

**Benefits**
- This tool is not distracting.
- It is simple to use.
Limitations
- It is difficult to monitor with many learners.
- Notification is by icon: there is no audible notification.

Tips for using hand-raising
- If you use hand-raising to seek a response, ask simple questions such as “Raise your hand if you did not understand that”, rather than “OK, who understood that?”
- Even though it is fast, allow a little time for responses.
- Make sure participants lower their hands when they no longer seek attention. If they don’t, the producer or facilitator can do this for them.

2.2.8 Recording sessions

Virtual classroom sessions can be recorded. The sessions can then be replayed as if they are videos. Learners or instructors can replay a session at any time after the session has finished. Learners can access the recorded session by opening the initial link to the virtual classroom session.

The recorded session includes audio, video, text in the public chat area, and activities on the whiteboard (including screen sharing). The activities in the breakout sessions are not recorded.

A recorded virtual classroom session can be edited to add graphics or replace audio.

Benefits
- If people cannot attend a meeting, they can at least view the recorded session.
- The session can be used as an example for learners and teachers.
- It can be used to review teacher performance.
- Learners can review the session multiple times.
- Recorded sessions might be used as reference material in the future.

Limitations
- It provides no interaction between learner and class participants.
- Learners may decide not to attend the meeting if they know that it will be recorded.
- File sizes of recorded virtual classroom sessions can grow large.
- In IBM Lotus Virtual Classroom, a session must be replayed using Virtual Classroom; it cannot be replayed on a desktop workstation using a standalone media player. (Future releases may remove this limitation.)
- Activities in breakout sessions cannot be recorded

**Tips for recording virtual classroom sessions**
- Regularly check disk space if sessions are often recorded.
Let’s take a test drive

In this chapter we look at the features and functions of the product from three perspectives: learner, instructor, and administrator.

For a quick test drive written by a Virtual Classroom developer, see:

http://www-10.lotus.com/ldd/today.nsf/a2535b4ba6b4d13f85256c59006bd67d/bcbcf711b3aae60385256cbb004fed93?OpenDocument
### 3.1 The learner test drive

1. Log onto Virtual Classroom.

2. Getting started

   Virtual Classroom is a Web-based learning system of instructor-led classes. All online work is done through your browser.

   a. To enroll in courses, click the **Course Catalog** tab at the top of the Learning Home window, as shown in Figure 3-1. Click a course title in the course table to display its description.

   b. To view courses in which you are already enrolled, click the **My Sessions** tab in the Learning Home window. Click a course to display its description.

   c. When you attend a session, your instructor can present materials in the form of slides and documents, Web pages to visit, shared applications, and question-and-answer sessions.

   d. You can also chat with other learners and instructors in the class.

![Course catalog]

**Figure 3-1  Course catalog**

3. Permissions

   Learners have access to My Sessions, the Course Catalog, and the actual session in which they are enrolled. If they are granted permission by their instructor, they also have access to the classroom materials for editing and sharing in the session.
All users are automatically members of the learners group. All users removed from the instructor and administrator groups are still members of the learner group by default.

4. Enrolling yourself in a course

If you have registered in Virtual Classroom, you can enroll in courses. There are two ways to enroll:

a. Your administrator can enroll you in a course, whether its status in the course catalog is “Closed enrollment” or “Open enrollment.”

b. You self-enroll if the course has open enrollment.

You can enroll in a course up to one hour before it begins, as long as it is not full. Follow these instructions to enroll yourself.

a. In the Learning Home window, click the Course Catalog tab.

b. Find the course by clicking By Course Title or By Date in the left-hand navigator.

c. Click the course title. Details about the course are displayed, as shown in Figure 3-2 on page 37.

d. Find a session with a status of “Open enrollment” that is convenient for you. Click Enroll. An enrollment confirmation displays.

e. Click OK to confirm your enrollment.

f. If an assessment is included, you can either click Take Assessment, or take it at another time.

g. Click Close Window.

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</thead>
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Pre-session assessment required

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<thead>
<tr>
<th>Upcoming Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date and time</td>
</tr>
<tr>
<td>November 22, 2002 09:00 AM CST - 10:00 AM CST</td>
</tr>
</tbody>
</table>

Figure 3-2  Course details

5. Sessions
In Virtual Classroom, a session is a live online class in which all participants sign in at the same time. The beginning and ending times for a session are specified by the instructor. When learners attend a session, they see the Virtual Classroom window. Instructors and learners interact in the virtual classroom. For example, they can work with other participants in a shared application, present information on the whiteboard, or post chat messages.

A learner can participate in two kinds of sessions, each of which provides a different level of interaction. These are:

a. **Moderated** sessions. These are meant for small to medium-size classes which involve lots of interaction between instructors and learners.

b. **Broadcast** sessions. These are meant for large classes where the learners only need to watch and listen. There is no interaction between learners and instructors in these sessions.

6. Preparing for a session

You can attend a session of a course you have enrolled in, up to fifteen minutes before the session is scheduled to begin.

**Important:** Before you attend the session, test your audio and video.

a. In the Learning Home window, click the **My Sessions** tab.

b. Click the session title that you want to attend.

c. Under the Description section, click **View outline**.

d. Some courses include a pre-session assessment that you take before you can join a session. Some are required; others are not. Take a pre-session assessment by clicking on **Take assessment, as shown in Figure 3-3**.

e. After you complete the assessment, click **View answers** to see your results.
7. Attending the session
   a. In the Learning Home window, click the My Sessions tab.
   b. Click the session title that you want to attend.

   **Note:** Be sure you have completed any pre-session assessment requirements.

   c. Under Session information, click Attend session. If the session is not yet available, you will see a message.

   **Note:** Sessions are not available until fifteen minutes before their start time.

8. Unenrolling yourself from a session

   If your session allows self-enrollment, you can unenroll from a session you don't want to attend.
   a. In the Learning Home window, click the My Sessions tab.
b. Click the course title.

c. Under Session details, click **Unenroll**, as shown in Figure 3-4.

**Note:** If there is no Unenroll button, contact your site administrator to unenroll you.

d. When the confirmation displays, click **OK**.

e. Click **Back to My Sessions**.

**Note:** If your site supports e-mail notification, you receive an e-mail confirmation of your unenrollment.

<table>
<thead>
<tr>
<th>Unenroll?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unenroll from the following session?</td>
<td>Number</td>
<td>Date and time</td>
</tr>
<tr>
<td><strong>Title</strong></td>
<td><strong>Test #01</strong></td>
<td><strong>November 22, 2002 09:00 AM CST</strong></td>
</tr>
<tr>
<td>Domino Designer R6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 3-4  Unenrolling yourself from a session*

### 3.2 The instructor test drive

An instructor can attend a course, just as a learner can.

#### 3.2.1 Taking a course

1. Log onto Virtual Classroom.

2. The following tabs are available:
   - My Sessions
   - Course Catalog
   - Course Builder
   - Library

**Note:** Instructors have access to everything that is available to a learner, as well as the Course Builder and Library tabs, as shown in Figure 3-5 on page 41.
3. By default, the contents of the Course Catalog tab are displayed. Click on the title to see details about that course and to enroll.

4. The Course Catalog can be viewed by:
   – Course title, as shown in Figure 3-5
   – Date, as shown in Figure 3-6 on page 42

5. A session of a course can have one of the following date and time settings:
   – Date and time: actual date and time of an upcoming session
   – No upcoming session: a course has no available upcoming sessions
6. When you click a title in the course catalog, details about that course are displayed; see Figure 3-7 on page 43. Included in course details are the following:

- A description of the course.

- Upcoming sessions. This includes dates, times, instructors, and status for upcoming sessions of the course in which you can enroll. A session can have one of the following status settings:
  - Full: the session has no more room, so you cannot enroll.
  - Open enrollment: the session still has room, so you can enroll.
  - Closed enrollment: you are not allowed to enroll yourself in this session. Contact your Virtual Classroom administrator in order to get enrolled.
Chapter 3. Let’s take a test drive

7. Other options:
   - Click Help for context-sensitive help.
   - Click Change Password to change your password.
   - Click Log Out to exit Virtual Classroom.

3.2.2 Course Builder

When you build a new course as an instructor, you specify whether the course appears in the course catalog. You also enter the course catalog information, outline, schedule of sessions, and any assessments and question pool questions you plan to present for this course.

Click here to download the Sametime Print Capture Facility.

Click here to download the Sametime Print Capture Facility.
Creating new courses

1. In the Learning Home window, click the Course Builder tab. All the courses that you have built are displayed, as well as any others for which you are listed as an instructor; see Figure 3-8 on page 43.

2. Click New Course.

3. In the New Course screen, as shown in Figure 3-9, enter the following information:
   - Category: Select a category to associate with this course or enter a new category and click Create category. Courses are listed by category in the course catalog.
   - Course title: Enter a title for your course. Course titles do not have to be unique.
   - Course number: Enter the number of your course, up to 20 characters. If your organization doesn't use course numbers, leave this box blank. The course number appears in the course catalog.
   - Description: Enter a description of your course. This description appears in the course catalog.
   - Instructors: You automatically appear as the course instructor. You can also add and remove instructors. All instructors listed on this page can edit this course.

4. Click Create Course.

Figure 3-9 The new course screen
Editing course information
You can edit the catalog information for any course you create or for which you are listed as an instructor. The catalog information includes the course title and description, as well as the instructors listed for course.

1. In the Learning Home window, click the Course Builder tab. A list of courses is displayed that includes those you created as well as those for which you are listed as an instructor.

2. Click the title of the course you want to edit. As Figure 3-10 on page 46 shows, you can:
   - Edit visibility: specify whether the course appears in the course catalog and who can see it (everyone or administrators only).
   - Edit course catalog information: this includes the course title and description, as well as the names of the instructors listed for the course.
   - Edit the course outline: include the actual content of the course, the list of course activities and related materials.
   - Edit the schedule of sessions: reschedule sessions or change how you set up sessions. This includes the specific dates and times when the course will be taught.
   - Edit pre-session or in-class assessments. Assessments are course-related quizzes or evaluations related to the course which can be given before or during sessions. If you include assessments with your course, you can choose to score them and can also indicate whether learners are required to take them in order to enroll in the course.
   - Edit the question pool: this contains a collection of unscored questions that you can ask at any time during the course session.
3.2.3 About the Library

The Library page lets instructors create and save assessments, question pools, and questions to store in the library, as shown in Figure 3-11 on page 47. These can then be added to courses at a later time.

For example, your organization may have a standard course assessment (evaluation) that each instructor presents towards the end of a course session. If this assessment is stored in the library, then it is available for all instructors to use with their course.
You can change the view by clicking the left-hand navigator to choose what you want to work with: assessments, question pools, or questions. Questions display in this list by default.

Click on **Assessments**, **Question Pools**, or **Questions** to see details about the item that you are working with.

From this page, you can do the following:

- Create new assessments to store in the library
- Create new question pools to store in the library
- Create new questions to store in the library

![Figure 3-11   Viewing the Library page](image)

### 3.3 The administrator test drive

1. Log onto Virtual Classroom.
2. The following tabs are available:
   - My Sessions
   - Course Catalog
   - Administration

Administrators have access to everything that is available to a learner, as well as to the Administration tab, shown in Figure 3-12 on page 48.
3. The Administration page lets administrators:
   – Register users and manage user profiles
   – Manage the courses that are offered in the Virtual Classroom
   – Manage servers
   – Manage system-wide site settings

4. To select the area that you want to manage, click a view in the left-hand navigator.

3.3.1 Managing registered users and user profiles

The registered users, instructors, and administrators views let administrators register users and manage user profiles. From these views, you can do the following:
   ▶ Add and remove users
   ▶ Import multiple users from a text file
   ▶ Edit user profiles
   ▶ Search for user profiles
Adding users

Every Virtual Classroom user needs to be registered with the system before he or she can participate. You register a user by adding a user profile to the Virtual Classroom. All users are automatically added to the learner permissions group.

1. In the Learning Home window, click the Administration tab.
2. In the left-hand navigator, select Registered Users.
3. Click Add Users.
   - If your site uses a local Virtual Classroom directory, an Add Users screen displays with four columns in each row. If your site uses a corporate LDAP directory, an Add Users screen displays with a single column entry box.
4. In the Add Users screen, shown in Figure 3-13 on page 50, enter the following information for each user:
   a. Login. Enter a unique login ID. It can contain alphabet characters, numbers, dashes (-), and underscores (_), but spaces are not allowed.
   b. Display name. Enter the user's name as you want it to display to other users. Use a format that follows any conventions established at your site (last name first; first name first; nicknames; etc.).
   c. E-mail (optional). Enter the user's e-mail address. This is used to notify the learner of his or her enrollment status.
   d. Password. Enter a password. A secure password is mixed-case and contains numbers and punctuation, instead of entirely lowercase alphabetic characters.
   e. (Optional) If the new users are instructors or administrators, check the appropriate box under the Permissions heading. A user can be both an instructor and an administrator.
   f. Select an e-mail client for the users, if it is different from the default e-mail client.
   g. (Optional) Click the QuickPlace accessibility mode checkbox to enhance keyboard and screen reader accessibility.
   h. Select the broadcast server to use for broadcast sessions.
   i. Click Add Users to add your list of users.

When the Adding users confirmation screen displays, check to see if any users that you specified did not get added.
5. Click Back to User Administration.
### Add Users

**User information**

Use this form to register new users. Use the Tab key to move between fields. The ★ indicates required information.

<table>
<thead>
<tr>
<th>Login ★</th>
<th>Display name ★</th>
<th>Email</th>
<th>Password ★</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mike</td>
<td>Mike Ebbers</td>
<td><a href="mailto:mikeebb@us.ibm.com">mikeebb@us.ibm.com</a></td>
<td></td>
</tr>
<tr>
<td>2 Salm</td>
<td>Phil Salm</td>
<td><a href="mailto:salm@berbee.com">salm@berbee.com</a></td>
<td></td>
</tr>
<tr>
<td>3 Dan</td>
<td>Dan Noyes</td>
<td><a href="mailto:Dan.Noyes@newport.a">Dan.Noyes@newport.a</a></td>
<td></td>
</tr>
<tr>
<td>4 David</td>
<td>David Balague</td>
<td><a href="mailto:David_Balague@es.ibm">David_Balague@es.ibm</a></td>
<td></td>
</tr>
<tr>
<td>5 Balaka</td>
<td>Balsa Ganguly</td>
<td><a href="mailto:balakag@ggn.hcltech">balakag@ggn.hcltech</a></td>
<td></td>
</tr>
</tbody>
</table>

**Permissions**

All users are automatically added as **Students**. Check the boxes below to give these users additional privileges:

- [ ] Instructor
- [ ] Administrator

**E-mail client**

Specify the type of e-mail client available to these users:

- [ ] Lotus Notes

**QuickPlace accessibility mode**

- [ ] Enable QuickPlace accessibility mode to enhance keyboard/screen reader accessibility

**Broadcast server**

Choose the server for these users to use for broadcast sessions:

- [ ] lvcsession

---

*Figure 3-13  Adding users*
Removing users
Removing a user removes the user's profile from Virtual Classroom, as well as the permissions group to which the user belonged. Records of assessments and courses that a learner took remain in the system.

1. In the Learning Home window, click the Administration tab.
2. Click the user's login. The user's profile displays.
3. Click Remove User, as shown in Figure 3-14.
   If the user is an instructor and has any upcoming sessions, a message tells you that you cannot remove the instructor until the sessions have been reassigned. Click Edit next to any upcoming sessions and reassign these sessions.
4. When the Remove user confirmation appears, click Back to User Administration.

<table>
<thead>
<tr>
<th>Edit</th>
<th>Remove user</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Profile</td>
<td></td>
</tr>
<tr>
<td>Login name</td>
<td>Balaka Ganguly</td>
</tr>
<tr>
<td>Display name</td>
<td>Balaka Ganguly</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:balakag@gnhcitech.com">balakag@gnhcitech.com</a></td>
</tr>
<tr>
<td>E-mail client</td>
<td>Lotus Notes</td>
</tr>
<tr>
<td>QuickPlace accessibility mode</td>
<td>Off</td>
</tr>
<tr>
<td>Broadcast server</td>
<td>IncSession</td>
</tr>
<tr>
<td>Permissions</td>
<td>Instructor, Administrator</td>
</tr>
<tr>
<td>Upcoming teaching</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Date and time</td>
</tr>
<tr>
<td>Domino Designer R6</td>
<td>November 22, 2002 09:00 AM CST</td>
</tr>
</tbody>
</table>

Figure 3-14 Removing a user

Importing multiple users from a text file
You can add new users by importing files from outside Virtual Classroom.

Preparing text files
1. If your site uses a local Virtual Classroom directory, use the following guidelines to create a text file with the member information you want to import. Each row of the file must contain the following fields with information for each member: login name, display name, e-mail address, and password. See the examples at the end of this topic.
Separate fields with a comma. The login name cannot have spaces. The login name, display name, and password cannot be blank. If you omit an e-mail address, insert a comma in its place.

2. If your site uses an external directory, each row in the text file must contain the login name of a user.

Importing text files
1. In the Learning Home window, click the Administration tab.
2. In the left-hand navigator, select Registered Users.
3. Click Import.
4. Enter the name and path of the file that you want to import, or click Browse to find it, as shown in Figure 3-15 on page 53.
5. Click the checkbox next to the groups to which you want to add the imported users. They get automatically added to the Learner group.
   
   Note: Users can be members of both the instructor and administrator groups.
6. Select an e-mail client.
7. Select a broadcast server to use for broadcast sessions.
8. Click Import users.
   
   When the Importing users confirmation screen displays, check to see if any users that you specified in the text file did not get added.
9. Click Back to User Administration.
Chapter 3. Let's take a test drive

**Editing user profiles**

You can change a user's display name, password, broadcast server, permissions, and e-mail address in the user's profile. You cannot change the user's login.

1. In the Learning Home window, click the **Administration** tab.
2. In the left-hand navigator, select the type of user profile that you want to edit (registered users, administrators, or instructors).
3. Click the user's login. The user's profile is displayed.
4. Click **Edit**.
5. Edit the settings that you want to change, as shown in Figure 3-16 on page 54.

---

**Figure 3-15  Importing a list of users from a file**

Select the file containing the users to import. Each record should be on a separate line in the file. Each line should contain a distinguished name (e.g., the login name) of the user to add. Select the file containing the users to import. Each line should contain a login, display name, email, and password.

---

**Permissions**

All users are automatically added as **Students**. Check the boxes below to give these users additional privileges:

- Instructor
- Administrator

**E-mail client**

Specify the type of e-mail client available to these users:

- **Lotus Notes**

**QuickPlace accessibility mode**

- Enable QuickPlace accessibility mode to enhance keyboard/screen reader accessibility

**Broadcast server**

Choose the server for these users to use for broadcast sessions:

- **IvcSession**
6. Click **Save changes**.

**Note:** If a user is scheduled to teach an upcoming class, you cannot remove the check from the instructor's permissions checkbox.

![Figure 3-16   Editing a user profile](image)

<table>
<thead>
<tr>
<th>Login name</th>
<th>Mike Ebbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Mike Ebbers</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:mikeebb@us.ibm.com">mikeebb@us.ibm.com</a></td>
</tr>
<tr>
<td>Password</td>
<td>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</td>
</tr>
<tr>
<td>E-mail client</td>
<td>Lotus Notes</td>
</tr>
<tr>
<td>QuickPlace accessibility mode</td>
<td>![checkbox] Enable QuickPlace accessibility mode to enhance accessibility</td>
</tr>
<tr>
<td>Broadcast server</td>
<td>![drop-down] lvcsession</td>
</tr>
</tbody>
</table>
| Permissions  | ![checkbox] Instructor
|              | ![checkbox] Administrator |

**Searching for a user profile**

A user must be registered in order to appear in your search results.

1. In the Learning Home window, click the **Administration** tab.
2. In the left-hand navigator, select the type of user that you want to find (registered users, administrators, or instructors).
3. Click **Search**.
4. Enter the login or display name of the user that you want to find. You can specify only the beginning characters in the field value. The search results are based on all matches with those beginning characters.
5. Click **Go**. The search results display beneath the query statement.
3.3.2 Managing the course catalog

The Course Catalog view of the Administrator page lets administrators manage all the courses offered in their Virtual Classroom site, as shown in Figure 3-18 on page 56. You can change how information displays within the view by:

- Clicking the course title to see details about that course and the sessions that are offered.
- Selecting **Hide obsolete**. This excludes from the view any courses that have been removed from Virtual Classroom.

A course can have one of the following status settings:

- Not yet available: the instructor has not published the course to the catalog yet.
- Active: the instructor has published the course to the course catalog, and learners can be enrolled.
- Obsolete: the course has been marked obsolete in Virtual Classroom and no longer displays in the course catalog. It can be restored.

From the Course Catalog page, you can do the following:

- Enroll learners in a session
- Un-enroll learners from a session
- Restore courses
- Change course instructors
- Schedule sessions
- Change or remove scheduled sessions
3.3.3 Managing servers

The Servers view of the Administration page lets you view all your registered servers by their host names, as shown in Figure 3-19 on page 57. Servers can be the following types:

- Catalog server: the Domino-based database for managing users and courses. This server is always grouped on the same machine as the Content server.
- Content server: the QuickPlace-based server that contains the course content. Each course contains outlines and course materials.
- Session server: the Sametime-based server where sessions take place.

You can have the Catalog server and the Content server sharing one server and the Session server on another. You can have a multiple number of Session servers, but you can only have one Catalog/Content server.
3.3.4 Managing site settings

The Site Setting view of the Administration page displays the number of registered users at this site as well as the system-wide settings in Virtual Classroom, as shown in Figure 3-20. Make whatever changes you want to the default settings on this page and then click Save Changes, as shown in Figure 3-21 on page 58.

From the Site Settings page, you can do the following:

- Find the number of registered users
- Allow learners to register themselves
- Set a default invited server
- Set a default e-mail client
- Turn off e-mail notifications
- Change LDAP directory settings
<table>
<thead>
<tr>
<th><strong>Edit Site Settings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of registered users</strong></td>
</tr>
<tr>
<td><strong>Session notification</strong></td>
</tr>
<tr>
<td><strong>Default e-mail client</strong></td>
</tr>
<tr>
<td><strong>Default broadcast server</strong></td>
</tr>
<tr>
<td><strong>Directory type</strong></td>
</tr>
<tr>
<td><strong>Registration</strong></td>
</tr>
</tbody>
</table>

*Figure 3-21  Editing site settings*
Inside the IBM Lotus Virtual Classroom 1.0

IBM Lotus Virtual Classroom version 1.0 is the result of a clever combination of different IBM Lotus workgroup technologies (namely Sametime, QuickPlace, and Domino) which have been adapted to create a new product with a unique purpose: live virtual learning sessions.

In this chapter we describe the functionality that each separate product provides to form the virtual classroom.
4.1 Architecture overview

The IBM Lotus Virtual Classroom is made up of four basic application components: the catalog server, the content server, the session server, and live Virtual Classroom additions; refer to Figure 4-1.

1. **Catalog server** – This is the access point to Virtual Classroom. The Domino components that make up the Catalog server hold all basic information on course catalog, scheduling, enrollment, authoring, user profiles, poll authoring and so on. Depending on your setup, it also performs user access authentication. It is hosted on the Management Server.

2. **Content server** – This holds the course materials in QuickPlace; the course outlines are developed here. A QuickPlace is created for every new course. It is hosted on the Management Server.

3. **Session server** – This is the front-end and engine behind the live sessions. This is where learners and teachers interact, and where material is delivered. It is hosted on a Classroom Server. There may be multiple Classroom servers, depending on the deployment.
4. **Live virtual classroom additions** – A set of Java class files, HTML files and APIs which glue together the other three main components.

## 4.2 Domino

The Lotus Domino server is at the core of the product. Apart from being the main access point to Virtual Classroom, it is where most pre-session tasks take place. This involves four databases in the Catalog server; refer to Figure 4-2.

![Figure 4-2 Databases involved in the Domino Catalog server](image)

Table 4-1 lists the databases in the Catalog server, as well as their paths and purpose.

**Table 4-1 Databases in the Catalog server and their paths and purpose**

<table>
<thead>
<tr>
<th>Database</th>
<th>Path on server</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domcfg.nsf</td>
<td>C://domino/data</td>
<td>This provides the Domino server with the path to a login page.</td>
</tr>
<tr>
<td>VCMMLogin.nsf</td>
<td>C://domino/data</td>
<td>The login page is held here.</td>
</tr>
</tbody>
</table>
Using IBM Lotus Virtual Classroom

4.2.1 Domcfg.nsf and VCMMLogin.nsf databases

When a user accesses the Virtual Classroom using a URL, the Management server presents a login screen. The Virtual Classroom install sets this up by creating a Login Form Mapping document in a database named domcfg.nsf in the Domino server Data directory.

<table>
<thead>
<tr>
<th>Database</th>
<th>Path on server</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>names.nsf</td>
<td>C://domino/data</td>
<td>The Domino Directory holds a list of all registered users and categorizes users into three groups: learners, instructors, and administrators.</td>
</tr>
<tr>
<td>LDAP</td>
<td>External - not on server</td>
<td>[Optional] The Virtual Classroom can be used with an external LDAP server which holds the details of all registered users. When a user registered within the LDAP server first logs in to the Virtual Classroom a profile document is created for them, while their user name and details remain in the LDAP server.</td>
</tr>
<tr>
<td>vcmm.nsf</td>
<td>C://domino/data</td>
<td>This contains profiles for each registered user of the Virtual Classroom.</td>
</tr>
</tbody>
</table>

**4.2.1 Domcfg.nsf and VCMMLogin.nsf databases**

When a user accesses the Virtual Classroom using a URL, the Management server presents a login screen. The Virtual Classroom install sets this up by creating a Login Form Mapping document in a database named domcfg.nsf in the Domino server Data directory.

**Login Form Mapping**

<table>
<thead>
<tr>
<th>Site Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Server type:</td>
<td>Primary Server</td>
</tr>
<tr>
<td>Comment:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Login Form</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Database file name:</td>
<td>LearningSpaceVirtualClassroom/vcmmlogin.nsf</td>
</tr>
<tr>
<td>Target Form name:</td>
<td>vcmmlogin</td>
</tr>
</tbody>
</table>

*Figure 4-3 Login Form Mapping document*

In this way, all users are redirected to a database called VCMMLogin.nsf, in the C://domino/data/LearningspaceVirtualClassroom directory.
All users access the system through the login screen, shown in Figure 4-4. It uses the Domino/WebSphere session-based cookie.

If the site has an external directory and the user can authenticate, then the user's personal data is captured from the external LDAP directory server and copied to a local user profile held in the VCMM.nsf database (see 4.2.2).

In a deployment of the Virtual Classroom that uses the local Domino Directory for authentication, the user name and password is checked against the names.nsf database of the server.

**Attention:** Customization of the databases outlined in this chapter is not supported by IBM Lotus. Should you want to modify the design of the database, be aware that when upgrading to a new version, you are likely to lose your changes.

### 4.2.2 VCMM.nsf database

Once authentication is successful, the user is sent back to VCMM.nsf database. This is in the C://domino/data/LearningspaceVirtualClassroom directory. It is the gateway database where most things happen, including the following:

- It stores *user profile documents* in the User Profile form. This is a Pass-through HTML type form, which stores the following information: Login name, Display name, e-mail, e-mail client, QuickPlace accessibility mode, Broadcast server, Permissions (or role: learner, instructor, administrator), and a list of upcoming teaching sessions, if applicable.
- It creates, holds and stores *assessments, questions, and question pools*.
- It creates and stores *course details* using the Course form. From this form, it allows you to develop the course outline, giving you access to (or creating) the
appropriate QuickPlace. It also allows you to schedule a session, or gives access to question and assessment development.

- It allows you to schedule course sessions with the Schedule Sessions form.
- It stores references to Library contents, which are stored in the course’s QuickPlace.
- It holds the course Catalog, which is the gateway to selecting and enrolling in sessions.
- It creates enrollments to scheduled sessions.
- It creates practice sessions, by initiating the session process and creating a session in the Session server.
- It stores and displays both the learner and instructor session details in the Session form. From this document, sessions are started by the instructor and accessed by the learners.
- This database also includes a number of agents, including CreateSessionScheduled, the agent responsible for creating sessions. You will notice that this agent may issue errors to the Domino console. This is due to the fact that there are no sessions to be created. You can disregard these error messages.

See Chapter 3, “Let’s take a test drive” on page 35 for a user view of the items listed above.

**Important:** Notice that VCMM.nsf contains a number of documents which display as UITEXT in some views. These documents, accessible from the PublicUIChoiceLookup and ALL views, make up the IBM Lotus Virtual Classroom user interface, and should not be deleted or modified.

### 4.2.3 Utility.nsf

The Virtual Classroom install establishes a third database in the system, utility.nsf. This database is installed in the Session server. This database contains forms which add live virtual classroom functions to Sametime. These are:

- The pages for importing a new whiteboard file during your session
- The session details that you see during the session
- The page used for changing the session duration
- A list of supported files
- The splash screen used when loading the session; see Figure 4-5.
4.3 QuickPlace

QuickPlace is where all course materials are stored. Every time a course is created in the VCMM.nsf database, a new QuickPlace is created on the management server under C://domino/data/quickplace with a directory name format such as VCMM_1_QP_24686081.

Once courses become obsolete, administrators may want to remove or archive old QuickPlaces manually from the Catalog server. The directory name code (24686081, in this example) is unique, and does not relate to the course title or code assigned to the course through the Course Builder process. The directory under which course content is stored can be found on the course details page.

**Attention:** Customizing QuickPlace back-end components of Virtual Classroom is not supported and could potentially impact your system integrity.
Using IBM Lotus Virtual Classroom

Virtual Classroom extends QuickPlace by adding a new front-end, including new HTML pages such as:

- SCREENSHAREFORM.HTML, which creates a Screen share outline entry.
- ASSESSFORM.HTML, which creates an Assessment outline entry.
- BREAKOUTSESSIONFORM.HTML, which creates a breakout session outline entry.

More detailed information on QuickPlace customization and integration with other environments can be found in Customizing QuickPlace, SG24-6000.

**Tip:** You can archive obsolete courses manually by using QuickPlace functions, as follows.

Mark the courses as obsolete:

1. Log in to the Virtual Classroom as an Administrator.
2. Click the **Administration** tab.
3. Select **Course Catalog** from the menu to the left of the screen.
4. Select the course to be archived by clicking its name.
5. Note the directory as shown on the course details screen (see Figure 4-6).
6. Click **Mark as Obsolete** in the course details screen.

Now archive the QuickPlace:

7. Stop the Virtual Classroom server (**Start>Lotus Applications>lvc>Stop**).
8. Find the QuickPlace directory under \C://domino/data/quickplace.
9. Archive to another location, or delete.
4.4 Sametime

Sametime resides in the session or classroom server. It is the class delivery tool in which learners and instructors interact with each other. IBM Lotus Virtual Classroom includes additional functions beyond the standard Sametime product.

4.4.1 Anonymous access to Sametime meetings

The Sametime Meeting Service default setup allows anonymous access for Web users, permitting an Internet user to login to the Sametime server without providing a user name or password. The Internet user could then attend Sametime meetings. This is useful when organizations want to hold online meetings for outside clients or anyone not registered in the Sametime Directory.

Anonymous access may be appropriate for ad hoc online meetings. Denying such access in a deployment of Virtual Classroom might be desirable, however.

4.4.2 Denying access to anonymous users

Denying access can be done by changing the access control level setting for the anonymous entry in the Sametime Meeting Center database ACL. An administrator can select the database icon and click File/Database/Access Control. Figure 4-7 on page 68 displays how the anonymous entry can be changed to have a No Access level. Set the -Default- entry to No Access.
Figure 4-7 Setting access control to the Sametime Meeting Center

Attention: Customizing Sametime back-end components of Virtual Classroom is not supported and could potentially impact your system integrity.
Implementing Virtual Classroom

In this part, we discuss how to plan the implementation of IBM Lotus Virtual Classroom in an organization. We provide a step-by-step installation guide with tips and useful advice. We also give a detailed account of how to manage users, schedule courses, and organize enrollments.
Planning a Virtual Classroom deployment

In this chapter, we examine some of the issues that need to be considered before deploying IBM Lotus Virtual Classroom.

There is no “best” way to establish Virtual Classroom services, but the factors discussed in this chapter will enable you to start planning a deployment that suits your business needs.
5.1 Designing an appropriate network topology

Before being able to design a suitable network topology for the deployment of the Virtual Classroom, we need to determine how the product is to be used. Consider:

- Who is going to use our live virtual classroom?
- How do we intend to use our live virtual classroom?
- What do we intend to use our live virtual classroom for?
- What is our current network topology?

These questions need to be discussed extensively and transparently between the deployment stakeholders (see Chapter 8, “Roles and responsibilities” on page 125).

If deployment is in answer to an internal training need and is to run on a LAN, the network topology is going to be relatively simple. If, however, the deployment needs to connect users on low bandwidth connections to LAN users behind a firewall, the network topology is going to be much more complex. This will have a major impact on hardware requirements and support.

Since the Virtual Classroom visible (session) server is based on Sametime technology, you can examine existing Sametime deployment documentation and expertise. An excellent discussion of complex Sametime deployment can be found in Lotus Sametime 2.0 Deployment Guide, SG24-6206; Chapter 6, “Deploying Sametime on the Internet” will be of particular benefit.

5.2 Servers

A basic deployment of IBM Lotus Virtual Classroom requires two separate servers: a management server that hosts the catalog (Domino) and the content (QuickPlace) servers, and a classroom server that hosts the session (Sametime) server. Large or complex deployments will see the need for multiple classroom servers. It is unlikely that there will be a need for multiple management servers, and installation of additional management servers is not documented for the current version of IBM Lotus Virtual Classroom (version 1.0). Considering that the management server load cannot be spread over several machines, it is worth understanding the functions of the two servers.

Note: For an in-depth discussion of the architecture of the Virtual Classroom, refer to Chapter 4, “Inside the IBM Lotus Virtual Classroom 1.0” on page 59.
5.2.1 Management server load

The management server has a relatively light processing load. The QuickPlace components of IBM Lotus Virtual Classroom are used to store content. Each course has its own QuickPlace database. Content from a QuickPlace is uploaded to the classroom server an hour before the session is scheduled, by an agent. As such, any given course (QuickPlace) is generally only used by one instructor loading materials at a time. The only likely pressure on the server is in disk space, which can be expanded in a live deployment.

5.2.2 Classroom server load

The classroom server is subject to a much higher processing load than the management server, as it will experience a high level of concurrent usage. Multiple classroom servers can therefore be deployed (refer to the product installation documentation for further information). The specification and number of servers required for the classroom component of the Virtual Classroom will be a factor of:

- The number of concurrent users
- The use of audio and/or video tools
- The use of heavy files in the outline

As a general guide, every classroom server can realistically support 225 concurrent users in data only mode and approximately 35 concurrent users when using video, audio and data over IP. Care in scheduling sessions can therefore see even a deployment with only one classroom server fulfilling a great training need.

The costs of deploying each additional classroom server include:

- Server (hardware and software)
- Installation and ongoing maintenance
- Networking

As more classroom servers are added, however, significant benefits will be seen. Performance for WAN deployment can be increased by housing servers close to distant groups. The use of audio and video becomes more viable for larger groups, bringing significant savings in telephone and video conferencing costs. Critical sessions can be “ring fenced” on a dedicated server.
5.3 Client

Even the fastest server setup and network topology will deliver a poor level of performance during sessions if the client setup is poor. Proper planning is vital in order to be able to deliver Virtual Classroom services to the appropriate client setup.

5.3.1 Client PC

The client PC provides all of the power required to send and receive Sametime awareness data, instant messages, audio, and video services. All audio and video code processing is performed on the client PCs. The Virtual Classroom classroom server does not do any manipulation of the contents of data packets sent through it.

The local PC also executes the signed Java applets from the classroom server used for providing the session interface.

Given these functions, the client PC must have sufficient power to support demands placed on it by the Virtual Classroom. Almost any current Windows PC with a network connection will be able to handle text chatting, and the object sharing and whiteboard sessions. Slow PCs will take a considerable length of time to start Java applets, however. The demands on the client PC rise sharply when audio and video compression and handling for these functions are introduced.

Ideally, client PCs will run on a Pentium III processor or higher and have memory of 128Mb or higher. The performance of the instructor’s PC is particularly important to the performance of the session for all users, and it is recommended that their PCs have memory of at least 256Mb.

Restriction: The IBM Lotus Virtual Classroom supports client PCs running only Windows (98 Second Edition, NT, 2000, or XP Professional).

5.3.2 Client networking

Every IBM Lotus Virtual Classroom service is only as good as its connection to the users. When planning your live virtual classroom deployment, keep your users’ networking capacity in mind. Consider questions such as: Are you using low-bandwidth connections from remote sites? Are all your users in one site, or are they scattered across the world? How congested is your current network?

Table 5-1 on page 75 gives an approximate outline of what session functions can realistically be used at different network connection speeds. Keep in mind that
every network is different, and issues such as network traffic congestion and line speed fluctuations are not considered here.

Table 5-1  Recommended bandwidth and performance levels for classroom session functions

<table>
<thead>
<tr>
<th>Line Speed (Kbps)</th>
<th>Text chat&lt;1 Kbps</th>
<th>Broadcast Session 16-128 Kbps</th>
<th>Screen Share/Whiteboard 3-64Kbps</th>
<th>2-way Audio 6.3 or 64 Kbps</th>
<th>2-way A/V 16-128 Kbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;56K</td>
<td>Good</td>
<td>Audio OK, video not recommended</td>
<td>View OK</td>
<td>OK - listen only broadcast</td>
<td>Slow 1 fps</td>
</tr>
<tr>
<td>56K-64K</td>
<td>Good</td>
<td>Acceptable</td>
<td>Live screen share OK in limited size, low colors</td>
<td>OK if used with moderated microphone</td>
<td>Marginal</td>
</tr>
<tr>
<td>128K-300K</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Reasonable</td>
</tr>
<tr>
<td>&gt;300K</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
</tbody>
</table>

Note: Even very low-speed (28.8 Kbps or lower) connections will function very well for online status and text chat functions. Instant message data transmissions are usually measured in mere bytes (far less than 1,000 characters per message). Any lag encountered usually occurs because of routing delays, rather than the actual time required to transmit the data.

**Downloading the Sametime Connect client**

The Virtual Classroom session is delivered to users through the Sametime Connect client, a Java applet run in their browser. The client is about 4MB in size. For those working on a low-bandwidth connection, it is strongly recommended that the Sametime Connect client be downloaded well in advance of a session. This can be done by going to My Sessions and following the link titled “Click here to test your set-up before attending your first session”.

**5.3.3 Client browser**

Although Netscape 4.7 is supported, performance in practice is faster using Internet Explorer 5.5x or Internet Explorer 6.0 with service pack 1.

For up-to-date browser downloads, visit:

http://www.microsoft.com/windows/ie
Chapter 6. Installing Virtual Classroom

This chapter contains information about installing IBM Lotus Virtual Classroom, including:

- Supported server configuration
- System requirements
- Installation overview
- Management server installation
- Classroom server installation
- How to access Virtual Classroom
6.1 Prerequisite knowledge

The installation process requires knowledge of Lotus Domino and its components. It is strongly recommended that readers be familiar with the concepts covered in the following documents:

- *Lotus Notes and Domino R5.0 Security Infrastructure Revealed*, SG24-5341
- *Getting the Most From Your Domino Directory*, SG24-5986
- Virtual Classroom Help documentation

Redbooks are available online at:

http://www.ibm.com/redbooks

6.2 Supported server configuration

The recommended installation of IBM Lotus Virtual Classroom is on two separate servers: a management server and a classroom server.

6.2.1 The management server

The management server consists of a Catalog server and a Content server.

- The Catalog server maintains information about the available classes, the scheduled sessions, learner enrollments in scheduled sessions, the instructors’ assignments to deliver scheduled sessions, and administrative information.
- The Content server stores the course materials and outlines that are used during the scheduled sessions.

The management server requires the installation of:

- Lotus Domino 5.0.10
- Lotus Notes and Domino Administrator clients 5.0.10
- IBM Lotus QuickPlace 3.0
- IBM Lotus Virtual Classroom Catalog server and Content server

**Note:** Throughout this chapter we shall use an example management server called itsolvcat.company.com.
6.2.2 The classroom server

The classroom server consists of a Session server which provides the scheduled sessions to the instructors and learners. The classroom server requires the installation of:

- Lotus Domino 5.0.10
- IBM Lotus Sametime 3.0
- IBM Lotus Sametime 3.0 Service Pack 1
- IBM Lotus Virtual Classroom Session server

**Note:** Throughout this chapter we shall use an example classroom server called itsolvcsess.company.com.

**Important:** The license agreement for IBM Lotus Virtual Classroom specifically states that you are authorized to install and use Sametime, Domino or QuickPlace servers solely and exclusively for the purpose of supporting the functions of the IBM Lotus Virtual Classroom product. The right to use any other IBM programs which may be provided in connection with the product are not applicable to the Program and you may not use such IBM programs unless you acquire separate licenses.

Even then, it is not supported to use a QuickPlace/Catalog server as a QuickPlace-only server, or to use the Sametime/Session server as a Sametime-only server. You should set up separate servers for those functions.

6.3 System requirements

**Important:** For a detailed examination of system requirements, refer to Chapter 5, “Planning a Virtual Classroom deployment” on page 71.

Two servers that meet the following hardware and platform prerequisites are required.

6.3.1 Server hardware

- CPU: Pentium® II 400 MHz or higher
- Memory: A minimum of 1GB RAM
- Disk space: A minimum of 1GB free disk space
Network: Local Area Network (LAN) interface for TCP/IP

Display: A minimum of 256 colors. The following problems can occur if the Session server has a display color setting of 256 colors or less:
- The images in Whiteboard attachments do not display correctly on the Whiteboard.
- Users cannot save a Whiteboard.
- The Meeting Room Client opens with a gray Whiteboard.
- Screen-sharing buttons are disabled in the Meeting Room Client.
- Audio/video features do not work.
- When a user attends a session, an additional Meeting Room Client opens in a different window and flashes periodically.
- The license utility fails to run.
- Shortly after these problems appear, sessions may fail to become active.

### 6.3.2 Server software

Servers must run one of the following operating systems:
- Windows NT 4.0 Server with Service Pack 6A
- Windows 2000 Server or Advanced Server with Service Pack 2

**Note:** The servers do not need be configured identically, but they must be set to the same time zone and date/time format. Both servers should be set, as closely as possible, to the same time. Failure to do this will result in errors such as:
- Shortened Virtual Classroom sessions.
- Users not being allowed to enter a session until after the scheduled session start time.

### 6.3.3 Client compatibility

All IBM Lotus Virtual Classroom users will require a PC and browser satisfying the following criteria:

**Operating system:**
- Windows (98 Second Edition, NT, 2000, or XP Professional)

**Browsers:**
- Microsoft Internet Explorer 5.01 (learner role only), 5.5x, or 6.0 with Service Pack 1
- Netscape Navigator 4.7x
6.3.4 Important notes and assumptions

Before we start installing, here are some important considerations.

Entries for notes.ini
For recommendations from Lotus Development about values for notes.ini, see:
http://www-10.lotus.com/ldd/today.nsf/a2535b4ba6b4d13f85256c59006bd67d/06f93a532022e92085256cbc0057f59370openDocument

Firewalls
The installation process outlined in this chapter assumes that all servers in the IBM Lotus Virtual Classroom "server bed" are within the same firewall, and generally on the same network router segment. Clients will likely be connecting from outside the network segment where the servers reside.

Virtual Classroom can be configured to operate in a 512 encryption environment. The configuration procedures are outlined in the documentation for Sametime and QuickPlace.

Server IP address
You cannot change the IP address of a server after installing IBM Lotus Virtual Classroom.

Supported version of Domino
The only supported version of Domino is 5.0.10. Other versions of Domino have not been tested with the IBM Lotus Virtual Classroom.

Using an existing Domino domain
IBM Lotus Virtual Classroom cannot be installed in an existing Domino domain, or on an existing Domino server. An existing Domino server can be used as an external LDAP directory, however, providing that the server is running the LDAP task.

Using an existing QuickPlace server
IBM Lotus Virtual Classroom must be installed on a new QuickPlace Server.

Note: Instructors need a minimum of 256MB RAM in order to deliver a course that has breakout sessions.
Using an external LDAP directory
An external LDAP directory server cannot run on the same machine as IBM Lotus Virtual Classroom.

Setting the server screen resolution
Make sure that your screen resolution is set to at least 256 colors, which is required by the InstallShield installation package. If you keep a lower resolution, the installation of QuickPlace, Sametime, and IBM Lotus Virtual Classroom may exit unexpectedly after asking you for the setup language.

6.4 Installation overview

Attention: A review of the technotes in “Technotes” on page 241 would be helpful in anticipating installation problems and their solutions.

In addition, Appendix F, “Troubleshooting” on page 269 has troubleshooting tips on installation and operation of IBM Lotus Virtual Classroom.

The components of the IBM Lotus Virtual Classroom should be installed in the following order:

The Management server
1. Install and configure Domino server.
2. Install and configure Lotus Notes and Domino Administrator clients.
3. Pre-register the Session server.
5. Configure the directory.
6. Install QuickPlace.
7. Install Virtual Classroom Catalog server and Content server.

The Classroom server
1. Install and configure Domino server.
2. Install Sametime.
4. Install Virtual Classroom Session server.
6.4.1 Before you begin

1. Disable any Web servers running on the machines (Microsoft IIS, for example).

2. Use lowercase when naming servers.
   For example, use:
   itsolvvc-sess.company.com
   and not:
   LVC-sess.company.com

3. The servers must have a fixed IP address

   **Important:** After installing Virtual Classroom, you cannot change the IP address of a server. If you do, you may receive a “Page not found” error.

4. If you are using Windows 2000, make sure the computer’s Network Identification contains the DNS domain name (itsolvvc-sess.company.com, for example, and not simply: lvc-sess). You can get to Network Identification by right-clicking the My Computer icon, selecting Properties, and clicking the Network Identification tab.

   **Note:** The name that you choose for your server’s Network Identification will be reflected in the Domino server name.

5. Both servers must be registered in the Domain Name System.

   **Tip:** As a temporary workaround, you can create entries in the local hosts files of these computers and every computer that someone uses to connect to them. For example, add lines like these to C:\WINNT\System32\Drivers\etc\hosts (for Windows NT, 2000, and XP Professional) or C:\Windows\hosts (for Windows 98):
   19.168.60.5 itsolvvc-cat.company.com catalog
   19.168.60.6 itsolvvc-sess.company.com session

   Substitute your computers’ names and TCP/IP addresses.

6.4.2 Planning user management

There are two ways to manage user access to the IBM Lotus Virtual Classroom. You should carefully consider which solution you wish to implement before installing the product.
Using an external LDAP directory server
If you have an LDAP-accessible directory server that stores the user names and Web passwords for your users, you can configure your deployment to make use of this external LDAP directory server.

Examples of external LDAP directory servers include:
- A Domino server that is running the LDAP server task
- IBM Directory Server (formerly known as IBM SecureWay Directory Server)
- iPlanet Directory Server

Using the Domino Directory
If you do not have an external LDAP directory server, you will have to register each user in the IBM Lotus Virtual Classroom internal directory, and establish scheduled replication between the two Domino servers. There are two ways to register users:
- Administrator-based registration (default)
  An administrator registers users, assigns initial passwords, or imports a list of users via a text file.
- Self-registration
  This allows users to pick their own user names and passwords.

**Important:** Your choice of user management will affect some of the decisions you make during the installation process. Refer to Chapter 7, “User management” on page 113, for an overview of the different ways of registering users.

6.5 Management server installation
The instructions in this section relate to the installation of the Catalog and Content server components of the IBM Lotus Virtual Classroom.

6.5.1 Install and configure the first Domino server
The foundation of a management server is a Domino server.

**Installing Domino server**
- Start the Lotus Domino 5.0.10 Server installation program (setup.exe) on the management server (itsolvc-cat.company.com):
<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>License Agreement</td>
<td>Read the license agreement. Click <strong>Yes</strong>.</td>
</tr>
<tr>
<td>Name and Company name</td>
<td>Enter your name and company name. Do <em>not</em> check Partitioned Server Installation. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Program Folder and Data Folder</td>
<td>Do <em>not</em> change the default Program Folder installation directory from C:\Lotus\Domino. Do <em>not</em> specify the same directory for both the Program Folder and Data Folder.</td>
</tr>
<tr>
<td>Setup type</td>
<td>Keep the default setting of Domino Application Server. Optional: Click <strong>Customize</strong>. Highlight Data Files and click <strong>Change</strong>. Clear the check boxes for Modem Command Scripts and Readme. Click <strong>Continue</strong>. Clear the check box for DECS. Keep the default setting for “Domino as an NT service.” Highlight Domino Data Files and click <strong>Change</strong>. Clear the check box for Teamroom. Click <strong>Continue</strong>. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Program Folder</td>
<td>Changing the default folder name from Lotus Applications is optional. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Installation program copies files</td>
<td>When the installation is complete, click <strong>Finish</strong>.</td>
</tr>
</tbody>
</table>
**Important:** You must start the Domino server and IBM Lotus Virtual Classroom the same way—either manually using the Start menu, or as NT Services.

If you wish to set the Domino server to start automatically when the computer starts, follow these steps:

1. Start Services (for Windows NT, click **Start** -> **Control Panel** -> **Services**; for Windows 2000, click **Start** -> **Programs** -> **Administrative Tools** -> **Services**).
2. Double-click **Lotus Domino Server**.
3. Set the Startup Type to Automatic.
4. Click **OK**.

Close Services.

### Configuring the Domino server

- First rename KVOOP.EXE to KVOOP.EXE-OFF in the Domino program directory (C:\Lotus\Domino).
- Start the Lotus Domino Server (**Start** -> **Programs** -> **Lotus Applications** -> **Lotus Domino Server**). The four-step setup process begins. Refer to Figure 6-1 on page 89 as you read through the steps.

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a New Domino Server</td>
<td>Keep the default setting of First Domino Server and click the &gt; button.</td>
</tr>
<tr>
<td>Select a Setup Method</td>
<td>Choose <strong>Advanced Configuration</strong> and click the &gt; button.</td>
</tr>
<tr>
<td>Server Audience — Advanced Configuration</td>
<td>In the Web Browsers section, check the HTTP check box. A new section appears - select the <strong>Web Applications</strong> radio button. In the Internet Mail Packages section, check the <strong>SMTP</strong> check box. In the Internet Directory Services section, check the <strong>LDAP</strong> check box. Click the &gt; button.</td>
</tr>
<tr>
<td>Step/screen</td>
<td>Action</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| Administrative Settings — Advanced Configuration | **Note:** Refer to Figure 6-1 on page 89. In the Organization Identity section:  
- Enter a Domain Name (company.com, for example). You can use your DNS domain name.  
- Enter a Certifier Name (Cert1, for example).  
- Leave the Certifier Country Code blank.  
- Keep the default setting of Allow Setup to create a new certifier ID.  
- If you want, change the Certifier Password. It must be at least 8 characters in length.  
**Important:** If you forget this password, you will have to completely reinstall Domino and everything you installed after it. |
| Administrative Settings — Advanced Configuration | In the New Server Identity section:  
- In the Server Name field, keep the default setting of the unqualified name of the Catalog server (for example, catalog).  
- In the Server's Hostname field, keep the default setting of the Catalog server's fully qualified domain name (for example, catalog.example.com).  
- In the Server ID field, keep the default setting of Allow Setup to create a new server ID. |
| Administrative Settings — Advanced Configuration | In the Administrator's Identity section:  
- The default settings for the Administrator's Name — first, M.I. (middle initial), and last — come from the name you typed during the installation of Domino.  
- If you want, change the Password. It must be at least 8 characters in length.  
**Important:** If you forget this password, you will have to completely reinstall Domino and everything you install from now on after it.  
- Keep the default setting of Allow Setup to create a new administrator ID.  
- The person you name is automatically registered as a Virtual Classroom learner only, and later can be promoted to an instructor or an administrator. |
Start the Domino server again (Start -> Programs -> Lotus Applications -> Lotus Domino Server). The Domino server console window (a Command Prompt window) appears.

- Wait until you see the message: HTTP Web server started.

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Settings</td>
<td>In the Network Options section:</td>
</tr>
<tr>
<td>— Advanced Configuration</td>
<td>- In the Ports field, select <strong>Customize</strong>. After Edit Ports appears, click it. The Port Setup window opens.</td>
</tr>
<tr>
<td></td>
<td>- On the line for the TCP/IP port, make sure the Net Address field contains the Catalog server’s fully qualified domain name (for example, catalog.example.com).</td>
</tr>
<tr>
<td></td>
<td>- Disable all other ports. Optional: Delete the entries in the Port and Net Address fields.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>OK</strong> to return to the Administrative Settings screen.</td>
</tr>
<tr>
<td>Administrative Settings</td>
<td>Click <strong>Finish</strong>.</td>
</tr>
<tr>
<td></td>
<td>Wait while the setup of the Domino server takes place.</td>
</tr>
<tr>
<td>Congratulations!</td>
<td>- Click <strong>Set Access Control List Entry</strong>. The Set Default Database Access window opens.</td>
</tr>
<tr>
<td></td>
<td>- Leave the default settings of Add a group and Administrators.</td>
</tr>
<tr>
<td></td>
<td>- Check the <strong>Also add ‘Anonymous’ with No Access</strong> check box.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>OK</strong>.</td>
</tr>
<tr>
<td></td>
<td>Wait while the changes are made.</td>
</tr>
<tr>
<td></td>
<td>When the screen is redrawn, click <strong>Exit Configuration</strong>.</td>
</tr>
<tr>
<td></td>
<td>The setup window disappears.</td>
</tr>
</tbody>
</table>
6.5.2 Installing and configuring the clients

Next, you install and configure the Lotus Notes and Domino Administrator clients.
Installing the clients

- Start the Lotus Notes 5.0.10 installation program on the Catalog server (itsolv-cat.company.com).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>License Agreement</td>
<td>Read the license agreement. Click <strong>Yes</strong>.</td>
</tr>
<tr>
<td>Name and Company name</td>
<td>Enter your name and company name. Do <strong>not</strong> check Shared Installation. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Program Folder and Data Folder</td>
<td>You may change the default installation directories if you wish. Do <strong>not</strong> specify the same directory for both the Program Folder and Data Folder. Do <strong>not</strong> specify the Domino server's directories. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Setup type</td>
<td>Select <strong>Domino Administrator</strong> (this includes the Lotus Notes client.)</td>
</tr>
<tr>
<td></td>
<td>- Click <strong>Customize</strong>.</td>
</tr>
<tr>
<td></td>
<td>- Highlight Common Data and click Change. Check the Optional Templates check box. Click <strong>Continue</strong>.</td>
</tr>
<tr>
<td></td>
<td>- Highlight Data Files and click Change. Clear the check boxes for Modem Command Scripts and Readme. Click <strong>Continue</strong>.</td>
</tr>
<tr>
<td></td>
<td>- Clear the check box for <strong>DECS</strong>.</td>
</tr>
<tr>
<td></td>
<td>- Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Program Folder</td>
<td>You may change the default folder name from Lotus Applications if you wish. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Installation program copies files</td>
<td>When the installation is complete, click <strong>Finish</strong>.</td>
</tr>
</tbody>
</table>

Configuring the clients

- Start the Lotus Notes client (Start -> Programs -> Lotus Applications -> Lotus Notes). The setup process begins.

**Important:** The Domino server must be running during the client setup.
### Chapter 6. Installing Virtual Classroom

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting Up Connections</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Do You Want to Connect to a Domino Server?</td>
<td>Keep the default setting of “I want to connect to a Domino server.” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>How Do You Want to Connect to a Domino Server?</td>
<td>Keep the default setting of “Set up a connection to a local area network (LAN).” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Domino Server Name</td>
<td>Enter the hierarchical name of the Domino server you created during Domino server setup (lvc-cat/Cert1. Refer to Figure 6-1 on page 89). Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Who Are You?</td>
<td>Choose “<strong>Use my name as identification</strong>.” Enter the Administrator’s name you specified during Domino server setup. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Connecting to a Domino Server over a LAN</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Set Up an Internet Mail Account</td>
<td>Keep the default setting of “I don’t want to create an Internet mail account.” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Connect to a News Server</td>
<td>Keep the default setting of “I don’t want to connect to a news server.” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Connect to an Internet Directory Server</td>
<td>Keep the default setting of “I don’t want to connect to another directory server.” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Connect through a Proxy Server</td>
<td>Choose “<strong>I do not connect to the Internet through a proxy server</strong>.” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Internet Connection Type</td>
<td>Keep the default setting of “Connect over local area network (or cable modem).” Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Congratulations!</td>
<td>Click <strong>Finish</strong>.</td>
</tr>
<tr>
<td>Step/screen</td>
<td>Action</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Enter Password dialog box</td>
<td>Type the Administrator's password you established during Domino server setup (refer to Figure 6-1 on page 89). Click OK.</td>
</tr>
</tbody>
</table>

- Wait until you see the pop-up message: Notes setup is complete!, then click OK.
- Wait until you see the Welcome - Lotus Notes page.

### 6.5.3 Pre-register the additional Domino server

Before you can install Domino on the Session server, you must pre-register it with the Domino server on the management server:

From the Lotus Notes client, select **File -> Tools -> Server Administration** to launch the Administrator client. If this is the first time you have used the Domino Administrator client, the “What’s new” page appears. Check the “don’t show this again” check box, then press Esc.

The Domino Administrator workspace opens to the People & Groups tab.

**Note:** If you have already launched the administrator client, it may not be open to the People & Groups tab now. If this is the case:

- Select **File -> Open Server**.
- In the Open Server Dialogue box, type the hierarchical name of the server (lvc-cat/Cert1, in our example).
- Click **OK**.

1. Click the **Configuration** tab.
2. In the Tools column on the right-hand side of the screen, click **Registration** to display the list of sub-tasks.
3. Click **Server**. The Choose Certifier ID dialog box appears.
4. In the File name field, enter the full path to the file cert.id in the Domino Data Directory (C:\Lotus\Domino\Data\cert.id - if you kept the defaults when configuring Domino).
5. Click **Open**.
6. Enter the Certifier Password you established in the Administrative Settings section of the Domino server setup (refer to Figure 6-1 on page 89).
7. Click **OK**.
8. Wait until this pop-up message appears: The current certifier ID contains no recovery information and will not allow ID/password recovery on IDs created with this certifier. The ‘EscrowAgent’ ID recover mechanism is no longer supported. Display this warning in the future? Click Yes. The Register Servers dialog box appears.

9. Click Registration Server.

10. In the Registration Server field, the name of your Domino server (lvc-cat/Cert1, in our example) is already displayed. Click OK.

11. Click Continue.

12. In the Domino server name field, type the short name of the Session server (lvc-sess, in our example).

13. Leave the password field blank.

14. In the Domino domain field, enter the Domain Name you established in the Administrative Settings section of the Domino server configuration (company.com, in our example).

15. In the Administrator field, enter the Administrator’s Name you established in the Administrator’s Identity section of the Domino server setup.

16. Click Other.

17. Recommended: in the Domino server title field, enter: Session server.

18. In the Network field, change Network1 to: TCPIP Network.

19. Under Store Server ID, clear the check box for In Domino Directory and check the box for In file:

20. Optional: click Set ID File to change the location and file name of the file that will be the Classroom server’s Domino server ID file.

21. Click Register.

22. When you see the pop-up message: Do you want to register another server?, click No.

23. Close the Domino Administrator client (File -> Exit Administrator). You should be back at the Lotus Notes client.
6.5.4 Configure Web Single Sign-on (SSO)

Web Single Sign-on enables users to be authenticated just once in a multiple server environment such as the IBM Lotus Virtual Classroom.

While in the Lotus Notes client, follow these instructions.

1. Select File -> Database -> Open.

2. In the Open Database dialog box:
   a. At the end of the Server field, click the downward pointing triangle.
   b. Click the hierarchical name of the Catalog server's Domino server (lvc-cat/Cert1).
   c. In the Database list, highlight the DomainName's Address Book. This database is also known as the Domino Directory, called company.com in this example. The Filename field displays names.nsf.
   d. Click Open.

3. If this is the first time you have opened the database, a window with About Domino Directory appears. Press Esc to close this window.

4. If a window with the Domino Directory Profile appears, click Save and Close.

5. The People view appears. The name of the administrator given during Domino Server configuration appears in the main window.

6. Click Server in the left-hand column. A list of sub-categories appears.
   - Click Servers to open to the Server\Servers view. You should see entries for both computers (lvc-cat/Cert1 and lvc-sess/Cert1).

7. On the Action Bar (just above the view), click Web and then click Create Web SSO Configuration.

Important: Pre-registering the Classroom server results in the creation of the server ID file for the Classroom Server. Keep a note of where you opted to save it, as you will be asked at a later stage to transfer this to the new server (see 6.6.1, "Install the additional Domino server" on page 104).

It is crucial to the security of this Domino installation that all Server, Certifier, and Administrator ID files are securely stored and that passwords are not disclosed. Refer to Lotus Notes and Domino R5.0 Security Infrastructure Revealed, SG24-5341, for further information.

Redbooks are available online at:
http://www.ibm.com/redbooks
8. In the Token Domain field, enter the DNS domain name for your servers (.company.com; note that the leading period is added automatically if you do not type it.)

9. In the Domino Server Names field, enter the hierarchical names of both computers (lvc-cat/Cert1 and lvc-sess/Cert1). Do this now, even though the Session server has not been set up yet.

10. In the Expiration (minutes) field, change the value to: 720.

11. On the Action Bar, click Keys and then click Create Domino SSO Key. When this pop-up message appears: Successfully created Domino SSO key, then click OK.

12. On the Action Bar, click Save and Close.


15. Recommended: on the Basics tab in the Server Title field, enter: Catalog and Content Server.

16. Click the Internet Protocols tab.

17. Click the Domino Web Engine sub-tab.

18. Change the Session authentication field from Disabled to Multi-server.

19. On the Action Bar, click Save and Close.

20. Press Esc to close the Domino Directory.

6.5.5 Configure the Directory

Your next step will depend on the choice of user management solutions as outlined in 6.4.2, “Planning user management” on page 83. Now complete one of the following procedures.

Note: The installation of IBM Lotus Virtual Classroom discussed in this book uses the Domino Directory on the management server for user management.

Using the internal Domino Directory

If you choose the internal Domino directory, then follow these instructions from the Lotus Notes client:

1. Select File -> Database -> Open.

2. In the Open Database dialog box:
   a. At the end of the Server field, click the downward-pointing triangle.
b. Click the hierarchical name of the Catalog server’s Domino server (lvc-cat/Cert1).

c. In the Database list, highlight the DomainName’s Address Book. This database is also known as the Domino Directory, called company.com in our example. The Filename field displays names.nsf.

d. Click Open.

3. Click Server in the left-hand column. A list of sub-categories appears. Click Connections to go to the Server\Connections view.

4. Click Add Connection.

5. On the Basics tab, use the following settings:

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Type</td>
<td>Local Area Network (default)</td>
</tr>
<tr>
<td>Source server</td>
<td>Hierarchical name of the Catalog server (default); for example, lvc-cat/Cert1</td>
</tr>
<tr>
<td>Source domain</td>
<td>Name of the Domino domain (company.com)</td>
</tr>
<tr>
<td>Use the ports</td>
<td>Click Choose Ports, highlight TCPIP, and click OK</td>
</tr>
<tr>
<td>Usage Priority</td>
<td>Normal (default)</td>
</tr>
<tr>
<td>Destination server</td>
<td>Hierarchical name of the Session server (lvc-sess/Cert1)</td>
</tr>
<tr>
<td>Destination domain</td>
<td>Name of the Domino domain (company.com)</td>
</tr>
<tr>
<td>Optional network address</td>
<td>Fully qualified host name of the Session server (lvc-sess.company.com)</td>
</tr>
</tbody>
</table>

6. On the Schedule tab, use the following settings:

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>ENABLED (default)</td>
</tr>
<tr>
<td>Connect at times</td>
<td>12:00 AM - 11:59 PM</td>
</tr>
<tr>
<td>Repeat interval of</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Days of week</td>
<td>Sun, Mon, Tue, Wed, Thu, Fri, Sat (default)</td>
</tr>
</tbody>
</table>

7. Click Save and Close.

8. Press Esc to close the Domino Directory.

Using an external LDAP directory server

Perhaps you choose to use an external LDAP server. Read this restriction:
To proceed, while still in the Lotus Notes client, follow these instructions:

1. Select **File -> Database -> New**.

2. In the New Database dialog box:
   a. At the end of the Server field, click the downward-pointing triangle.
      Click the hierarchical name of the Catalog server's Domino server (lvc-cat/Cert1).
   b. In the Title field, enter **Directory Assistance**.
   c. Change the File Name field to: **da.nsf**.
   d. Click **Template server**, then click the downward-pointing triangle.
      Click the hierarchical name of the Catalog server's Domino server (lvc-cat/Cert1).
      Click **OK**.
   e. In the list of templates, scroll down and highlight the Directory Assistance template - **da50.ntf** appears next to the About button.
   f. Click **OK**.
      Wait while the Directory Assistance database is created and opened.
      Since this is the first time you have opened this new database, a window with About Directory Assistance appears. Press Esc to close this window.

3. In the Action Bar, click **Add Directory Assistance**.

4. On the Basics tab, use the following settings:

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain Type</td>
<td>LDAP</td>
</tr>
<tr>
<td>Domain Name</td>
<td>LDAPlookup</td>
</tr>
<tr>
<td>Company Name</td>
<td>The name of your company</td>
</tr>
<tr>
<td>Search Order</td>
<td>1.00</td>
</tr>
<tr>
<td>Group expansion</td>
<td>Yes (this field appears when you set Domain Type to LDAP)</td>
</tr>
</tbody>
</table>

**Restriction:** If you are required to connect to your external LDAP directory server using SSL encryption, do **not** follow these steps.

Contact IBM Lotus Virtual Classroom support for configuration assistance.
5. On the Rules tab, for Rule 1, set the Trusted for Credentials field to: Yes.

6. On the LDAP tab, set these fields to the following settings:

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nested group expansion</td>
<td>Yes (this field appears when you set Group expansion to Yes)</td>
</tr>
<tr>
<td>Enabled</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname</td>
<td>Fully qualified host name of your LDAP server (ldap.example.com, for example)</td>
</tr>
<tr>
<td>Optional Authentication Credential—Username</td>
<td>Leave blank if possible; if not, enter a valid username from your directory in LDAP format: for example, cn=john doe,o=example.</td>
</tr>
<tr>
<td>Password</td>
<td>Leave blank if possible; if not, enter the password that goes with the Username</td>
</tr>
<tr>
<td>Base DN for search</td>
<td>Enter the base distinguished name for your users in LDAP format: for example, o=Example,c=US.</td>
</tr>
<tr>
<td>Perform LDAP search for</td>
<td>Check both Notes clients/Web Authentication and LDAP clients</td>
</tr>
<tr>
<td>Channel encryption</td>
<td>Choose None. You get a pop-up message that states: Warning! You should not disable the SSL port and still have a rule which is trusted for credentials. Click OK. The Port field value changes from 663 to 389. These fields disappear: Accept expired SSL certificates; SSL protocol version; Verify server name with remote server's certificate.</td>
</tr>
<tr>
<td>Timeout</td>
<td>60 seconds</td>
</tr>
<tr>
<td>Maximum number of entries returned</td>
<td>100.00</td>
</tr>
<tr>
<td>Dereference Alias on search</td>
<td>Always</td>
</tr>
</tbody>
</table>

7. Click **Save and Close**. You get the pop-up message again because Trusted for Credentials is set to Yes, while Channel encryption is set to None. Click **OK**.

8. Press Esc to close the Directory Assistance database.
9. Select **File -> Database -> Open**.

10. In the Open Database dialog box:
   a. At the end of the Server field, click the downward-pointing triangle.
   b. Click the hierarchical name of the Catalog server's Domino server (lvc-cat/Cert1).
   c. In the Database list, highlight the DomainName’s Address Book. This database is also known as the Domino Directory, called company.com in our example. The Filename field displays *names.nsf*.
   d. Click **Open**.

11. Click **Server** in the left-hand column. A list of sub-categories appears. Click **Servers** to open the Server\Servers view. You should see entries for both servers (lvc-cat/Cert1 and lvc-sess/Cert1).


13. On the Action Bar, click **Edit Server**.


15. On the Action Bar, click **Save and Close**.

16. Press Esc to close the Domino Directory.

**Note:** Before installing QuickPlace, you need to install the Domino FixPack. This is located in the DominoFixPack folder of the QuickPlace install.

## 6.5.6 Install QuickPlace

After you have installed the Domino FixPack, you are ready to install the QuickPlace server.

- Stop the Catalog server’s Domino server: In the Domino server console window, type: `quit` and press Enter. When the Domino server has completely stopped, the window disappears.

- Start the QuickPlace installation program (SETUP.EXE).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Software License Agreement screen</td>
<td>Read the license agreement. Select <strong>Accept</strong>. Click <strong>Next</strong>.</td>
</tr>
</tbody>
</table>
### 6.5.7 Install IBM Lotus Virtual Classroom

- Stop the Catalog server’s Domino server. In the Domino server console window, type: `quit` and press Enter. When the Domino server has completely stopped, the window disappears.
- Start the Virtual Classroom installation program (SETUP.EXE).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose Setup Language</td>
<td>Select language. Click <strong>OK</strong>. Wait while the installation program copies some files.</td>
</tr>
</tbody>
</table>

Start the Domino server (Start -> Programs -> Lotus Applications -> Lotus Domino Server).

Wait until you see the following messages in the server console:
- HTTP: Successfully loaded Web SSO configuration
- QuickPlace: Successfully loaded Web SSO configuration
- QuickPlace Server started
- HTTP Web Server started
<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software License Agreement</td>
<td>Read the license agreement. Click <strong>Accept</strong>.</td>
</tr>
<tr>
<td>Welcome</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Type of Installation</td>
<td>Keep the default setting of Catalog and Course Content Servers only.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Domino server ID</td>
<td>If the default value (C:\Lotus\Domino\Data\server.id) is not the full file name of your Domino server's ID file, correct it. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Catalog Server DNS Name</td>
<td>Enter the fully qualified host name (this must be all in lower case) for the Catalog server (itsolvcat.company.com). Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Directory Type</td>
<td>Your response will depend on whether or not you have set up your server to work with an external LDAP directory server:</td>
</tr>
<tr>
<td></td>
<td>If using the L-VC Domino directory:</td>
</tr>
<tr>
<td></td>
<td>Keep the default setting of Local directory.</td>
</tr>
<tr>
<td></td>
<td>If using an external LDAP directory server:</td>
</tr>
<tr>
<td></td>
<td>Select <strong>Corporate LDAP directory</strong>.</td>
</tr>
<tr>
<td></td>
<td>In the Server name field, enter the fully qualified host name of the external LDAP directory server (ldap.example.com).</td>
</tr>
<tr>
<td></td>
<td>In the Port number field, enter 389.</td>
</tr>
<tr>
<td></td>
<td>Leave the User name and Password fields blank unless your external LDAP server requires them for access.</td>
</tr>
<tr>
<td></td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>e-mail Client</td>
<td>Select the most common mail system your users use. Note that certain workflow features will be unavailable to non-Notes clients. Click <strong>Next</strong>.</td>
</tr>
</tbody>
</table>
Start the Domino server (Start -> Programs -> Lotus Applications -> Lotus Domino Server).

Wait until you see the message: HTTP Web Server started.

Configure QuickPlace server settings
Open a Web browser and follow these instructions. The browser can be on the Catalog server (itsolvc-cat.company.com), but does not have to be.

1. Go to http://<Catalog.server.name>/quickplace (e.g., http://itsolvc-cat.company.com/quickplace).
2. Click Sign In.
3. In the Login box, type the QuickPlace administrator's name you specified during the installation of QuickPlace (refer to "Username & Password" under 6.5.6, "Install QuickPlace" on page 99).
4. In the Password box, type the password you specified during the installation of QuickPlace.
5. Click Server Settings.
6. Click User Directory.
7. Click either of the two Change Directory buttons.
8. In the Type box, select LDAP Server. Do this even if you do not have an external LDAP directory server.

   Note: The QuickPlace server talks to the underlying Domino server's LDAP server task.
9. In the Name field, enter the fully qualified host name of the Catalog server (itsolv-c-at.company.com).

10. Leave all of the other fields the way they are.

11. Click either of the two Next buttons.

12. Click Sign Out.

13. When the pop-up message asks: Are you sure you want to sign out?, click OK.

14. After you see this QuickPlace message, close the browser: You have successfully signed out of the place. To secure this browser before others use it, you should also clear the browser cache.

**Note:** If you receive a Security Warning pop-up message asking if you want to install applets from Iris Associates or International Business Machines Corporation, click Yes.

**Start Virtual Classroom**

You can start the program on the Catalog server automatically, using NT Services.

- If you set the Domino server and Virtual Classroom to start automatically when the computer starts, restart the computer. After you login, you should see the Domino server console and two additional command prompt windows:
  - L-VC Engine (this window has an interactive command console)
  - L-VC Connector (this window displays status messages)

If you set the Domino server and IBM Lotus Virtual Classroom to start manually:

- Type: restart server in the Domino server console window, and press Enter. The window disappears, and reappears within ten seconds.
- Wait until you see the message: HTTP server started.
- Start IBM Lotus Virtual Classroom using the Start menu (Start -> Programs -> Lotus Applications -> IBM Lotus Virtual Classroom -> Start Virtual Classroom). You should see four additional command prompt windows:
  - L-VC Engine (this window has an interactive command console)
  - L-VC Connector (this window displays status messages)
  - L-VC Server Manager (also known as the Net Manager—this window represents the communications layer)
  - L-VC Log Server (this window displays the message log)
Once installed, you may notice that the Catalog Server repeatedly displays an error message on the Domino Server console, as often as every five minutes. The error message is:

<date> <time> AMgr: Error executing agent 'CreateSessionScheduled' in 'LearningSpaceVirtualClassroom\VCMM.nsf':
No documents found.

The message simply means that in this pass, the agent found that there are no upcoming sessions of any courses. If upcoming sessions were scheduled, for each session, the agent would do the following:

- Instruct the Session Server to create an online meeting.
- Send the course materials from the Content Server to the Session Server.

### 6.6 Installing the Classroom server

**Note:** Before you start, transfer the server ID file of the Management Server to the Classroom server (itsolvcs-sess.company.com). It doesn’t matter whether you use a diskette, FTP it in binary mode, or copy it from a network share.

#### 6.6.1 Install the additional Domino server

- On the Session server (itsolvcs-sess.company.com), start the Lotus Domino 5.0.10 installation program (SETUP.EXE).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>Click Next.</td>
</tr>
<tr>
<td>License Agreement</td>
<td>Read the license agreement.</td>
</tr>
<tr>
<td></td>
<td>Click Yes.</td>
</tr>
<tr>
<td>Name and Company name</td>
<td>Enter your name and company name.</td>
</tr>
<tr>
<td></td>
<td>Do not check Partitioned Server Installation.</td>
</tr>
<tr>
<td></td>
<td>Click Next.</td>
</tr>
<tr>
<td>Program Folder and Data Folder</td>
<td>Do not change the default Program Folder installation directory from C:\Lotus\Domino. Do not specify the same directory for both the Program Folder and Data Folder.</td>
</tr>
<tr>
<td>Step/screen</td>
<td>Action</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Setup type</td>
<td>Keep the default setting of Domino Application Server. Optional: Click <strong>Customize</strong>. Highlight Data Files and click <strong>Change</strong>. Clear the check boxes for Modem Command Scripts and Readme. Click <strong>Continue</strong>. Clear the check box for DECS. Keep the default setting for “Domino as an NT service.” Highlight Domino Data Files and click <strong>Change</strong>. Clear the check box for Teamroom. Click <strong>Continue</strong>. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Program Folder</td>
<td>Changing the default folder name from Lotus Applications is optional. Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Installation program copies files</td>
<td>When the installation is complete, click <strong>Finish</strong>.</td>
</tr>
</tbody>
</table>

**Important:** You must start the Domino server and IBM Lotus Virtual Classroom the same way—either manually using the Start menu or as NT Services. If you wish to set the Domino server to start automatically when the computer starts:

- Start Services (for Windows NT, click **Start -> Control Panel -> Services**; for Windows 2000, click **Start -> Programs -> Administrative Tools -> Services**).
- Double-click **Lotus Domino Server**.
- Set the Startup Type to Automatic.
- Click **OK**.

Close Services.

- In the Domino Program directory (for example, C:\Lotus\Domino directory), rename KVOOP.EXE to KVOOP.EXE-OFF.

**Configure the additional Domino server**

- On the Session server (for example, session.example.com), start the Lotus Domino Server (**Start -> Programs -> Lotus Applications -> Lotus Domino Server**). The five-step setup process begins.
<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a New Domino Server</td>
<td>Select <strong>Additional Domino Server</strong> and click &gt;.</td>
</tr>
<tr>
<td>Select a Setup Method.</td>
<td>Select <strong>Advanced Configuration</strong> and click &gt;.</td>
</tr>
<tr>
<td>Administrative Settings — Advanced Configuration</td>
<td>In the Web Browsers section, check the <strong>HTTP</strong> check box. In the new section that appears, select <strong>Web Applications</strong>. Click &gt;.</td>
</tr>
</tbody>
</table>
| Administrative Settings — Advanced Configuration | In the New Server Identity section:  
  - In the Server Name field, enter the hierarchical name for the Session server's Domino server (for example, session/CertifierName).  
  - In the Server's Hostname field, enter the Session server's fully qualified domain name (for example, session.example.com).  
  - For the Server ID field, select **Server ID supplied in a file**.  
  - In the Server ID filename field, enter the full path name of the Session server's Domino server ID file (for example, A:\session.id) that you transferred from the Catalog server. |
| Administrative Settings — Advanced Configuration | In the Domain Address Book Location section:  
  - In the Get Address Book from which Server? field, enter the hierarchical name of the Catalog server's Domino server (for example, catalog/CertifierName).  
  - In the Connect via field, keep the default value of Network. |
Chapter 6. Installing Virtual Classroom

After the Congratulations! screen appears, click Exit Configuration.

Start the Domino server again (Start -> Programs -> Lotus Applications -> Lotus Domino Server). The Domino server console window (a Command Prompt window) appears.

Wait until you see the message: HTTP Web server started.

Suggestion: After this occurs, you might want to replicate the names.nsf (or wait for the files to replicate and update) before installing Sametime.

6.6.2 Install Sametime

Stop the Session server’s Domino server - type: quit and press Enter in the server console window. When the Domino server has completely stopped, the window disappears.

Start the Sametime installation program (Setup.exe).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Settings — Advanced Configuration</td>
<td>In the Network Options section: ▶ For the Ports field, select Customize. After Edit Ports appears, click it. ▶ The Port Setup window opens. ▶ On the line for the TCPIP port, make sure the Net Address field contains the Session server's fully qualified domain name (for example, session.example.com). ▶ Disable all other ports. Optional: Delete the entries in the Port and Net Address fields. Click OK to return to the Administrative Settings screen.</td>
</tr>
<tr>
<td>Administrative Settings</td>
<td>Click Finish.</td>
</tr>
</tbody>
</table>

► After the Congratulations! screen appears, click Exit Configuration.

► Start the Domino server again (Start -> Programs -> Lotus Applications -> Lotus Domino Server). The Domino server console window (a Command Prompt window) appears.

► Wait until you see the message: HTTP Web server started.

**Suggestion:** After this occurs, you might want to replicate the names.nsf (or wait for the files to replicate and update) before installing Sametime.
If you see the pop-up message: *Your machine has less than 512 MB of memory. It is recommended to run the Sametime server with a minimum of 512 MB of memory*, then click **OK**.

**Note:** The performance of the Sametime server will be poor if you have less than 1GB of memory.

Welcome

Click **Next**.

Question - install as part of Domino?

In response to the pop-up message: *An existing version of Domino was found at Domino Program Folder. Would you like to install Sametime as part of Domino? If yes, make sure you stop the Domino server.*, click **Yes**.

Start Copying Files

Review the choices you have made. Click **Next**. Wait while the installation program copies files.

Installation Complete

Click **Finish**.

Set Up on a Domino server

Enter the full path to the Session server's Domino server ID (C:\Lotus\Domino\Data\session.id). Click **Next**.

Select the Directory Type

Your response will depend on whether or not you have set up your server to work with an external LDAP directory server:

If using the L-VC Domino directory:
Keep the default setting of Domino directory.

If using an external LDAP directory server:
**Select Corporate LDAP directory.**
In the Server name field, enter the fully qualified host name of the external LDAP directory server (ldap.example.com). In the Port number field, enter 389.

Click **Next**.
Chapter 6. Installing Virtual Classroom

6.6.3 Install Sametime 3.0 Service Pack 1

- Stop the Session server’s Domino server—type: quit and press Enter in the server console window. When the Domino server has completely stopped, the window disappears.
- Start the Sametime Service Pack installation program (Setup.exe).
- Wait while the installation program copies some files.

1. Software License Agreement screen
   - Read the license agreement

Attention: The Sametime server running message will fail to appear if the Primary DNS suffix of the server was entered incorrectly, or if it was left blank. You can work around this issue by re-entering the correct DNS suffix for the server:

- Right-click My Computer and choose Properties.
- On the Network Identification tab, click Properties and More.
- Enter the correct Primary DNS suffix.

Without the DNS domain name, Web Single Sign-on (SSO) cannot work.
– Click **Accept**.

2. Welcome screen
   – Click **Next**.

3. Start Copying Files screen
   – Click **Next**.

4. Sametime Server Configuration screen
   – In response to the question: *Will this Sametime server be managed by an Enterprise Meeting Server?*, leave the check box blank.
   – Click **Next**.
   – Wait while the installation program backs up files and installs the service pack files (be patient).

5. Setup Complete screen
   – Click **Finish**.

   ▶ Start the Domino server *(Start -> Programs -> Lotus Applications -> Lotus Domino Server)*.

   ▶ Wait until you see the message: *Sametime Server: Running*.

   **Suggestion:** After this occurs, you might want to replicate the names.nsf (or wait for the files to replicate and update) before installing Virtual Classroom.

### 6.6.4 Install Virtual Classroom

▶ Stop the Session server’s Domino server—type: `quit` and press Enter in the server console. When the Domino server has completely stopped, the window disappears.

▶ Start the Virtual Classroom installation program (that is, InstallShield\Disk1\Setup.exe).

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose Setup Language</td>
<td>Select language. Click <strong>OK</strong>. Wait while the installation program copies some files.</td>
</tr>
<tr>
<td>Software License</td>
<td>Read the license agreement. Click <strong>Accept</strong>.</td>
</tr>
<tr>
<td>Welcome</td>
<td>Click <strong>Next</strong>.</td>
</tr>
<tr>
<td>Type of Installation</td>
<td>Select <strong>Session Server only</strong>. Click <strong>Next</strong>.</td>
</tr>
</tbody>
</table>
Chapter 6. Installing Virtual Classroom

111

Start Virtual Classroom on the Session server

- **Automatic start using NT Services:**
  
  If you set the Domino server and IBM Lotus Virtual Classroom to start automatically when the computer starts, restart the computer. After you log in, you should see the Domino server console and one additional command prompt window, the L-VC Connector, which displays status messages.

- **Manual start:**
  
  If you set the Domino server and IBM Lotus Virtual Classroom to start manually, on the Session server, start the Domino server again (Start -> Programs -> Lotus Applications -> Lotus Domino Server):
  
  - Wait until you see the message: Sametime Server: Running.

---

<table>
<thead>
<tr>
<th>Step/screen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domino server ID</td>
<td>If the default value (C:\Lotus\Domino\Data\server.id) is not the full file name of your Domino server's ID file, correct it. Click Next.</td>
</tr>
<tr>
<td>Catalog Server Host Name screen</td>
<td>Enter the short host name for the Catalog server (for example, catalog). Click Next.</td>
</tr>
<tr>
<td>DNS Name</td>
<td>Enter the fully qualified host name (all lower case) for the Session server (itsolv-c-sess.company.com). Click Next.</td>
</tr>
</tbody>
</table>
| Start-up Method | Select the method that matches the way the Domino server starts. Click Next.  
  Note: You must start the Domino server and Virtual Classroom the same way—either manually using the Start menu, or as NT services. |
| Select Program Folder | You may change the default folder name from Lotus Applications |
| Start Copying Files screen | Review the choice you have made. Click Next.  
  Wait while the installation program copies files to a new folder at the same level as the Domino Program Folder (C:\Lotus\LVC). |
| Setup Complete | Click Finish. |
– Start Virtual Classroom using the Start menu (Start -> Programs -> Lotus Applications -> IBM Lotus Virtual Classroom -> Start Virtual Classroom).

– In addition to the Domino server console window, you should see one command prompt window, the L-VC Connector, which displays status messages.

You have now completed all of the installation tasks for Virtual Classroom.

6.7 Accessing Virtual Classroom

Open a Web browser on any computer.


Log in as: lvcaadministrator

The password is: learningspace (the password is case-sensitive)

**Important:** You should change the lvcaadministrator password immediately.

- Log in to the IBM Lotus Virtual Classroom as above.
- Click the Change Password link at the top right of the Learning Home screen.

Congratulations. You are ready to proceed with e-Learning classes.
User management

In this chapter, we explore in greater depth the ways in which users are registered and allowed access to the Virtual Classroom. We explain the underlying architecture for authentication and registration, and give some tips on managing large-scale learner access. We also point to a user export routine sample that we have written for your convenience.
7.1 Permissions groups

Every Virtual Classroom user is categorized into one of the following groups, which we call permissions groups. Table 7-1 shows the permissions assigned to each of the three groups:

- Learners
- Instructors
- Administrators

When a new user is registered in the IBM Lotus Virtual Classroom, they are automatically added to the Learners permissions group in their directory. Once registered, Learners may be promoted to Instructor or Administrator. This is done through the user's personal profile.
<table>
<thead>
<tr>
<th>Group</th>
<th>Can...</th>
</tr>
</thead>
</table>
| Learner     | **Access:**  
- My Sessions  
- The session(s) in which they are enrolled  
- Course Catalog  

If allowed by Instructor:  
- Have access to the classroom materials  

All registered users are in the learners permissions group |
| Instructor   | Can access everything learners can, plus:  
- Create courses  
- Schedule sessions for their own courses  
- Add items to the library  

If a session has more than one instructor, only the primary instructor will be able to:  
- Control the outline  
- Switch between presentation files on the whiteboard and screen sharing  
- Control speaker privileges  
- Access all breakout sessions  
- Grant to others:  
  - data sharing  
  - breakout session access  
  - speaker privileges  
- Promote another instructor to be the primary instructor |
| Administrator| Can access everything learners can, plus:  
- Administration tools:  
  - User  
  - Servers  
  - Site |
In this chapter, we will look at:

- User registration and authentication
- Adding and removing users

7.2 User registration and authentication

Users are authenticated and registered separately. Authentication is performed by the directory server, which can either be the management server's Domino Directory (local), or an LDAP directory server (external). Everyone within the directory is granted access to the Virtual Classroom (see note below). Therefore:

- When using an external LDAP directory server, all users within that directory are granted access.
- When using the management server's Domino Directory to manage users, the directory will show only one user after installation (lvcadministrator); new users will need to be created or imported before they will be able to access the live virtual classroom.

Profiles are held within the vcmm.nsf database on the management server.

**Note:** When setting up directory assistance for using an external LDAP directory server, you have the option of restricting searches to a base distinguished name such as:

```
ou=Finance o=ACME c=US
```

Depending on the structure of the organization, it is thus possible to restrict or allow access to specific organizational groups, such as contractors.

7.2.1 User management using an external LDAP directory

Everyone registered in the LDAP directory can access the Virtual Classroom (see special note above). Users can simply log in to the Virtual Classroom using their existing user name and password, as defined in their personal entries in the directory.

Once users have been authenticated, they are registered (given a profile record) within the IBM Lotus Virtual Classroom. The profile is stored in the Domino database named vcmm.nsf on the management server. The creation of the profile is triggered by any of the following:

- The user signing on to the system for the first time
- The user enrolling for a session
The administrator enrolling the user on a session

Virtual Classroom administrators can edit each user profile, which can be accessed under the Administration tab, as shown in Figure 7-1 on page 117.

**Table 7-2  User profile fields**

<table>
<thead>
<tr>
<th>Profile entry</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login name</td>
<td>Required. Unique login name. Cannot be edited once the user has been created.</td>
</tr>
<tr>
<td></td>
<td>[Held in LDAP server, where available]</td>
</tr>
<tr>
<td>Display name</td>
<td>Required. Unique display name. Unlike the login name field, special characters may be used in this field. 20 characters maximum.</td>
</tr>
<tr>
<td></td>
<td>When using an external LDAP directory server, the person’s full name is copied across to the profile document. It can later be edited</td>
</tr>
<tr>
<td></td>
<td>by an administrator if necessary.</td>
</tr>
<tr>
<td>E-mail</td>
<td>Optional. Used for e-mail notifications of sessions.</td>
</tr>
<tr>
<td></td>
<td>[Held in LDAP server, where available]</td>
</tr>
</tbody>
</table>
If the Virtual Classroom is set up to use the local Domino Directory to manage users, this directory will contain no records after installation. There are three options for creating records:

- Administrators can add users by using a form.
- Administrators can import lists of users in a text file.
- Administrators can allow people to register themselves.

A record consists of a personal entry in the management server's Domino Directory (used for authentication), and a profile document. The profile document can be edited directly to change details held in the directory’s person document; see Figure 7-2 on page 119.
Chapter 7. User management

When there is no external LDAP directory server, the Virtual Classroom profiles can be edited directly by an administrator to force password changes or update the e-mail address for the user.

Adding users manually

Administrators can add up to ten new users at a time using the Virtual Classroom Add Users form:

The Add User form allows administrators to add up to ten users at a time. If several users are added at once, they share common profile preferences, such as the type of e-mail notifications that they will receive. Once users are registered
in this way, the administrator needs to inform the users of their user name and
password.

Both the login name and the display name must be unique to each user. Although learners will be able to alter their passwords themselves, all other
details can only be changed by an administrator. The login name, however,
cannot be altered once chosen.

**Important:** The administrator needs to inform new users of their new Virtual
Classroom account details.

If the administrator chooses a login name or display name for a new user that
clashes with an existing registered user's, the new user will fail to be registered.
The administrator is informed of the status of new user registration and conflicts
after clicking the Add Users button:

```
Adding Users
1 - Dan No, Yes (dnoneyes): A user with that login name already exists. Login names must be
unique. **User not added.**
2 - Roger Rabbit (rabbit01): User added successfully.
```

1 user(s) added.

*Figure 7-4  Status report when adding users*

**Importing users using a text file**

Adding users manually using the above form can be cumbersome for registering
large numbers of learners. The Virtual Classroom therefore allows large user
lists to be imported directly, using as a text file.

The text file can be created from databases or spreadsheets containing user
information. Appendix E, “LotusScript user export routines” on page 253,
describes how an agent can be written to create the required text file for
importing large numbers of users from an existing Domino Directory.

**Note:** We have written a sample LotusScript utility that you can use as a starting
point. The entire routine is found in Appendix E on page 253.

As with registering users manually, the administrator is notified of any conflicts
after the text file has been processed.
Important: Once users have been imported to the Virtual Classroom, their password will not synchronize with the database from which the information was exported. That is, if a user changes their live virtual classroom password, passwords held elsewhere will not be updated or altered.

Self-registration

It is possible to enable Virtual Classroom users to register themselves on the system as new users. This might be suitable for a deployment that sits entirely within a corporate firewall, for example, where everyone who could access the live virtual classroom is by definition “trusted”. Self-registration is enabled under Site Settings section, available from the Administration tab.
Using Virtual Classroom

In this part, we provide tips and techniques for using the Virtual Classroom after your infrastructure is in place.

Chapter 8 provides an overview of the various organizational roles and responsibilities typically employed in the overall delivery of live virtual training.

Chapters 9 through 13 provide a blueprint of the steps involved in rolling out a new training program following the ADDIE model. ADDIE stands for Analysis, Design, Development, Implementation, and Evaluation—the five major stages in this training model.

We discuss each of these stages and highlight important tasks for creating effective training using a virtual classroom. We review best practices throughout, and provide you with reusable aids for developing training in your organization.

Chapters 9 through 13 are prefaced with an ongoing fictional scenario to illustrate this process in action. The scenario depicts a fictional company, GBPKS...
International, and describes how the company used a virtual class in a blended training program delivered to the global sales force.

**Note:** This scenario is not intended as a reference to any real company.
In this chapter, we define some of the roles involved in developing and delivering courses and sessions in the IBM Lotus Virtual Classroom. We begin by looking at the roles of those learning and teaching in the traditional classroom, and go on to outline roles in the Virtual Classroom.
8.1 Traditional roles

Most learners have experienced many different types of learning, working with others in a variety of roles. In high school we attended classes with a teacher, had laboratory sessions with technicians where we used special equipment, took sports lessons, and so forth. In college, we experienced new environments such as lectures and tutorials, and became involved with new activities such as research. In the workplace, we have encountered still other types of learning environments, such as on-the-job experience, corporate induction sessions, skills-related training sessions with a trainer, mentoring, and so forth.

Any type of class or learning environment involves many participants, including:

- Learners
- Teachers
  - Trainers
  - Lecturers
  - Tutors
  - Lab technicians
  - Mentors
- Developers
  - Curriculum planners
  - Instructional designers
  - Authors
- Support personnel
  - Facilities support (porters, security guards, janitors)
  - Resources support (librarians, information technology staff)
- Administrators
  - Resource planners
  - Course administrators
  - Financial administrators
  - Registrars

The roles these people perform in the traditional classroom environment all exist in some form in the live virtual classroom.

8.2 Roles in the live virtual classroom

In this section we discuss the roles of those that may be involved in the live virtual classroom. Each role doesn’t necessarily equate to a separate person; one
person in reality might fulfill several of the roles described here, depending on the scale of the organization and the level and type of available resources.

Included here are suggestions for best practices, which are meant as a starting point for those discussing new roles when implementing the virtual classroom.

8.2.1 Learners

The learner’s role is an active one. Good learners know what their learning objectives are: Why am I learning? What do I want to learn? How will I best learn this? They use the Virtual Classroom as a tool to seek answers to these questions. They are willing to share resources, knowledge, and questions without competing against other learners. This requires a respect for the diversity of beliefs and attitudes.

The learner needs to prepare adequately in advance of sessions. This preparation includes:

- Familiarization with the topics to be covered (reading, research, taking part in and using asynchronous courseware, and so forth)
- Learning how to use the environment and any applications to be used during application sharing
- Efficient time management and personal management, to keep sessions free of interruptions

During the session, the learner has to:

- Take part in exercises that involve working with other learners, materials, and facilitators
- Ask questions
- Interpret, analyze, and evaluate information
- Give feedback to facilitators and other learners

8.2.2 Teachers

There are many types of teachers in the Virtual Classroom. We distinguish between:

- Facilitators
- Producers
- Subject matter experts
- Trainers
Facilitator

The facilitator leads Virtual Classroom sessions and helps the learners in a group to realize their learning objectives. The facilitator needs a thorough understanding of the live virtual classroom and its tools, as well as excellent interpersonal, communication, and organizational skills. The facilitator is usually knowledgeable within the subject area he or she teaches, but this isn’t always the case. A facilitator guides learners by:

- Welcoming learners to the session.
- Establishing an agenda by presenting the outline and consulting with participants.
- Initiating activity, setting up groups, inviting participation, and so forth.
- Encouraging group self-management by creating a sense of ownership of the Virtual Classroom in the learners, and encouraging learners to share and talk with one another. The facilitator might also share responsibility with the learners for running and managing the session.
- Assessing the level of understanding of topics and subjects, both in individuals and in the group as a whole. This is an ongoing process used to track the progress of the learners and to determine what to concentrate on next.
- Guiding and maintaining activity by finding patterns and making connections in topics and discussions, and by encouraging a real meeting of minds.
- Asking the questions that enable learners to discover answers.
- Closing the session and outlining the outcomes.

Figure 8-1 on page 129 shows the skills that a facilitator needs for success in an e-Learning situation.
Chapter 8. Roles and responsibilities

Producer
The producer handles the practical and technical aspects of running the session. These include:

- Redirecting users with technical issues to the help desk by using private chat
- Handling user permissions (granting and revoking edit rights to the whiteboard, for example)
- Pushing Web pages
- Sending polling questions and assessments
- Monitoring for raised hands while the facilitator is screen-sharing
- Passing the microphone (in hand-off audio mode)
- Any other technical issues

Subject matter expert (SME)
A subject matter expert might be invited to participate in a session as a guest speaker. Although the facilitator leads the session, the subject matter expert is the source of expertise on one or more of the session topics. A subject matter expert might prepare a presentation, be interviewed by the facilitator, or participate in question and answer sessions with the entire group.
Virtual Classroom trainer
Unlike traditional classroom environments, most people have never experienced a virtual classroom. A virtual classroom session will only be effective if all participants are familiar with the environment and its tools. The role of the Virtual Classroom trainer is to familiarize all new users of the environment by:

- Running classroom-based orientation sessions
- Producing printed and online materials
- Running introductory IBM Lotus Virtual Classroom sessions

8.2.3 Developers

The roles for developing a class include curriculum planners, instructional designers, and chief learning officers.

Curriculum planner
The curriculum planner puts together training programs and decides upon the type of delivery - the blend of different learning and teaching types. The curriculum planner needs an excellent overview of the various types of training and e-Learning and their characteristics and relative merits. The curriculum planner determines the composition of learning programs and constructs the ultimate blended solution.

Instructional designer
The instructional designer is responsible for planning the outline of virtual classroom sessions and creating the materials to be used. This includes:

- Definition of session objectives
- Presentation materials
- Question sets
- Links to reference materials and sites
- Scripts/scenarios for facilitators to use

Chief learning officer
Just as the chief financial officer (CFO) is responsible for a company’s fiscal resources, a role such as chief learning officer (CLO) is required to manage and grow a learning organization’s intellectual or knowledge capital. This is still an emerging role in most companies. Other titles for the same role include:

- Chief knowledge officer
- Director of knowledge management
Chapter 8. Roles and responsibilities

- Director of leadership development

The CLO doesn’t necessarily belong within any of the traditional units of an organization, such as human resources. Instead, the role is one of steering the focus of the organization as a whole from being reactive to the environment (coping), to being creative (producing). The CLO’s main tasks can be outlined as:

- Turning the collective intelligence of the organization into a critical asset
- Gaining commitment to the integration of learning in business processes
- Changing perceptions of learning into an active, creative process; empowering people to learn and not just to be trained
- Unlocking information latent in the organization and turning it into knowledge

8.2.4 Support

The Virtual Classroom requires support roles in terms of both user support and systems support.

User supporter

The user supporter is responsible for assisting users with all support issues regarding the virtual classroom. All technical assistance should take place outside of the online classroom so as not to disrupt the class. If necessary, the help desk forwards queries to others in the organization. Some organizations choose to support instructors and learners using separate help desks, while others provide a single user support resource.

Systems supporters

These roles are concerned with maintaining and troubleshooting the technical infrastructure serving the virtual classroom. These include:

- Networks
- Servers
- Security
- Access and directories

8.2.5 Course administrators

A number of administrative tasks need to be addressed:

- Scheduling sessions
- Selecting and booking facilitators and SMEs
- Managing resources, such as conference rooms, audio visual equipment, PCs, and so forth
- Registering new users
- Enrolling users on courses
- Archiving or deleting old resources and courses
- Managing virtual classroom session feedback

It is also strongly recommended that a role such as registrar be established - this role can to a large extent be fulfilled by establishing good administrative procedures. The registrar would oversee issues such as:

- Maintaining consistent course categories in the Catalog
- Establishing course name and code conventions
- Recording assessment records

The registrar might also regulate “learning contracts”, which are service level agreements for both training providers and learners.
Chapter 9. Analysis

The A in the ADDIE model stands for Analysis. In this chapter we describe a structured way to assess your organization's training requirements, and document the key factors you need to consider for deploying a live virtual training program. We focus on considerations you'll want to investigate prior to developing your training in the Virtual Classroom.

Investing in analysis is sometimes criticized in today's fast-paced world. But as we hope our lead-in scenario illustrates, a brief period of analysis can help you to avoid wasting time on unnecessary training, and insure a successful training program when training is required.

In Appendix B, “Analysis Worksheet” on page 247, we provide a template that you can use during the analysis stage.
9.1 Analysis scenario

GBPKS International, a global distributor of office supplies, was faced with a problem. They had implemented an expensive sales automation tool a year earlier, but it was not being appropriately utilized by the GBPKS sales force. Each one of the 200 salespeople was supposed to enter information about sales prospects into the system. This information was then to be used to produce a sales forecast, which impacted everything from staffing to purchasing and distribution and corporate budgeting. The lack of reliable information from this tool was turning into a real liability.

To resolve the problem, Jenny S. was asked to provide training on the software to the global sales force as soon as possible. Because of the urgency behind the request, Jenny knew she had to do a fast analysis.

She conducted a quick, anonymous survey of several members of the sales team, and held phone interviews with the few sales people she could track down. She found that there were some knowledge/skill gaps related to use of the software, especially on how to use the custom fields and features added to the system by the software vendor to meet GBPKS’s needs.

However, Jenny also quickly learned that in addition to a lack of understanding of how to operate the software, other factors were contributing to why the sales force was not entering data. For example, some sales staff considered entering the data a waste of their time—instead, they could be calling on potential customers. She realized that if this was the prevailing attitude, it wouldn’t matter whether or not the sales staff knew how to use the software, because they wouldn’t be motivated to use it anyway. It became clear that GBPKS needed to pull out the carrot (or more likely, the stick) to motivate the sales staff to use the software.

Jenny passed this information on to the Sales Director who had requested the training. The Sales Director decided that the company would implement a key business process to motivate sales members to use the software: withholding payment on expense reports if information in the sales software was not kept current. In addition, application training would be offered to insure everyone knew how to use the software. The Sales Director would make the announcement at the end of the week, and the entire sales team then needed to be trained before the new policy took effect in two months.

So, Jenny had identified the training need and had a clear timeframe to deliver the training in. She had a very limited budget, certainly not enough to pay for her to travel to all of the sales regions for face-to-face training (not that there was time for that anyway). One definite plus was that GBPKS had access to IBM Lotus Virtual Classroom hosted by a premier IBM business partner, so Jenny
knew that key personnel were already in place to deliver this training. After a call
to her Virtual Classroom hosting company, Jenny learned that the PCs deployed
in her organization did meet the hardware and software requirements when the
Virtual Classroom was launched, but not all of the sales people had accounts on
the system.

With this information in hand, Jenny completed her profile of her audience,
knowing that she would have some new Virtual Classroom users included in the
group. Next she moved on to designing the training curriculum. Just in time, too,
since the policy-change announcement had just been made. In an about-face
from the field, Jenny was now receiving requests for training directly from
members of the sales team regarding the software and details of the new policy.
She let them know that training plans would soon be announced.

9.2 Identify the training need

Training in an organization is intended to enable the workforce to execute tasks
required to meet the organization’s strategic objectives. The first step in the
analysis stage is determining what the training need is. This sounds obvious, but
the challenge is verifying that training can solve the business problem.

For example, a key objective for a mail-order company may be to improve
customer satisfaction with their ordering process to increase the number of
repeat buyers. To do this, the company initiates a training program for its
customer service representatives.

9.3 Identify constraints

Every project has to be delivered within the context of its own particular
constraints. Some of the constraints that will affect delivering virtual classes are
the budget, the available personnel for delivering the training, and the timeframe
available to produce and deliver the training.

9.3.1 Budget

The budget can impact your training design in many ways. Specific cost
considerations are:

- Guest lecturers
- Print materials (production and shipping)
- Headsets with microphones
- Desktop video cameras
- Audio bridges, conference calls (number and length)
The good news is most of these items are optional enhancements to an effective virtual class. Even if you are deploying headsets and video cameras to each participant's desktop for the first time, the price of these items has dropped so significantly that you can easily equip your participants for a minimal investment per user.

So with a very constrained budget, you can still deliver training using a live virtual classroom. Travel expenses for facilitators and participants are completely averted. This is one of the factors that adds to the compelling business case for delivering training with the IBM Lotus Virtual Classroom.

9.3.2 Personnel

The available human resources to support your training initiative should be identified. Identify who will be performing each of the roles described in Chapter 8, “Roles and responsibilities” on page 125. It is likely that some people will be performing multiple roles, but you should still link each role with a name, in order to clearly delineate responsibilities.

9.3.3 Timeline

Identify the timeframe available to develop this training. If you are dealing with a new product rollout that is occurring at the end of the week, you will probably not have time to put together a complex curriculum. However, using the Virtual Classroom, delivering training under extremely tight time pressures is still possible. This is another attractive feature of training with the Virtual Classroom—the ability to create and deliver training to a large, dispersed audience very quickly.

9.3.4 Profile your audience

Profile your audience. Following we list some key aspects you need to identify about your audience, along with the implications for training.

Size
The size of the audience can impact the type of virtual class you hold (moderated or broadcast), as well as how many virtual classes you deliver.
Locations
If you have groups of people at several locations, you can have them attend as a group in a conference room. You can introduce contests by location, or publish performance by location—utilizing local peer motivation to encourage high levels of participation and performance.

Experience and skill levels related to the training content
If you have people with a broad range of skill levels, you can create different sessions geared towards those levels (beginner, intermediate, advanced). This will eliminate wasted time for advanced audience members, as well as provide a comfortable training environment for novices.

If you don’t know the skill levels of your audience, consider using the Virtual Classroom to deliver pre-tests. Based on the user results of the pre-test, direct each learner to the course they should attend.

If you have a small population of advanced users, consider using this population as mentors. Mentors can be effective in breakout sessions during the virtual class, as well as support resources for learners after the classes have been completed.

First-time users of the Virtual Classroom will need additional time before the virtual class to configure and test their workstations prior to the virtual class. In addition, they will need more assistance with the product interface at the beginning of a session. Advanced activities, such as having learners perform screen sharing, are best left to audiences that have some experience with the Virtual Classroom environment.

Motivation
Learner motivation affects everything, from whether they will attend a session to how engaged they are in a session. Provide a clear message to your attendees on why they should attend the training (what is in it for them). To increase motivation, consider using well-known subject matter experts (SMEs) as guest speakers, conducting a publicity campaign, introducing competition into the training, or providing rewards or recognition based on successful completion.

9.3.5 Verify the technical infrastructure
There are several technical issues that need to be checked out prior to launching your session.

Virtual Classroom setup
There are two specific Virtual Classroom issues that you will need to verify.
First, do all members of your intended audience have accounts on your Virtual Classroom system? If not, you will have to ensure that their accounts are set up in your project plan.

Second, try to determine if this audience has attended an Virtual Classroom session in the past. If a large portion of the audience has not, you will want to allow for extra time in your project for users to test their access to the Virtual Classroom and run the test meeting in order to install the necessary components on their PC.

**End-user PC requirements**
Verify that your end-users have access to PCs that meet the minimum software and hardware requirements to participate in a session. If those PCs do not meet the minimum requirements, you will need to utilize resources to upgrade the PCs or determine if there are other PCs the participants can use.

For a standard session, end-user PCs must meet the following minimum requirements:
- Windows clients (98 Second Edition, NT, 2000, or XP Professional)
- Microsoft Internet Explorer 5.01 (learner role only), 5.5x, or 6.0 with Service Pack 1
- Netscape Navigator 4.7x

Additionally, users must have their browsers enabled with the following preferences:
- Accept Cookies
- ActiveX® Controls (Microsoft Internet Explorer only)
- JavaScript™ (Netscape Communicator only)
- Plug-ins (Netscape Communicator only)
- SmartUpdate (Netscape Communicator only)

If your users access the Internet through a proxy server, their Web browsers may need to be configured to use the proxy server. You may need the assistance of a system administrator to accomplish this.

**Bandwidth**
Check what connection to the Internet is available to participants (modem, broadband, other). Your end-user connection speed will influence the use of IP audio and video in a session and what type of session you deliver (moderated or broadcast). See Chapter 10, “Design” on page 141 for specific recommendations for selecting the appropriate meeting type and audio/video delivery method.
Networking

Finally, determine if there is a firewall between your end-user locations and your Virtual Classroom servers. If so, the firewalls may need to be configured to allow users at those locations to attend your sessions.

If your session server was set up to enable tunnelling, then all standard meeting tools (except for audio and video) will function normally over port 80, the standard route for Internet traffic. In this case, as long as your end users have access to the Internet, no configuration should be needed for the firewall.

If you plan to use IP audio and video in your session, or if your session server was not set up to enable tunnelling, consult with your Virtual Classroom administrator. Changes may be needed to other participant firewalls.

Also keep in mind, as previously mentioned, that Appendix B, “Analysis Worksheet” on page 247, contains a template that you can use during the analysis stage.
The first D in ADDIE stands for Design. Once you have set the stage for your training initiative with the information you gathered in the analysis stage, it is time to roll up your sleeves and design your training program. Taking time for design will result in more effective and interactive live virtual classes—providing the best experience for you, special presenters, and your learners.

In this chapter, we provide you with tips for creating a session design that effectively utilizes the tools available to you in the Virtual Classroom. The outcome of the design phase should be a curriculum with course scripts that will achieve the desired learning outcomes when implemented.
10.1 Design scenario

Jenny did some quick learning of her own to understand the software and what the sales team would need to know. Based on this, she identified the learning outcomes for the course, and broke them down into enabling outcomes. She then investigated what resources were available to her.

10.1.1 Gathering resources

Jenny was quite happy with what she found. It turned out that she could cover approximately 70% of the training content using existing resources. GBPKS’s contract with the software vendor included access to a self-paced training module on how to operate their software. The software also included an online database of frequently-asked questions (FAQs) to assist users. This would not cover the customizations to the software or the new company policy, but it would provide the basics. In a call to the software vendor, Jenny was able to convince them to provide laminated quick-start reference sheets for trainees and some (limited) time from one of their product specialists. Finally, the Sales Director indicated that he would make available a few hours of his time to help clarify questions about the new policy, as well.

10.1.2 Building the curriculum map

Resources in hand, Jenny put together her curriculum map. She planned to create one course to train the sales force on the details of the new policy, and schedule a broadcast session for delivery of that course. That would maximize the time she had with the Sales Director. She would solicit questions from the sales force in advance, and then interview the Sales Director in a broadcast session that utilized the A/V features of the Virtual Classroom.

The visual presence of the Sales Director in the session would emphasize the importance upper management was placing in this project, and would provide additional motivation to the audience to complete the other elements of the training program. By using the broadcast feature of the Virtual Classroom, conference call costs would be avoided and the entire sales force could attend the same session. Jenny planned to have the session recorded so that people who could not attend the class at the scheduled time could view the presentation afterwards.

Next, the sales team members would complete the self-paced training provided by the software vendor. To ensure completion, each salesperson was asked to take a pre-assessment in the Virtual Classroom as a prerequisite to attending a second course. This course would focus on the use of the custom features of the sales application.
Jenny would schedule five sessions of this second course to address the custom application features at varying times that were practical for her global audience, and attendance at one of the sessions would be mandatory. At the end of the sessions, Jenny would deliver two assessments to the participants. The first assessment would test the attendees’ understanding of the topics covered in the session—a short level two evaluation. Next, participants would complete an online smiley sheet, or level one evaluation of the session (Chapter 13, “Evaluation” on page 193, defines and explains evaluation levels).

After the session, participants would enter a sample case into the sales system. If anyone needed help with this activity, they could contact the training staff to arrange for an informal tutorial where they could do the activity together.

Both of these courses would be completed at least one week prior to the new policy taking effect. This would provide a one-week buffer to address the needs of anyone that had not completed the training. Jenny would then provide reports on the results of the training to the Sales Director.

Three months after the training had been completed, Jenny would receive an update on usage of the sales system. Additionally, she would conduct optional focus group sessions to follow up with participants. Jenny would then compile this data for the Sales Director, and they would determine at that time, if any, additional actions were required.

10.1.3 Scripting the sessions

With her curriculum map in hand, Jenny proceeded to script her two classes, the policy class and the custom features class.

Policy class

She sent out a request to the sales team for questions they had on the new policy, and sat down to put together her script. The class would be available for participants to log on five minutes prior to going live, and the whiteboard would display a welcome slide in the interim. Jenny would begin the session with a welcome, and a brief overview of what would be covered in the class. Since participants would not be using the interactive tools, she would leave out an overview of the Virtual Classroom interface, and move right into the core of the class.

Jenny scripted out six slides to provide an overview of the purpose of the new policy, and then the technical details of it. During the class, the Sales Director would speak through the entire presentation, and Jenny would use the whiteboard tools to draw attention to the points being made. She estimated that should take 20 minutes.
In interview fashion, Jenny would then present the Sales Director with questions sent in from the field. She planned on fielding four questions in this manner, which would take approximately 10 minutes. Finally, Jenny would finish the class with a general thank you and quickly highlight the remainder of the training activities. The entire session should be completed in 35 minutes, which should be long enough to get the intended message out, but short enough to keep the audience tuned in.

**Custom features class**

The custom features class would be delivered as moderated sessions. This would allow Jenny to use all of the tools of the Virtual Classroom to create an interactive learning session. Jenny decided to use the company’s internal phone conferencing system to provide audio with the session. Since video would not add much to the purpose in the class, she decided not to use video. The conference call and the Virtual Classroom class would be available for participants to log on five minutes prior to the start of the session.

Jenny outlined several features and tasks that participants must understand by the end of the session. Knowing that this would be the first Virtual Classroom class for several participants, she decided to avoid any activities that could be too challenging to a new user, such as sharing their own screen. She would begin the session with a quick hello and a raise of hands, and then introduce herself, the producer, and the guest from the software vendor. Next, Jenny would hand control to the session producer (a partner of hers in the training department) for an overview of the tools that would be used in the session. The producer could complete the overview in five minutes.

Once the overview was done, Jenny would have participants put three learning objectives into the chat space to get things started. Next, she would review her planned objectives of the online class, highlighting those that participants had already mentioned. All in all, the introductory activities should be completed in 15 minutes.

Wanting to have participants read, hear, see, and do—for best retention—Jenny planned to use several slides to outline the process and the custom application features the sales team should be using. To keep participants engaged, she would include periodic polling questions and hand raising responses to gauge how participants were currently using the application. She also planned to add content to several slides using the whiteboard tools as she moved through the presentation. She estimated that this presentation would take approximately 20 minutes.

Next, the expert from the software vendor would use screen sharing to demonstrate how to use the custom features of the application with a sample case. Jenny decided against having participants control any of the screen
sharing, since so few would have the time to do this. Besides, participants would have a chance to practice what they had learned after the session. Jenny allotted 20 minutes for this demonstration.

The facilitator would wrap the session up with Q&A. But before opening the floor for questions, the facilitator would use the Web Pages feature to send all of the participants the URL for the online FAQ for the software, and then have participants bookmark the site so they could easily access it after the class. This should be completed in another 15 minutes.

Finally, Jenny would end the session with two assessments. The first would be a short, 10-question quiz that she would allot 10 minutes for, and the second would be a “smiley sheet” evaluation which would take approximately 5 minutes to complete. The entire class would run approximately 90 minutes, right in the target range for a Virtual Classroom class.

Jenny then moved on to develop the training materials.

10.2 Identify the learning outcomes

As with training in any medium, you will start your design process by translating your training need into a set of outcomes that participants are expected to achieve by successfully completing the training. This is the familiar list of items that begins with the phrase “At the end of this course, the learner will be able to...”.

Next, break down the outcomes for the course into a more detailed set of enabling outcomes and learning objectives. These will provide the foundation for the curriculum and the virtual classes that you design.

Later in the design process, you will be developing activities—utilizing the tools of the Virtual Classroom—to meet the objectives.

10.3 Collect available resources

Now that you have mapped out what you need to enable your participants to do, collect the resources that are already available in your organization.

Examples of relevant resources are:

▲ Reference materials (print, Web-based, other)
▲ Job aids
▲ Self-paced training
▲ Prior training content

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While you are collecting resources, look for items that the learners are likely to use in their work setting. Incorporate these items into your curriculum as much as possible to give context to the training, enabling better on-the-job recall. In addition, this enables learners to independently find answers to questions they have after the training sessions have been completed.

For example, suppose you are providing training to customer service representatives about a new product soon to be released, and your customer service representatives have a standard tool for looking up product information. Rather than present all of the information about the new product in the slides, you could incorporate a Q&A activity where the participants actually accessed the database during the session to find the answer.

### 10.4 Create a blended curriculum

Get out your blender! With your learning outcomes and available resources documented, create a curriculum map. Do this by aligning resources and delivery formats to meet the learning outcomes. Some delivery formats are listed in Table 10-1.

#### Table 10-1  Delivery formats

<table>
<thead>
<tr>
<th>Online</th>
<th>Offline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-paced courseware/simulations</td>
<td>Classroom training</td>
</tr>
<tr>
<td>Live virtual classrooms</td>
<td>Print or electronic documentation</td>
</tr>
<tr>
<td>Discussion boards</td>
<td>Video tapes</td>
</tr>
<tr>
<td></td>
<td>e-mail</td>
</tr>
<tr>
<td></td>
<td>CD-ROM</td>
</tr>
<tr>
<td></td>
<td>Mentoring</td>
</tr>
<tr>
<td></td>
<td>On-the-job activities</td>
</tr>
</tbody>
</table>

Select the format based on what is best suited for meeting the desired outcomes. You do not need to use every format, and you can use one format for multiple events. For example, the curriculum might utilize some electronic documentation, several virtual classes, and a few on-the-job activities.

Maximize the value of times when facilitators, SMEs, and participants will directly interact with each other, such as moderated sessions in an Virtual Classroom, a classroom, or mentoring situation. Use broadcast sessions and self-study formats to facilitate information transfer, and require pre-work to be completed prior to personal interactions. Learners can access the outline of a Virtual
Classroom session prior to its delivery to review any presentations or documents you include in advance of the session. Utilize personal interaction for question and answer sessions, in-depth analysis, concept application, demonstration, and practice.

Include activities where learners have the opportunity to practice or apply the concepts directly on the job. Follow these activities with chances to interact with facilitators or SMEs. Learners develop questions and insightful tips they can share once they have had a chance to apply what they have learned in the context of their job. Just think of all the times you thought you understood a concept explained in a class, only to flounder when trying to apply it after the class.

Next, indicate what type of evaluations will be performed, and when the evaluations will occur. The Virtual Classroom provides you with a tool to perform evaluations before and during a session. This is covered in Chapter 13, “Evaluation” on page 193.

10.5 Creating a script for a session

After you have determined where and when you will incorporate virtual classes into your curriculum, you should create a script for each session. Time in the Virtual Classroom is a valuable commodity, and preparing a script is essential to maximizing this time.

A script can also be a helpful guide for both the facilitator and the producer during the session. It indicates on a timeline what tools will be in use, what content is displayed, what actions occur, and what should be said—all in reference to the desired learning outcome.

A good rule of thumb is to limit your session time to 60 to 120 minutes. After that amount of time, learners are likely to tune out or be overloaded.

10.5.1 Selecting a session type

The first decision you need to make is what type of session you will use: broadcast or moderated.

Broadcast session

A broadcast session is meant to push information, similar to a television broadcast. In a broadcast session, a set of instructors can use the whiteboard and screen sharing to deliver information to a large audience. However, the
instructors cannot interact with the audience, and the audience members cannot interact with each other.

Broadcast sessions are a cost-effective way to deliver information to a large audience. Verify with your system administrator how many concurrent participants your Virtual Classroom infrastructure has been architected to support.

Effective scenarios for using broadcast sessions include:

- A panel discussion among SMEs
- A personalized message from a senior executive or industry expert
- Demonstration of a new software or Web application
- Information on a new product
- Information on a new company benefit or procedure

Broadcast sessions are not appropriate when you need to:

- Immediately field questions from the audience
- Ask your learners questions
- Use the polling, assessment, or Web pages features
- Conduct breakout sessions
- See who is attending the session
- Let your learners participate in screen sharing
- Address a small audience

If your training requires a mix of things, some suited for a broadcast session and some not, consider using both broadcast and moderated sessions.

**Moderated session**

A moderated session is an interactive session where you can utilize the full range of meeting tools described in Chapter 2, “Tools of the IBM Lotus Virtual Classroom” on page 15. This type of session can be an engaging collaborative learning experience when well designed and executed. A moderated session can be designed to achieve just about any learning outcome.

But a moderated session is not appropriate when you:

- Have a very large audience that needs information very quickly
- Need to demonstrate a physical procedure
- Need to block communication among participants

Typically, a single facilitator and producer can conduct an effective moderated session with up to 40 participants. However, you should scale this number back to between 10 and 20 participants for new facilitators. Larger interactive sessions can be conducted by utilizing multiple facilitators and leveraging breakout sessions from your main session.
10.5.2 Choosing an audio/video delivery method

Now that you have determined what type of session you will have, decide how you will deliver audio and video to your participants. There are five common methods to choose from:

- No audio/No video
- IP audio/No video
- IP audio/IP video
- Audio bridge/No video
- Audio bridge/IP video

No audio/No video
With no audio or video, you will have to rely on chat and private text messaging for communication in your session. You need to set very explicit ground rules for chat communication to be effective. Many people struggle with chat when there are multiple discussion threads occurring at the same time. In addition, participants who are slow typists will be challenged to contribute anything to the session.

Still, this may be the best option if you have firewall, hardware, or bandwidth constraints that make IP audio unfeasible, and you do not have access to an audio bridge. Be sure to provide extra time for all learning activities since communication via chat is slower than direct speech.

IP audio/No video
IP audio is an inexpensive way to add audio to your sessions. It requires each participant to have a microphone at their PC, preferably a boom microphone attached to a headset. IP audio is best delivered to users with connection speeds greater than 28.8 Kbps.

When choosing IP audio, remember that your audio quality can be affected by the traffic load on the network and the Internet. Also, you may wish to use “request” audio rather than automatic audio switching to facilitate an orderly discussion. IP audio may require modifications to firewalls that exist between participants and your Virtual Classroom session servers.

IP audio/IP video
This option provides an inexpensive way to include audio and video in a session, but also imposes the highest bandwidth requirements. Adding video to a meeting has several advantages. It personalizes the meeting, breaking down distance barriers and encouraging interaction.

Video also allows you to show physical objects under discussion or demonstrate certain physical actions (limited by what can be captured in a desktop video...
camera). It also adds communication through body language and facial expressions, and offers an additional medium for humor.

Video is most effective when all participants have a high-speed connection to the Internet. Even with a high-speed connection, however, do not expect television-quality video. Video also may require modifications to firewalls that exist between participants and your Virtual Classroom servers. Note that some participants may be apprehensive about having their picture broadcast in a session, and this may affect their level of participation in the class.

**Audio bridge/No video**
This is a great option when:

- You have participants attending via low-speed connections
- You do not have the necessary hardware for IP audio
- You need to guarantee phone-quality audio during your session
- Firewalls outside of your control exist between the participants and your session servers

With an audio bridge, there is the added advantage that participants are familiar with phone technology. However, an audio bridge can add costs to your training project. Plus, the conversation over the audio bridge is not recorded as part of the session, and so cannot be played back or edited with the session recording.

**Audio bridge/IP video**
This option is desirable if you do not have the audio hardware available at all locations, but the facilitator does have a video camera. You also gain the quality of service (QOS) you can count on from an audio bridge.

The disadvantages of this option are the additional cost of the audio bridge, higher bandwidth requirements, and potential firewall. Additionally, your video will likely resemble a poorly dubbed movie since the audio via the audio bridge will reach participants faster than the video which is first cached on the session server before being delivered to participants.

### 10.5.3 Pre-presentation activities

It is a good idea to plan a five-minute logon period prior to beginning the virtual class. By default, Virtual Classroom opens access to a session five minutes prior to the listed start time (so if your session is scheduled to begin at 8 a.m., it is actually open for learner access at 7:55 a.m.).
During this time, your participants should log on to the Virtual Classroom, attend the session, and call in to the conference call (if there is one). This buffer will allow participants to sort out any last-minute technical issues they may encounter. Furthermore, participants who enter the session late can affect session performance; having this earlier logon period can discourage participants from entering the session after you have begun.

Put conference call information and any preliminary announcements on the whiteboard, not in the chat area. Participants do not see the chat text that occurred prior to their logging on. The opening whiteboard is also a good place to add a snapshot of the facilitator or guest speakers and their location information, to allow participants to connect a face with a name.

10.5.4 Orient new participants to the virtual classroom

At the beginning of the session, the facilitators should briefly introduce themselves and the producer, and ask all of the participants to raise their virtual hands if they are ready to begin. This engages participants immediately, and enables the facilitator to find participants that may have logged on but stepped away from their PC.

Next, have the producer perform a quick overview of the virtual classroom features. An effective way to do this is to use a blank whiteboard and draw arrows in the general direction of the classroom features you are discussing; see Figure 10-1 on page 152.

You do not need to explain every feature of the classroom, but try to highlight the features participants will be using. Typically you will want to point out how a participant can customize their own view of the classroom so they can get the best viewing experience. If you have an experienced audience, you might skip this orientation.
10.5.5 Establish ground rules

Experienced audience or not, you should allot time to cover ground rules for the session. Although people are used to etiquette in a standard classroom, most will not be accustomed to interacting in a virtual classroom.

A few ground rules that you may wish to include are:

- Instructions for when and how to ask questions.
- Instructions for muting telephones if using an audio bridge. (Tell participants not to put the call on hold, or your entire class will be hostage to the elevator music.)
- Instructions for muting microphone or pausing video if using IP audio and video.
- Instructions for requesting audio if using request IP audio.
• Appropriate use of private messaging and the chat area.
• Using the chat area to “table” questions or items for later discussion.
• Rules for appropriate actions when given access to the whiteboard or control over screen sharing (deleting content, advancing slides, saving changes).
• Having a “Plan B” - what to do in the event of a server error or individual disconnection.

Establishing a Plan B can alleviate potential stress for learners. Many times the end-user’s network connectivity or ISP service is out of your control. Let participants know in advance that problems with these things do occur and can cause them to be disconnected from the session. Participants should simply rejoin the session.

10.5.6 Beginning the session

With the ground rules for engagement established, you may want to proceed with some official introductions. If this is a new group of learners, an ice-breaker activity will help engage everyone and lower barriers to active participation.

Ice-breaker activities include:
• Have a map on the whiteboard, and have participants mark their location when they introduce themselves.
• Record on the whiteboard participant any learning objectives as they introduce themselves.
• Have participants make quick self-portraits on the whiteboard as they introduce themselves.
• Pair participants up in private chats. Spend five minutes having them learn three things about each other. When they return to the main session, have them introduce their partner.
Before continuing with your presentation, you may wish to direct participants to set their shared area to full screen. This will focus their attention on the whiteboard or screen sharing, and cut down on chat “noise,” meaning ancillary chat or private chatting. If you do this, be sure to instruct participants how to undo the full screen so they can access their virtual hand if they have a question.

10.5.7 Content presentation and interactions

As you are scripting your content presentation and session interactions, focus on accomplishing your learning objectives, and not on using every tool in the Virtual Classroom. It is easy to get enthralled with the cool technology and overlook the purpose of your session. Also, keep the session moving and the screen changing to maintain participant interest.

Table 10-2 on page 155 identifies some of the items that fall into each category.
Table 10-2  Script elements

<table>
<thead>
<tr>
<th>Tool</th>
<th>Content</th>
<th>Actions</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text item</td>
<td>Text for Outline</td>
<td>Click text item in outline</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Presentation file</td>
<td>Document and page number</td>
<td>Mark-up instructions, permission changes</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Web pages</td>
<td>URL</td>
<td>Launch instructions</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Screen sharing</td>
<td>Application (program, frame, or screen)</td>
<td>Screen movements, by whom, permission changes</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Assessment</td>
<td>Questions and Answers</td>
<td>Send assessment instructions</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Question set</td>
<td>Question</td>
<td>Send and show results instructions</td>
<td>Speaker name, text</td>
</tr>
<tr>
<td>Breakout session</td>
<td>Room names and assignment type (automatic, manual, self)</td>
<td>Launch instructions, permission changes, announcements, close instructions</td>
<td>Speaker name, text</td>
</tr>
</tbody>
</table>

Although you want to keep your session moving, do not make it frantic. Control the number of screens shown per minute, and allow a reasonable amount of time for each screen. In a standard classroom, the rule of thumb is no more than one slide every three minutes. So in a script for a 90-minute session, you should have no more than 30 different screens.

In addition to screen changes, vary who is speaking, even if you are just switching between the facilitator and the producer. The best-case scenario is bringing in recognized subject matter experts to present some or all of the content, and, most importantly, to be available to field questions from session participants. It’s difficult to overstate the value that participants place on having access to experts during a session.

Try to include opportunities for your participants to read, hear, see, and do. As studies have shown, when you add each of these elements to your curriculum, the level of retention by your participants increases. For example, you could include the following activities in your script:

- Have participants read important information on the whiteboard, through Web pages, or accompanying materials.
- Have the facilitator talk through an explanation of key points in the session.
- Have the facilitator demonstrate the concepts through activities such as role-playing or through the use of screen sharing.
- Allow your participants to “do” in breakout activities or through opportunities to screen share.
The following section offers tips for effectively using the tools in the Virtual Classroom classroom to meet your learning objectives. Keep these in mind as you are scripting your content presentation and interactions.

10.6 Effective use of the classroom tools

The design phase is the time to include all the tools of the virtual classroom that you need in order to add variety and to get your points across. Here are descriptions of the tools available and tips on how to use them.

10.6.1 Text items

Text items are essentially placeholders you can use in your outline. They can provide a reminder for learners and facilitators about a topic or transition in the session, and eliminate the need to generate supporting content to go with the singular talking point. Like other outline items, you can add a timer and speaker notes to text items. Be sure to include instructions in your script for the facilitator to click on the text item. This will make it clear to all attendees where they are at in the session, and it will also initiate the timer for that item.

10.6.2 Presentation files

The whiteboard is typically the primary tool for displaying information from presentation files to participants. Whiteboarding performs faster than screen sharing in a session. For this reason, it is better to use the whiteboard for presenting information in documents, rather than screen sharing for this purpose. Use screen sharing if you need to make modifications to the file in its native format during the session.

In the traditional classroom, participants focus on the presenter. This is one of the reasons why proper attire is so important to classroom instructors.

In the Virtual Classroom, participants focus on the shared space. This makes good visual presentation on the whiteboard even more important in the Virtual Classroom than in the traditional classroom.

The whiteboard should rarely be a static presentation of content. Use specific whiteboard tools to direct participants’ attention to specific aspects of the content on the whiteboard, or add additional informational content to the screen during the presentation; see Figure 10-3 on page 157.
Here are a few whiteboard interactions you can include in your script:

- Use the pointer tool to draw attention to a bullet point or portion of a graphic.
- Leave blanks in sentences and fill in with crucial terms, or have participants complete them.
- Leave bar or line charts without the data lines. Draw them in as you discuss them.
- Make pie charts without labels, and add them as you discuss them.
- Lead into a whiteboard activity with a poll. Enter data from the poll in a whiteboard table to compare against other statistics.
- Draw an item once, and move it around the whiteboard to draw attention to other locations.
Select an item on the whiteboard and cycle through colors for a neon-lights effect.

Conduct a brainstorming activity where everyone can use the whiteboard and contribute on a topic.

You can also add files to the whiteboard to add some levity to your sessions. For example:

- Display a cartoon
- Display a fictitious photo of the presenter
- Display a humorous photo to describe your physical location
- On-the-fly, “dispense” virtual rewards or punishments to learners as they participate by displaying images of the items on the whiteboard

For example, Figure 10-4 shows a picture of the instructor’s frozen location (actually a picture of Iceland) and the text “My House in Madison.”

![Figure 10-4  Humorous photo of instructor’s house](image)
Be sure to include steps in your script for the producer to grant permissions to participants before they contribute to the whiteboard, and remember to revoke this permission after the activity has been completed to prevent any unintended changes to the whiteboard.

Some virtual classroom instructors will combine all of their presentation whiteboard files into a single document that participants print prior to their session. This may seem redundant, but it does provide additional advantages to participants that choose to print it. First, if a network problem causes them to temporarily disconnect from the session, they will still have a printed copy of the content to refer back to what they missed. In fact, if the session uses an audio bridge, the participant can continue to listen to the speakers in the session and follow along with their handout while rejoining the session. Second, it provides participants with a way to take notes during the session. And finally, facilitators can instruct participants to write important words or key steps in this document to facilitate retention.

Refer to 2.2.1, “Whiteboard” on page 22 for additional information on the Whiteboard tool.

### 10.6.3 Web pages

You can use the Web pages feature of a Virtual Classroom for several different types of learning activities. If you want to include multimedia files in your virtual class (such as Macromedia Flash animations, streaming audio, or video), the best way to do it is to push Web pages that include these files. Multimedia files do not transfer to the whiteboard, the frame rates are usually too fast for screen sharing, and audio does not transfer by screen sharing. You will need to instruct participants how to control the multimedia file once they receive the Web page. The play rate for each participant will likely vary, so ask users to raise their hand when they are done viewing the piece. See 11.4.6, “Additional materials” on page 175 for step-by-step instructions on how to post a media file to the Virtual Classroom for use in a Web page activity.

Here are a few other Web page activities that you can include in your script:

- Send participants to an FAQ or help site they can use on the job, and have them bookmark the URL.
- Send participants to one Web site to explore. Send them to another Web site a few minutes later. Have them contrast the two sites (for usability, content, marketing, and so forth).
- Send participants to a Web application to perform a lab activity.
- Send participants to another virtual class entry in the catalog and have them register.
With Web pages, remember that when you push an additional Web page, it will replace the Web page in the viewing window—it does not create an additional window. Also include instructions to close the Web pages window when you want participants to return to the main virtual classroom window.

Web pages are not well-suited for instructing participants on Web site navigation. This is because the facilitator does not control what links a participant clicks in the Web page window. Therefore, there is no guarantee that participants will click the appropriate link, or that they will know what you are referring to on the screen. Screen sharing is much better suited for this type of activity. You can follow a screen sharing activity with a Web page push to allow participants an opportunity to practice navigating on their own.

For more information on the Web pages tool, see 2.2.4, "Web tour" on page 29.
10.6.4 Screen sharing

Screen sharing is a powerful learning tool for demonstrating software procedures, explaining Web site navigation, and demonstrating operations at the PC desktop level (for example, altering control panel settings). It is also an effective tool for leveraging the power of other applications to add interactivity to your session. For example, you can leverage the computational power of Microsoft Excel to illustrate a financial concept, while having a participant enter personal data to provide an instant case study for discussion.

But beyond content presentation, screen sharing is an excellent means to allow for participant practice, and for troubleshooting participant difficulties while performing activities in applications on their local PC. You can also use it for assessment purposes, requiring participants to demonstrate proficiency in a particular application. Include explicit screen-sharing steps in your script, just as you do for the whiteboard.

First you need to select what type of screen sharing to use: share a program, share the entire screen, or share a resizable frame. It is important to select the appropriate screen-sharing method to maximize performance of the Virtual Classroom and focus participant attention.

Share a program

This option is best for sharing a specific application, such as Macromedia Dreamweaver or a Web browser window. Pop-up and spawned windows will appear in the shared area, but new applications that are launched by the shared application will not appear. Also, when the screen sharer leaves the shared application without turning off screen sharing, the shared space turns gray for all meeting participants.

Test your screen sharing script to verify that learners will be able to see all of the screen sharing interactions you have planned. Sometimes what appears to be a window in an application is actually a separate application. For example, creating a new document in Microsoft Word 2000 will actually launch a separate instance of the Microsoft Word application. The new document will not appear using screen sharing if you are sharing the original Word 2000 in “share a program” mode. In these instances, either share the entire screen or share a frame.

If you allow participants to control screen sharing in this mode, they will have access to all of the application features that the screen sharer has. If you need to insure against participants’ saving documents or using other application features, share a frame instead and limit what menus and buttons the participant can access by appropriately sizing the frame.
Note that even when sharing a frame, participants that have control of that frame can initiate actions in the application revealed by the frame with command keys. For example, if you are sharing a frame over an active Microsoft Word document and you have allowed a participant to control that frame, the participant can save the document by pressing Ctrl-s. If you absolutely must prevent participants from executing features of a shared application, do not allow control while screen sharing.

Share the entire screen
This works best when you plan to switch between multiple applications, or you need to show something at the desktop level. Sharing the entire screen is the most bandwidth-intensive type of screen sharing, so performance may be slower than other screen sharing methods. Be extremely careful with scripting permissions, because participants with control over sharing the entire screen have the same access and rights to the screen sharer’s PC as the screen sharer does.

Share a resizable frame
This method is best for maximizing screen sharing performance and for limiting sharer access to features or information in the application that you are sharing. If you flip between applications, whatever application is within the frame continues to be shared. You can also share the desktop using this method. Keeping the frame small will result in the fastest screen sharing performance.

No matter which screen sharing method you select, there are several things you should keep in mind:

- Schedule screen sharing at a late point in your session. The arrival of late-comers to a session during screen sharing can slow performance.
- Have the screen sharer set their monitor display palette to the lowest number of colors necessary. This will improve the speed of the screen sharing.
- Have the screen sharer set their mouse pointer to a large size to make it easier for participants to follow its movement.
- The screen sharer should arrange to be at the best PC available to them. The performance of the screen sharer’s PC will affect everyone’s experience of the screen sharing.
- Avoid using shortcuts and smart keys, because learners find it easier to follow you through a series of pull-down menus.
- Have the screen sharer instruct participants where to look. Think of this as a narrative tour. For example, tell the learner to look at the top left for the edit menu and explain when you are clicking, dragging, and pulling down.
Have the screen sharer close all unnecessary windows and applications. This will improve performance and focus the participants’ attention.

Include pause points during the screen sharing to minimize the effect of latency. Latency describes the effect of screens repainting at different speeds for different users. If the screen sharer action results in large-scale visual changes in the application, such as switching between a Calendar and a list of e-mail messages, include a pause point after the switch.

For more information, see 2.2.2, “Screen sharing” on page 24.

10.6.5 Assessments

Assessments are collections of questions that are intended to provide a more formal evaluation component to your sessions. See Chapter 13, “Evaluation” on page 193 for a more in-depth look at assessments you may want to include in your sessions.

When you script an assessment, remember that this is really a self-paced type of activity for all participants. You will need to provide ample time for all participants to complete the assessment, as well as instructions for what users should when they have finished the assessment.

10.6.6 Question sets

A question set is a bank of questions that you can send out as poll questions in a session. Poll questions are intended to be an informal interaction—not an evaluation or assessment. The results of poll questions are not stored for later retrieval. Here are a few types of polling interactions you can including in your script:

- Create a poll question related to content that will be covered next in the session. Share the poll results with the class and use it as a lead-in to the next section.
- Use anonymous polling to allow participants to vote.
- Create a poll question on material that you have just covered, and use it as a spot check. Use teaching assistants and breakout sessions to provide individualized follow-up with those having difficulty.
- Use a polling question to spot check if the speed of your presentation is appropriate for the participants.
- Use a poll to have participants rate Web sites they have explored, or to judge the value of a particular resource.
Use a series of poll questions (Do you own a cat? Do you work overtime?) to create a quick demographic of your audience. This can be made into a fun ice-breaker activity.

It is a good policy to let participants know before sending a poll question that, unless you are using an anonymous poll, the facilitator will be able to see their individual responses.

For more information, see 2.2.3, “Polling” on page 26.

10.6.7 Effective use of breakout sessions

Breakout sessions are an effective tool to include higher levels of interaction and cognitive processing for all users. You can include unique outline content for each breakout group that participants will be able to use as a resource during the breakout session.

During the breakout sessions, participants can only view the session they have been assigned to, unless you have given them permission to access all breakout sessions. You can use the announcement feature to send out a pop-up announcement to all participants that will appear no matter what room they are in. This is particularly useful for providing reminders about time remaining for the breakout activity.

Instruct participants to double-click on the facilitator name from the participant list in order to ask a question. The facilitator cannot view all sessions simultaneously, and so will not be able to see if a user has raised their hand in the breakout session.

If you are using an audio bridge for your meeting, be sure to instruct users to use chat or the whiteboard for communication in the breakout session. Otherwise, participants from different breakout groups will be talking over each other.

At the end of a breakout activity, you can have participants “visit” the sessions of the other groups to view work that group posted to the whiteboard, or to hear a presentation from that group. To do this, note in your script to provide permission to everyone to view all breakout sessions, and verbally instruct users what session tab they should click on. Note that when participants “visit” the other sessions, they will not see the chat that occurred in the session prior to their arrival.

Be creative with breakout sessions. Many resources exist that explain how to conduct effective small group activities or team activities as part of a training session. With a little time and creativity, you can convert this to an effective online breakout activity.
Here are a few types of breakout sessions you can include in your scripts:

- Pair inexperienced participants with experienced ones, and use the breakout session for one-on-one mentoring.
- Have a competition among teams to come up with the solution to a problem or a puzzle. The first team to report back to the facilitator with the correct answer wins.
- Have participants work on different case studies and present their solutions to the entire class. This provides participants with exposure to many different problems and resolutions.
- Have participants work on the same case study (though in different breakout sessions), and then present their solution to the entire class. This provides participants with potentially many solutions to the same problem.
- If you have participant groups attending jointly from conference rooms at remote sites, create breakout rooms as a site workspace. It can be used in parallel with the main session to take notes on the whiteboard, or for group teamwork.
- Break participants into “chat huddles” (breakout sessions that only use the chat feature) to quickly confer and report back a team response to a question or issue raised in the session.
- Use breakout sessions to create “study groups” that exist over the course of the entire main presentation. Participants in the group can use the space as a constructive way to interact and learn from each other. Questions that get raised or answered in the study group can be shared with the main class at the end of the session.
- Use breakout sessions at the end of the main session for review. Have participants come up with a list of the top ten things they learned in the session, return to the main session, and share several with the whole class.
At the conclusion of the breakout sessions, have the facilitator end the breakout sessions to automatically pull participants out of the breakout sessions and back into the main session. If you need to access the work that participants completed in the breakout session after the facilitator has ended the breakout sessions, simply restart the sessions. The content on the whiteboard will retain the changes that were made during the breakout session.

For more information, see 2.2.5, “Breakout sessions” on page 30.

See Appendix C, “Script Worksheet” on page 249 for a sample form you can use to script your session.

---

**Group One: eLearning Slogans**

- Select a reporter to share your group work
- Brainstorm slogans you could use to market your e-learning courses... (use the chat area to capture your ideas)
- Choose 1 or 2 to use as your identifying slogan... what do you want your e-learning to "say."

---

Figure 10-6  Breakout session with class problem posted on the whiteboard
Chapter 11. Development

The second D in ADDIE stands for Development. With your design complete, it is time to develop the materials that will be used in your training program. This includes: Virtual Classroom courses, course outlines, questions sets, assessments, and whiteboard documents.

In this chapter, we discuss developing the course outline, creating the presentation files, and scheduling the session. This chapter is not intended as a replacement for the how-to information provided in the IBM Lotus Virtual Classroom Instructor’s Guide, found at:

http://doc.notes.net/uafiles.nsf/docs/lsvc10/$File/lvc_instructor.pdf

Refer to that document for step-by-step instructions on how to create a specific component for your course.
11.1 Development scenario

With the scripts in hand, the development tasks turned out to be very straightforward. Jenny knew exactly what she had to put together. She quickly developed the two PowerPoint presentations that would be used, one for the broadcast class and the other for the moderated class.

With the presentations complete, she set up the Virtual Classroom with all of the course information: session schedules, cap sizes, whiteboard documents, Web pages, agendas, and assessments. Finally, she wrote the instructions and the sample case for the offline activity.

All the pieces were quickly in place, and Jenny was ready to put the plan into action.

11.2 Course setup

You create new courses from the Course Builder tab in the Learning Home window. You must have an Instructor account on the Virtual Classroom in order to have access to this tab. If you do not have an Instructor account, the tab will not be visible to you.

![New course properties form](image)

You will be prompted to complete a form with the course category, title, number and description information, as well specifying who will have “instructor” status.
for this course. Be sure to follow any conventions your organization has established for formatting these entries.

**Note:** It is advisable to develop internal naming conventions for both course titles and course numbers.

*Course title* conventions help learners easily find the courses they require in the catalog. When creating course titles, try to limit them to 30 characters in length. Any character exceeding that number will not display in the Course Catalog display.

*Course numbers* should be consistent, with clear-cut numbering conventions. You may base your numbering on department numbers, cost centers, subject matter acronyms, etc. When creating a numbering convention, try to limit it to 20 characters in length. Any character exceeding that number will not display in the Course Catalog display.

When adding instructor names, you will want to specify all people that may be assigned as primary or secondary instructors for delivering sessions of this course. Only those with instructor status for a course can see the course listed in the Course Builder tab, and have permissions to edit the properties or content of the course and its sessions. So be sure to include any person responsible for the development or maintenance of the course in the list of instructors.

The instructor list can be modified after the course is created to add new instructors and developers or remove old ones.

### 11.3 Developing the course outline

If you followed the process outline in Chapter 10, “Design” on page 141 for designing your session, use the script you created as the blueprint for your course outline. In the following section, we provide you with specific tips on setting up presentation files and using the additional materials area of the course outline.

Refer to 11.4.2, “Tips for graphics in presentation files” on page 172, for tips on creating presentation files to include in your outline.

### 11.4 Presentation files

In a session, it is common to present a few slides, followed by another interaction (such as presenting using screen sharing), followed by additional slides. For
example, in a session on using Lotus Notes e-mail, the class might begin as follows:

1. Class Overview, Objectives, and Introductions (presentation file)
2. Demonstration of the Lotus Notes Client (screen sharing)
3. Overview of Acceptable Usage Policy (presentation file)

You can set up your course outline with the presentations from step 1 and step 3 either all as a single presentation file in your course outline, or as separate items in the outline. Table 11-1 outlines the pros and cons of each method.

<table>
<thead>
<tr>
<th>Outline Format</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate Presentation Outline Items</td>
<td>Clear outline of all session activities.</td>
</tr>
<tr>
<td></td>
<td>Linear navigation of outline for instructor.</td>
</tr>
<tr>
<td></td>
<td>Can attach specific speaker notes to each “subsection”.</td>
</tr>
<tr>
<td></td>
<td>Can attach specific time allotments to each “subsection”.</td>
</tr>
<tr>
<td>Single Presentation Outline Item</td>
<td>Faster outline setup time.</td>
</tr>
<tr>
<td></td>
<td>Simplified session outline.</td>
</tr>
<tr>
<td></td>
<td>Single, composite presentation file available for download after the session.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session outline can appear crowded.</td>
</tr>
<tr>
<td>A presentation file may need to be broken into multiple files.</td>
</tr>
<tr>
<td>Longer setup time required for creating the outline.</td>
</tr>
<tr>
<td>Non-linear navigation may be difficult for instructor.</td>
</tr>
<tr>
<td>Outline does not reflect true agenda of session.</td>
</tr>
</tbody>
</table>

Here are a few “gotchas” to avoid while creating your outline.

Figure 11-2  Do not attach multiple presentation files for a whiteboard

- The upload control for a presentation file will allow you to attach more than one file. However, only the first attachment will be converted for use on the whiteboard when adding a presentation file to your outline. In the example shown in Figure 11-2, the second document would not be available in the session.
HTML pages attached as presentation files will only display text and text formatting (such as color and size). Any dependent files, such as images or media, will be left out when converted. Use the Sametime Print Capture facility while viewing the page in a Web browser to capture the display of dependent files.

HTML pages attached as presentation files do not function as HTML files. When attached as a presentation file, the HTML file is converted into an image. Since it is only an image on the whiteboard, links or other HTML actions will not function. Use the Web pages or screen-sharing tools to display HTML functionality.

If you attach exceptionally large files as presentation files, they may not initially appear in the outline when the session is launched. This is because the file is still loading even though the rest of the virtual classroom is loaded. The item will appear in the outline after it has finished loading.

### 11.4.1 Creating presentation files

Here are a few tips for developing presentation files for use on the whiteboard in your sessions.

- Follow the 7x7 rule when designing slide screens: do not use more than 7 lines of text per screen, and no more than 7 words per line. This will keep your screens from becoming cluttered and make it easier for participants to read them.

- Shift the contents of your visual toward the upper left of the page to avoid having important content hidden by the participant list or chat tool. To ensure that learners can see the complete whiteboard, have them use the “make shared area full screen” button. You will also need to remind them to “undo full screen” when they need to raise their hand or use the chat space. Using the “fit shared area to window” button will alter the appearance of your whiteboard content and may not be appropriate.

- Use simple graphics and charts. Images are crucial for visual learners, and they keep the screen interesting. Be sure to include images where they can help explain the points discussed. But keep your images simple; detailed photos or complex images are overhead on your bandwidth.

- Control the total presentation file size. The total size of all of the files on the whiteboard can impact the performance of your session, so limit the whiteboard to files that are essential to the session.

- Limit the pages or slides in your presentation to 100 or less. (You can have multiple presentations of 100 slides, but no single presentation should be more than 100 slides.)
To include a file with more than 100 pages, split the file into two or more files that contain fewer than 100 pages, and attach the files to the whiteboard sequentially.

- Use a simple background for your presentation, such as a solid color or a gradient that fills vertically. White backgrounds work well.

- Headings in presentations sometimes display as one line of text in the presentation program, but wrap onto a second line when displayed on the whiteboard. To prevent headings from wrapping, use short headings, make sure that the text box you use to create the text is longer than the text itself, and use a common font for your headings.

- Do not use links to items or embedded objects in your presentation (graphics, charts, other files); linked items will not be converted when your file is translated for use on the whiteboard.

The Sametime Print Capture facility is also helpful for converting files with these items for use on the whiteboard. (For more details, see 11.4.4, “Converting files with the Sametime Print Capture facility” on page 174.)

- Do not use animation or audio in graphics or presentations. The whiteboard cannot display files such as animated GIFs or slide animation.

- If you use Lotus Freelance Graphics to create your presentation, refer to 11.4.5, “Tips for Lotus Freelance Graphics presentations” on page 175.

### 11.4.2 Tips for graphics in presentation files

Follow these tips to ensure that the graphics in your whiteboard presentation display well.

- Use only high-resolution 8-bit JPG or GIF graphics with a maximum of 256 colors in your presentation. The whiteboard conversion process restricts graphics to 256 colors and substitutes the closest color match for any graphics that exceed the restriction. If you are using a prepared presentation template, make sure all graphics in the template are JPGs or GIFs.

- When you use a highly detailed graphic, such as a screen capture from a program, save it as a JPG or GIF at approximately twice the normal size. (If you use a standard size, the graphic will scatter.)

  For example, if you use a graphics program to take a screen capture, save the screen capture at a ratio of 1:2 or 1:3, rather than 1:1. You can reduce the graphic to its normal size after placing it in your presentation.

- Do not remove or copy a graphic from a file in one program and place it into a file in another program. For example, if you create a graphic in a Lotus WordPro file and then paste it into a Freelance Graphics presentation, the
graphic does not convert well for whiteboard display. (Pasted graphics might appear on the whiteboard as gray boxes or boxes with colored lines.)

- Do not use bitmap graphics (BMPs) in your presentations. Bitmaps do not always display well on the whiteboard.

### 11.4.3 File conversion

Before your presentation file can be displayed on the whiteboard, it is converted to a series of images. The Virtual Classroom automatically converts many file types, including:

- Ami Pro (.SAM)
- Bitmap (.BMP)
- CCITT Group 3 Fax (.TIF)
- CompuServe Graphics Interchange Format (.GIF)
- Computer Graphics Metafile (.CGM)
- HTML (.HTM, .HTML)
- JPEG (.JPEG, .JPG)
- Lotus 1-2-3 (.WK3, .WK4, .123)
- Lotus Freelance Graphics (.PRE, .PRZ)
- Lotus PIC (.PIC)
- Lotus WordPro (.LWP)
- Microsoft Excel (.XL*)
- Microsoft PowerPoint (.PPT)
- Microsoft Word (.DOC)
- Paintbrush/DCX (multi-page PCX)
- PICT and PICT Graphics (.PCT)
- Portable Network Graphics (.PNG)
- Revisable Form Text (.RFT)
- Sametime Print Capture File (.FST)
- Sametime Whiteboard File (.SWB)
- Tagged Image File Format (.TIFF, .TIF, EPS)
- Text file (ASCII) (.TXT, .BAT, .INI)
- Windows Metafile Graphic (.WMF)
- WordPerfect (.WPD)
- WordPerfect Graphics (.WPG)

If you use a font that is not on the Virtual Classroom session server, the whiteboard displays the nearest match to that font. Use common fonts (such as Times New Roman or Arial) in your presentation to be sure that it displays as expected.

If the Virtual Classroom cannot convert your file automatically, use the Sametime Print Capture facility to convert the file for whiteboard display.

You may also want to use the Sametime Print Capture facility for:

- Presentation files that include complex graphics
- Presentation files that use fonts that are not on the Virtual Classroom session server
- Files created in a spreadsheet program such as Lotus 1-2-3
- Any standard import file that has irregularities when natively imported (such as a Microsoft PowerPoint file whose bullets appear abnormal)
More precise control of the overall size and orientation of the output for the whiteboard

11.4.4 Converting files with the Sametime Print Capture facility

The Sametime Print Capture facility is a “virtual printer” that allows you to convert your file to a Sametime file (.fst or “file for Sametime”) for use in the Virtual Classroom whiteboard. It takes a “snapshot” of the image that would be sent to a printer from the application you are printing from, and transforms this into an image for display on the whiteboard. Consult the list of file types in the previous section to determine if the Virtual Classroom can automatically convert your file.

Before using the Sametime Print Capture facility, you must download and install it on your computer, as described in the next section.

Installing Sametime Print Capture

To download and install Sametime Print Capture, begin on the Course Builder tab.

1. Click the link that says, “Click here to download the Sametime Print Capture facility.”

2. Do one of the following:
   - If you are using Microsoft Internet Explorer, select “Save this program to disk” in the File Download dialog box and click OK. In the Save As dialog box, choose a location to save the Sametime Print Capture file and click Save.
   - If you are using Netscape Communicator, click Save File in the Unknown File Type dialog box. In the Save As dialog box, choose a location to save the Sametime Print Capture file and click Save.

3. Open the Sametime Print Capture file from its location on your computer. Sametime Print Capture is now installed. You must restart your computer to use Sametime Print Capture.

You can open a file in any Windows program and use Print Capture to convert the file to .fst format for whiteboard display. The Sametime Print Capture facility allows you to configure the color, size, orientation, and resolution of the file to meet your specific needs.

You can also generate files that are much larger than your screen can display, so that you can use full-page documents or drawings at full resolution during your session. This larger-than-screen capability allows you to use these large drawings without sacrificing detail.
For tips on using the Sametime Print Capture facility and tweaking its output, see *Lotus Sametime 3.0 Print Capture Help* at:

http://doc.notes.net/uafiles.nsf/docs/ST30/$File/PrintCaptureHelp.pdf

### 11.4.5 Tips for Lotus Freelance Graphics presentations

The following information will help you create Freelance Graphics presentations that display well on the whiteboard. The whiteboard does not support transparent colors on images embedded in Freelance Graphics presentations.

If your Freelance graphics template has boxes that say “Click here to...” to guide you in placing various elements, you can follow these suggestions to prevent the boxes from appearing on the whiteboard:

- Edit the page layout and remove the unwanted prompt.
- Use a page layout that does *not* have “Click here” prompts.
- Replace the prompt with the suggested content.

#### Testing Freelance files

Perform the following procedure in Freelance Graphics to test your presentation for use on the whiteboard:

1. Open your Freelance file.
2. Choose **File** -&gt; **Internet** -&gt; **Convert to Web Pages**.
3. Click **OK**.
4. Click **Next**, and then click **Next** again.

Each page is converted to a GIF file. If your computer slows down and becomes almost unusable on one of the pages, the whiteboard will not be able to convert your presentation correctly. Review your presentation and make sure you have followed the tips provided earlier in this chapter.

### 11.4.6 Additional materials

The additional materials allows you to post all of the same types of items as the primary outline. However, these are items that you may want to present at some time during a session, but not in any particular order or at any specific time during the session.

Some items that you may include in the additional materials area could include:

- Humorous files, like images of virtual rewards for contest winners of session contributors, that you might hand out at any point in the session.
- Files for users to download before or after the session by accessing the session outline.
Multimedia files or other Web-browser viewable files (such as Adobe Acrobat files) that you want to push to participants in the session as Web pages.

**Download instructions**

If you want your users to access files from the additional materials area before or after the session, provide the following instructions.

1. Log onto the Virtual Classroom.
2. Click the **My Sessions** tab.
3. Click the course name.
4. Click the **View outline** button.
5. Click the Additional Materials link.
6. Click the document title.
7. Click the file to download, and click the disk icon to save the file to your computer.

**Using additional materials as a file store**

As discussed in Chapter 10, "Design" on page 141, the best way to include multimedia files (such as Macromedia Flash files) in your sessions is to push them to participants as Web pages. This requires that the multimedia files be accessible using a Web server. In a pinch, you can add the files to the Additional Materials area as presentation files, but send it to participants as a Web page. To do this, follow these steps in Internet Explorer:

1. Add the file as a presentation file in the additional materials area.
2. From the additional materials area, click the item title to open the page with the item information.
3. Right-click the white area of the page, and select **Properties**.
4. Copy the URL from the properties window. Be sure the click and drag across the entire URL before copying. The URL should end with "?OpenDocument".
5. Create a new Web Pages item in your outline.
6. Paste the URL into the Web Pages form. It should be of the form:

   http://<catalogserver>/QuickPlace/vcmm_1_op_24549281/Main.nsf/h_287AE0A95AD862F085256C4400492640/487401501220588256C6F0016D58C/?OpenDocument.

7. Delete "?OpenDocument" from the end of the URL.
8. Add the following to the end of the URL:

   "$file/<yourMediaFileName>/?OpenElement", enter a name for URL, and save the item.
9. Now when you push the Web page in your session, the media file will launch in a separate window on participant PCs.

   **Note:** Participants will need to install any necessary plug-ins in advance in order for the file to play as intended.

### 11.5 Scheduling the sessions

Now that you are ready, here are some tips on scheduling some course sessions.

#### 11.5.1 Testing your session

Before the actual class session, be sure to create a practice session and review all of the components of your outline. To test your session, follow these steps:

1. Go to the **Course Builder** tab.
2. Click the course you would like to test.
3. Click the **Schedule Session** button.
4. Click the **Create Practice Session** button.

This will launch an instant session with your course outline in it. Here are a few things that you should review in the practice session:

- Review presentation files for layout accuracy, especially slide headers, bullets, and complex graphics.
- Review Web pages to verify that the URLs are correct.
- Verify all questions available and accurate in the question set.
- Review outlines in breakout sessions. To access the breakout sessions in your practice session, do the following:
  a. Click the title for your breakout sessions in the outline. This will bring the Breakout Sessions tab to the forefront.
  b. On the **Breakout Sessions** tab, click the **Start All Sessions** button. This will launch all of the session rooms for the breakout session.
  c. To check a breakout session room, click the session's tab at the top of the virtual classroom.

#### 11.5.2 Notes on creating and editing class sessions

You must schedule sessions from the course details page. Once a session is scheduled, you can access and edit its properties from either the course details page or the manage course area on the Administration tab. Because the session
is actually created on the session server an hour in advance of the scheduled session start time, all changes to the session must be made at least an hour in advance.

You can also edit the course outline prior to the delivery of a session. These changes will be reflected in all sessions that are scheduled at least an hour in advance of when the changes to the outline occur.

Changes made to the course outline less than an hour in advance of the start time of a session will not appear in the session. If you need to make changes to your session within this timeframe, access the session before the start time and you can add additional materials to your session. Additional materials that you add during a session do not impact the main course outline and will not be present in subsequent sessions of that course.
Chapter 12.

Implementation

The I in ADDIE stands for Implementation. You have designed your sessions and developed the materials needed for those sessions, so you are ready to go live! We have divided this chapter into three sections: pre-session, session delivery, and post-session. The section on session delivery includes tips for facilitators, producers, and learners on participating in live virtual classes.

In addition, Appendix F, “Troubleshooting” on page 269 contains troubleshooting tips on installation and operation of IBM Lotus Virtual Classroom version 1.
12.1 Implementation scenario

Jenny gave her Virtual Classroom Administrator a call, and asked him to create user accounts on the Virtual Classroom for the sales team. He has a two-day turnaround on new user requests, but this request was well in advance of that. Next she called the hosting company to let them know of the training plans so they could prepare their help desk. “No problem,” said her account representative, “and thanks for the heads-up.” Jenny hoped the rest of the implementation would be so easy.

Next, she mulled over how to best market this training. In this situation, her audience had plenty of motivation to seek this training out, so the biggest challenge was getting the word out on the details of the training. To do this, Jenny planned a three-pronged communication approach.

First, she would have a small ad put on the company intranet portal that the sales team worked through every day. Next, she’d have a brief overview of the training added to the monthly sales update e-mail. Finally, she’d do a direct e-mail notification to all of the sales team. All three would include direct links to the Virtual Classroom catalog to make it easy for the sales team members to enroll for the sessions of their choosing.

Enrollments came in soon after the first marketing efforts were out. Jenny had the training assistant send out the “welcome packet” e-mail as soon as new enrollments were received. The e-mail contained information on the training, guidelines for participation, and instructions on how each user could test their system. Since there were new Virtual Classroom users in this audience, Jenny wanted to make sure they received this information as soon as possible so they could test their PCs well in advance of the first class.

With the class dates rapidly approaching, Jenny arranged for some practice dates with all of the class presenters: producers, facilitators, the software expert, and the Sales Director. She scheduled four practice sessions, two for the broadcast and two for the moderated sessions. Jenny knew that the first practice would be a little clumsy, as all the participants became accustomed to the script and their roles. The goal was for the second practice to run very smoothly.

The practice sessions didn’t go quite as smoothly as Jenny had hoped. The software expert kept trying to use short-cut keys during the screen sharing, and Jenny had to keep reminding him to use the menu commands so that everyone could see what he was doing. Plus the Sales Director was very long-winded on his answers to the questions. Jenny decided to cut one of the questions from the Q&A section to keep the session on schedule.
They'd follow the session up with an e-mail that included answers to all of the questions that were submitted. As for screen sharing, the facilitators were just going to have to chime in a reminder during the session should it be needed. Overall, there were no show stoppers, and the classes would soon begin. A reminder e-mail was sent out to the entire sales team the day before the broadcast class.

From Jenny’s perspective, the first class went very well. The practice sessions had really helped Jenny build a rapport and solidify her timing with the Sales Director. In fact, the session went so smoothly, Jenny threw in the question she had pulled from the script. The Sales Director didn’t miss a beat.

Later, Jenny found out that several people hadn’t prepped their PCs in advance and so had missed the beginning of the class. Typical, but these folks could at least view the recorded session, and then everyone should be ready for the next class.

Before the next class, Jenny ran a report to check the test scores on the pre-assessment in the Virtual Classroom. Most of the scores were just fine, but she expected that a few people would be taking advantage of the one-on-one follow-up sessions.

The classes ran extremely well. Two people in the Singapore office had network problems the day of their scheduled class and were unable to attend. But they were able to register for a later class and attend that one without a hitch.

As Jenny expected, a handful of people requested additional one-on-one training, but the majority of the sales staff went on to complete the sample case after the classes without assistance or problems.

### 12.2 Pre-session

With that scenario as an introduction, we are ready to discuss some tips about preparing for the running of your session.

#### 12.2.1 Administrator and Help Desk preparation

It is time to enlist the help of the broader team that is going to assist in the successful implementation of your session. This includes the marketing coordinator, Virtual Classroom administrator, help desk, facilitator, producer, and any guest SMEs.
You will want to notify the Virtual Classroom administrator and the help desk personnel about the details of the project. Both should be informed about:

- The anticipated number of users
- The number of new users
- The dates that marketing information will be sent out
- When users will be testing their PCs
- When the sessions will be live

For the Virtual Classroom administrator, this will assist in capacity planning for your system. Additionally, the Virtual Classroom administrator may be involved in the creation of new user accounts for some participants. Find out how much advanced notice your Virtual Classroom administrator needs for creating new user accounts; close off registrations for your event with that timeframe in mind.

For example, if your administrator will create new accounts within 24 hours of receiving the request, you should close off registration at least 48 hours in advance. This will provide time to get the accounts created and to send the account information to the users.

If you are planning to record your session, there are a few things you should check with your Virtual Classroom administrator:

- Are there any limitations on session recording imposed at the system level?
- How long are the recorded files available on the server?
- How are recorded sessions archived if they are removed after a certain period of time?

For the help desk, this will assist them in planning for call volume. Call volume will be higher during the period participants are testing their PCs. The help desk can also expect a brief spike at the beginning of a session: it is not uncommon to have some users that do not test their system prior to attending, and who are then stressed while they try to quickly work through a connection issue to avoid missing the session. Anticipating this allows the help desk to prepare and can make fielding these calls easier.

### 12.2.2 Marketing

One unquestionable truth to come from early e-Learning initiatives is that you must market your training—whether you are delivering to an internal or external audience. Learners need to know what they are going to get out of training, so your marketing materials should include the answer to “what's in it for me” for participants. The answers include how the training will help participants in their jobs, what experts they will have access to, and what kind or rewards are given to
those that successfully complete the training. Of course, be sure to include easy instructions for users to register, as well as how they can find out more information about the course or its requirements.

At a minimum, use all of the channels you normally do for letting your audience know of training opportunities, such as intranets, training catalogs, company newsletters, and company Web sites. Emphasize the benefits of taking training using an Virtual Classroom. These include:

- No need to travel to a remote location.
- Reduced down-time from their job.
- Unlike self-paced training, participants will have access to peers and experts during the session.

If the Virtual Classroom is new to your organization, do not be surprised if your live training sessions are not immediately filled. Like any organizational change, you may need to use additional marketing in your early sessions to encourage participation. Here are a few things you can try:

- Deliver a popular class only through the Virtual Classroom
- Provide a discount for the first class, or for the first bank of people to register
- Provide a small gift to all participants, or to all those that complete the class
- Provide free demonstration classes

Be creative and have fun, and your users will, too.

12.2.3 Enrollment and communications

You can set your course up for learner self-enrollment, or for manual enrollment by a Virtual Classroom administrator. If you use self-enrollment, be sure to provide clear instructions to your intended audience on how they can enroll. You should consider putting a cap on self-enrollable courses in order to keep session sizes to a manageable level.

If you cap enrollments, you may wish to include contact information in the course description so that you are notified of users that were unable to enroll because the course was full. This will help you determine whether or not to offer another session, and will also allow you to contact individuals if others unenroll.

If you have the e-mail notifications feature turned on for your Virtual Classroom, learners will receive an e-mail when they are enrolled in a course. The e-mail contains information about when the session is to occur, as well as a link that will take them directly to the course after they logon.
Note: In either case, enrollments are locked an hour prior to the start of the session. For this reason, you may wish to create a few generic user accounts on your system (such as User1), and enroll these generic accounts into your session. This will provide you with some flexibility if you need to provide last-minute access to users that were not able to enroll.

As enrollments come in for your sessions, you may wish to send out “course packs” to these participants. A course pack might consist solely of electronic documents you attach to an e-mail, or it may be a pack of print information and training resources (such as job aids) that you mail.

Sending a physical course pack can improve the experience for new users who are accustomed to receiving training materials in a classroom. A print workbook provides an easy place for participants to take notes, and it can be used during the session as part of learning activities.

Other items to include in a course pack are:

- Minimum hardware and software requirements for participating in the course
- Instructions for testing one’s PC before the session
- Help desk information
- Pre-session required work (including pre-tests)
- Instructions on where and how to log on to the course
- Conference call information (if using an audio bridge)
- Ground rules for participation in the session (these will be explained again at the beginning of the session)
- Tips for a successful learning experience (see 12.3.3, “Tips for learners” on page 190)

If you intend to ship a physical pack to participants, include an enrollment cutoff point that will allow sufficient time for you to produce and ship the items to the users. Have an “all electronic” backup plan for last minute participants, or those that do not receive their packs.

Getting participants to test their PCs in advance of a session is critical to a successful session. If users do not, the session might be delayed or cancelled all together. Emphasize the importance of this to your participants, and be sure to provide an adequate time period in which to complete this testing. Consider including a deadline in advance of the session that users are required to complete this testing by. You might even require them to confirm by e-mail that they have tested their PC by that date. If no confirmation is received, you can send these users an e-mail reminder or follow up with them individually in advance of the session.
For all registered participants, use e-mail to remind participants of the scheduled event. Because there is no travel involved, it is easier for participants to forget about a live virtual class for which they have registered. No-shows are a common problem for live virtual classes. You may want to include an incentive for participants to attend your course, such as a cancellation fee. This is a reasonable approach, especially for virtual classes that have been capped, and for those that have spent money on providing training resources in advance to registered participants.

Since you want to maximize the effectiveness of the session, include reminders to complete the pre-work for a session in your e-mail notifications.

### 12.2.4 Practice for the producer, facilitator, and SMEs

Practice sessions for producers and facilitators is key to an effective session. There are two types of practice sessions that you may want to include in your project plan. One session is strictly for the producer and facilitator. The other session is a “dress rehearsal” that would include the producer, the facilitator, any guest SMEs that will be a part of the actual class, and one or more mock learner participants.

The purpose of the first test session with the producer and the facilitator is to educate the facilitator on the operation of the tools in the Virtual Classroom, as well as to establish teamwork between them. Although the producer will be the one responsible for performing most of the technical tasks in the session, the facilitator should still understand how to do these tasks. This enables the facilitator to be more reactive to the needs of the learners in the session. If the facilitator needs to stray from the script to better respond to the needs of the learners, understanding the tools available in the Virtual Classroom will enable the facilitator to leverage the tools as part of the response. Also, should the producer experience technical problems during the meeting, the facilitator can take over without interruption to the class.

The second test session is a “dress rehearsal” of the actual script for the planned class, with the appropriate whiteboard and other materials to be used. Do not just read through the script; perform the actions that are planned for the class. This will enable you to catch any missing steps or instructions left off of the script (give user permissions, or have users undo full screen) or tweak your presentation (for instance, switch to “share a frame” instead of “share a program”). It will also help to establish timing between the producer, facilitator, and SMEs. Finally, by including mock learners, you make sure that no steps or instructions are left out from the learner perspective as well.
12.3 Session delivery

When the big day of the session arrives, you will want everything to go as smoothly as possible. Here are some tried-and-true suggestions to help with objective.

12.3.1 Tips for facilitators

The facilitator is essentially the online trainer in a virtual class. Like the classroom trainer, the facilitator is responsible for the delivery of an effective course to the learners. This section includes a few tips for effective facilitation in a live virtual classroom.

Technology

- Use the best PC available to you. How fast your system processes information affects the experience of all of the participants—especially if you are performing screen sharing.

- Use a headset, whether for IP audio or a conference call. Your speech will be more natural if you are using a headset as opposed to holding a phone receiver or hunching over a microphone. Also, this will free up your hands for typing and using the mouse.

- Don’t field technical support issues during your session. Participants should verify their PCs will work in a virtual classroom in advance of your session. Don’t penalize those that followed your instructions by delaying the session to help those that did not. Refer them to your technical support resource to troubleshoot their issue outside of the session. Fielding technical support issues in the session can also make other participants uneasy, which is not a great environment for learning.

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- Verify that you and your participants are on the same page. Since participants will likely be connecting with different PCs, at different bandwidths, and from different locations across the Internet, participants will receive and see the information in a virtual classroom at slightly different times (sometimes referred to as “painting”). Early in your session, check that participants can all see a screen before you begin discussing it. This will give you an idea of the lag time between when you can see a change on the whiteboard and when your participants can.

- Keep positive about the technology. Sometimes you or the participants will have a technical “hiccup.” Maintain a positive attitude. Otherwise participants will pick up on a negative attitude and it can interfere with their learning, even after a technical issue is resolved.
Practice with live virtual classroom tools, so that they become second nature. Being comfortable with the tool means a smooth flow to your sessions, and enhances your ability to address learner needs with on-the-fly activities.

Presentation

- Start your session on time. Your time in the virtual classroom is very limited; don’t waste it by delaying the start of your session. If you do delay, you are opening the door for bored participants to be distracted by the pressures of their work environment—and you may not get them back.

- Follow the script, but be flexible. Your script was created as a guide for meeting the intended learning objectives. Keep it with you during your presentation, or you will very likely miss steps as you proceed. Stick to the script to ensure you meet the learning objectives, but don’t be afraid to stray from it if you are receiving indications from participants that they need additional information or are having difficulty with the information as it was presented. Think of the script as an Instructor Guide for a standard classroom, and modify the course format as the needs of your learners require.

- Take your time. Don’t rush through your session. Your learners need time to digest the information as you are presenting it, and their PCs need time to download the new screen information as you change it.

- Vary how you mark up the whiteboard. Using a single pointer tool to methodically go through several slides, clicking the pointer next to each bullet as you go is about as monotonous as not using any whiteboard tools at all. Vary how you draw attention to points on the whiteboard. Also, you don’t need to point to every bullet as you go through. Save this for points you intend to emphasize.

- Watch for raised hands and questions posted in the general chat area. It is easy to focus so intently on the whiteboard and the material that you forget to monitor the rest of the virtual classroom. Use the “fit to shared area” feature to compress your presentation materials so you can view the entire virtual classroom at once.

- Use hand-raising for quick and easy feedback. Asking for a show of hands is the easiest and fastest way of soliciting feedback from your participants. Use it frequently to keep users engaged. Based on raised hands, call on specific participants to explain their response further.

- Personalize the learning experience. Call on participants by name, and solicit your participants to share relevant on-the-job experiences. Your participants are often a source of valuable “front-line” information that may not have been captured in the training materials.
Instruct learners to send a chat message to you if they have a question while screen sharing. When you are screen sharing, you will not be able to see when someone raises their hand in the virtual classroom unless you’ve arranged your desktop so that you can see the virtual classroom behind the application you are sharing.

Suspend accuracy requirements for chat spelling or grammar. Chat is meant to be a rapid communication tool. Let your learners know up front not to worry about correcting their chat messages.

Don’t get bogged down addressing a single question. It is OK to table a question that a participant wants to discuss in detail. You can address this with the individual learner during a private phone call or e-mail exchange after the session.

Be a learner in a live virtual classroom course. This is sometimes referred to as “eating your own cooking.” It will help you see what is effective from the learner perspective.

**Voice tips**

- Speak clearly and loudly. Because you are sitting at your desk, it may be easy to fall into a soft, conversational voice, one that is hard for participants to hear and easy for them to tune out. Pretend that you are standing in front of a class. This will help you speak loudly and annunciate clearly.

- Vary your voice inflection. Your voice plays a pivotal role, because it is largely your presence in the online classroom. Be a little “over the top” with changes in your voice. It will keep participants interested in what you are saying.

- Get a conference room or other private location. Face it, part of being a presenter is performing. But you may not be as comfortable performing from your cube as you are in the private setting of a classroom. Plus, your office mates may not be too keen on hearing your performance either. Arrange for a private room in advance if this is an issue.

- Have fun! If you have fun with your presentation, your voice will carry your enthusiasm, and your participants will pick up on this.

**Cultural diversity issues**

- At the beginning of the session, assess the level of linguistic understanding of your learners. Participants who cannot follow you, either because of your speed or linguistic level, will be wasting their time and will become frustrated.

- If you have a linguistically diverse attendance, try to speak slowly and check from time to time if your learners are following your pace and understand the contents.

- If you see that any learner cannot follow your delivery, try to organize a separate session to go through some of the points.
When using the whiteboard, be careful with what icons you choose or what images you draw which may have cultural or religious implications.

Learners from certain nationalities may not be as forthcoming as others; this does not necessarily mean that they are not following the pace of the class. Do not overwhelm them with questions, just check on them from time to time.

### 12.3.2 Tips for producers

In the virtual classroom, the producer is the technical assistant whose function is to assist the facilitator with the presentation tools of the live virtual classroom. This frees the facilitator to focus on training participants and coordinating the involvement of any additional subject matter experts. Here are a few tips for being an effective producer.

- **Keep one step ahead of the script.** Your script is the guide that keeps you and the facilitator on the same page. Watch it closely, and always be ready for the next activity. This will prevent delays between activities and keep the presentation flowing smoothly.

- **Set up a mock “learner” PC.** Have a second PC available to log on to the session with a generic ID. This will allow you to monitor how things are appearing to learners as you proceed through the session.

- **Use care with live virtual classroom permissions.** Unless you are doing a whole-class activity, pass out permissions to a single user at a time. This will prevent the session from becoming chaotic with random participant activity. When using screen sharing, always let participants know when you are giving them control, and when you are about to take it away.

- **Ask permission when assuming control of another’s shared application.** Seeing someone drive an application in their secure PC environment may be a new experience for many participants, and it is good to ensure it is a comfortable one.

- **“Whisper” feedback to facilitator.** Provide feedback to the facilitator using the private chat messaging of the virtual classroom. You can provide feedback on such things as the speed of the presentation or screen sharing, a missed step in the script, and even general encouragement as you proceed.

  **Note:** If the facilitator is sharing their entire screen, the chat message will be displayed to all session participants.

- **Monitor for raised hands.** It is easy for a facilitator to miss a raised hand. If you spot one, indicate this to the facilitator using a private chat.

- **Determine who raised their hand first.** If there are several participants who have questions, you can determine who raised their hand first by sorting the participant list by the virtual hand column. Do this by clicking on the virtual
hand at the top of the participant list columns. This is also helpful for online games, such as sorting out who clicked their “buzzer” first.

- Lower hands after a question and response. Lower hands after questions have been answered, or general responses have been fielded. Participants will forget to lower their own virtual hand, and this can cause confusion as you proceed on to the next topic.

12.3.3 Tips for learners

Participating and learning through a live virtual classroom is a new experience for most people. Here are a few tips to help you have an enjoyable and educational experience when you attend a session.

Setup

- Prepare your PC in advance. It is critical that you test the PC you will be using before the session. If you need to make a configuration adjustment, you may not have time to do it if you wait until the beginning of class. This means you could miss critical information, and you might miss the class entirely.
- Check the hardware requirements for your session. If your session will be using audio over the computer (IP audio), purchase a quality headset microphone. If your session will be using a conference call, consider purchasing a headset for your phone. In either case, a headset will be less likely to cause fatigue during the session and will result in better audio quality.
- Schedule time for class activities. If you don’t book time on your calendar, someone else will.
- Hang a sign that says “Do not disturb” or “Training in progress.” This will let co-workers know that you are busy and should not be disturbed. If you are interrupted to deal with a workplace question, you may not be able to return or recover your focus. You wouldn’t field basic work questions during a standard class, so don’t do it while attending one in the live virtual classroom.
- Arrive ahead of schedule. By arriving early for a session, you give yourself time to address any technical issue that may have cropped up. Also, you don’t want to arrive late since this negatively impacts performance of the virtual classroom for all of the session participants.
- Complete your assigned pre-work before the session. By completing the pre-work in advance of the session, you will gain the maximum benefit from the class. It will provide you with the background information necessary to effectively participate in the session, and it will help you determine if you have questions, so you can get answers in the session.
During the session

- Call the designated help resource to resolve technical problems. If you are having technical problems, call the help desk. Don’t delay the session for all of the other participants by having the facilitator help you troubleshoot.

- Mute your phone or your microphone when not in use. The ambient noise from your workplace can be a real distraction to other participants. *Never* put a conference call on hold, or the whole class will be delayed while they wait for your hold music to end.

- Follow the ground rules. Your facilitator will provide some guidance for interactions in the live virtual classroom, such as how to let the facilitator know you have a question. Follow these rules so that everyone can have an effective class.

- Arrange your screen for best viewing. You can set your virtual classroom screen to the best view for you by moving the participant list or the interactive tools. You can also use the “Expand to full screen” or “Fit to shared area” buttons to better view the whiteboard or screen sharing.

- Don’t multi-task; focus on the class. Just as it would be rude to be doing other work while attending a face-to-face training session, so it is while attending training in the virtual classroom. It will interfere with your learning, and your lack of participation will affect others attending the training.

- Be responsible with control. When you are given access to the whiteboard or screen sharing, follow the instructions for using it. Don’t advance the whiteboard screens or this will occur for everyone. Also, stop manipulating the mouse in screen sharing when asked.

- Close other applications. Closing other software programs will maximize the performance of the session on your PC.

- Let the facilitator know about delays. If you are not receiving the information on your screen that the facilitator is speaking about, ask your facilitator to pause a moment to let your screen catch up.

- Check your settings first if whiteboard or screen sharing appears distorted. If you’ve turned on the option to fit to shared area, the appearance of the whiteboard or screen sharing can be distorted, even when you’ve also set the shared area to display at full screen.

- Addressing firewall issues. If you are having problems because of a firewall configuration at your company site, try attending the session by connecting to an Internet service provider outside of your company.
12.4 Post-session

The post-session tasks involve ongoing access to session files, access to recorded sessions, post-session learning, evaluations, and report generation. See Evaluation for more information on conducting evaluations.

After your session is completed, class participants can access or download the original files you included on the whiteboard, as well as saved chats or modified whiteboards from the session. Let your participants know in advance if these resources will be made available to them, and for how long. The files will be available as long as your session details page is available. If you delete the session details page, or if it is deleted as part of routine server maintenance, these files will no longer be available.

If the session was recorded, you should provide learners with specific instructions on how to access the recorded file, when it will be available, and for how long it will be available.

You might have included additional learning activities after your session as well, such as on-the-job activities or assessments. After your session, consider e-mailing your participants with the details regarding the availability of post-session resources and recordings, as well as any additional learning activity requirements.

Finally, Virtual Classroom includes assessment reports that you can view after your session. Reporting is an important part of the evaluation process. It allows you to gauge the effectiveness of the training, and to provide management with information on the beneficial impact of the training for your organization.
Chapter 13. Evaluation

The E in ADDIE stands for Evaluation, and in this chapter we describe the evaluation stage. The evaluation stage is a key part of any training program. It allows you to gauge how well the training program met the objectives for which it was designed. Most trainers today use some, if not all, of the levels of evaluation described by Donald L. Kirkpatrick. These levels are:

- Level one: Reaction
- Level two: Learning
- Level three: Behavior
- Level four: Results

The assessment and reporting tools included in the Virtual Classroom can be used to facilitate conducting level one through three evaluations.
13.1 Evaluation scenario

The smiley sheet evaluations came in with very high ratings. The sales staff really appreciated hearing directly from the Sales Director and the software vendor, and everyone rated not having to travel to attend the training as extremely valuable.

As for the level two evaluations, everyone eventually was successful in entering the sample case, and this was by far the most important measure. On the in-session assessment, scores were mostly in the 90th percentile, with a few lagging in the 80th percentile. Three months later, the data in the sales system had vastly improved. Sure, there were still some gaps, but big changes had been made in a very short time, and GBPKS was now leveraging vastly improved internal intelligence as it formulated its strategy for the next year.

Ultimately, all indicators pointed to a successful training program that was completed prior to the implementation of the new policy. The Sales Director was very pleased with Jenny’s report on the results, and told Jenny, “We ought to do more of our training that way.”

Jenny took a minute to reflect on how chaotic the whole project would have been for her if she had to deliver the training in person. It had taken her a while to adjust to training using this new medium, but it had been worth it.

Now let’s discuss the level one through three evaluations that can be assessed with Virtual Classroom.

13.1.1 Level one: Reaction

The purpose of the first-level evaluation is to gauge learner satisfaction with the training experience by soliciting feedback from the learners on a course evaluation form, sometimes referred to as a “smiley sheet.” Learner satisfaction is relevant because you want a course to address the needs of learners. By soliciting their immediate feedback at the end of the course, you can determine the effectiveness of the course from the learner perspective.

If learners were dissatisfied with the course, this can affect long-term retention of the concepts or skills covered in the training. Additionally, it can influence whether these learners will participate in future training opportunities. Perhaps most importantly, dissatisfied learners will spread the word, and this can impact attendance or effectiveness of future classes.

Typically, a smiley sheet is set up such that the learner rates the course on a 5-point scale for several factors. Figure 13-1 is a sample smiley sheet you could use in your live virtual classroom:
You can use the built-in assessment tool of the live virtual classroom to create a level one evaluation for your class. Simply create an assessment with questions like those in Figure 13-1. For rating questions, use a multiple-choice format.

Since level one evaluations are most effective when learners complete them immediately upon finishing the course, it is best to attach this assessment to your session. Once you have reached the end of the session, have your participants complete the assessment before they leave.
13.1.2 Level two: Learning

The purpose of the level two evaluation is to gauge whether the learners understood and learned the concepts presented in your training session. To better gauge the impact of the training session, a pre-assessment can be given before the training session to determine the learners’ existing knowledge. At the end of a course, learners then complete a comprehensive assessment on the subject matter. Learner results before and after the session are then compared, and the degree of improvement is used as an indicator for the effectiveness of the training.

<table>
<thead>
<tr>
<th>Response Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course title</td>
</tr>
<tr>
<td>Course number</td>
</tr>
<tr>
<td>Session</td>
</tr>
<tr>
<td>Assessment name</td>
</tr>
<tr>
<td>Assessments taken</td>
</tr>
</tbody>
</table>

**Questions and responses**

1. It was easy to set-up my computer to attend the session.
   1. Strongly Agree                      4
   2. Agree                               4
   3. Neither agree nor disagree          0
   4. Disagree                            1
   5. Strongly Disagree                   0

2. It was easy to locate the course I attended.
   1. Strongly Agree                      5
   2. Agree                               4
   3. Neither agree nor disagree          0
   4. Disagree                            0
   5. Strongly agree                      0

3. It was easy to locate the session of the course I attended.
   1. Strongly Agree                      5
   2. Agree                               4
   3. Neither agree nor disagree          0
   4. Disagree                            0

*Figure 13-2 A report from an assessment*
In reality, many trainers are most concerned only with the knowledge level of participants upon completing the course, and so they only deliver assessments at the end of a session. However you choose to conduct your level two evaluation, the assessment tool of the live virtual classroom can help you.

To do pre-testing, create a pre-assessment in the virtual classroom and have users complete it prior to attending the session. For post-testing, create the assessment in the virtual classroom and have learners complete it at the end of the session. Once the learners have completed the assessments, you can use the reporting features of the virtual classroom to help analyze the results.

13.1.3 Level three: Behavior

The purpose of a level three evaluation is to determine if the training resulted in any on-the-job behavioral changes. In other words, did the learners take what they learned in the session and begin to put it to use as part of their work responsibilities?

A precise determination of this would require intensive workplace observation of the learners after they have completed the training. However, the value of information of this detail is typically considered less than the expense required to gather it. Instead, it is common practice to use surveys or focus groups three months after the completion of the training program to gather this data.

Again, you can use the live virtual classroom to gather this data. You can conduct a focus group by creating a new “class” and scheduling a session. Use this time to discuss with the participants (and perhaps their supervisors) how they have put to use in their job what they learned in the session. For a survey, you can create another assessment and ask participants (and supervisors) to complete it.
Live virtual classroom in context

In this part, we introduce the main concepts and basic facts about e-Learning. In its short history, e-Learning has evolved very quickly, from both a technical and conceptual point of view. New technologies and new business models have had a decisive impact on the learning environment.

In these chapters, we give a general picture of the evolution of knowledge acquisition techniques, what impact they may have in your workspace and business environment, and how virtual classroom fits in that scenario.
Blended learning and e-Learning components

e-Learning is technology-enabled learning. There are many types of e-Learning technology, including the live virtual classroom. In this chapter we discuss the various types using the IBM 4-Tier Learning Model as a framework. We also discuss the infrastructure components that are needed to deliver the various e-Learning types.

Finally, we introduce a new concept: blended e-Learning (the combination of a variety of complementary e-Learning types), and discuss how the live virtual classroom fits into this framework.
14.1 The IBM 4-Tier learning model

In order to really acquire and master a skill, it is not sufficient to simply listen to someone explain it to you. You need practice and experience. Gaining skills can be managed individually, but as education studies often show, people learn better in teams.

The same is true in an e-Learning environment. Instructor-centric models, such as Web lectures, are fine for information transfer. To really acquire a skill, however, the model has to allow the learner to take control and practice.

True learning of how to apply a skill requires interaction. Simple interaction with a computer will allow the learner to acquire basic skills, but in order to progress, greater levels of interaction and collaboration are required. This could be among many learners, or between the learner and the instructor, or both.

Ultimately, to really master a skill, the learner needs to apply that skill in a real-life situation. As we progress up the learning chain, the level of collaboration has to increase.

![Figure 14-1 The IBM 4-Tier learning model](image)

---

**Learn from Co-location**
Get together, Build Communities & Relationships, Live it, Do it

**Learn from Collaboration**
Discuss it, Practice it with Others

**Learn from Interaction**
Examine it, Try it, Play it

**Learn from Information**
Read it, See it, Hear it

**Experience Based Learning**
Learning Labs, Classroom, Mentoring, Role Playing, Coaching, Case Studies, Expert Presentations, Motivational Speeches

**Collaborative Learning**
Live Virtual Classroom, e-Labs, Collaborative Sessions, Real-time Awareness, Live Conferences, Teaming

**Interactive Learning, Simulation, and Games**
CBT/WBT Modules, Self-Directed Learning Objects, Interactive Games, Coaching & Simulations

**Performance Support & Reference Materials**
Web Lectures, Web Books, Web Conferences, Web Pages, Videos...

**Face-to-Face**

**Collaborative**

**Multimedia**

**Internet**
Similarly, in an e-Learning model, the level of interaction and collaboration has to increase if e-Learning is really to help a learner achieve mastery in a specific skill. This increase in collaboration is one of the key principles behind the IBM 4-Tier Learning model. This is the model with which IBM is now building its own internal education. The model describes the educational and collaborative spectrum. It starts with low-level information exchange, and extends to mastery.

It is also a model which is not 100% e-Learning. This model assumes that e-Learning will never fully replace traditional classroom training. There will always be the need, at some stage in skills development, to get learners together with an expert.

The model also allows courses to be developed both horizontally (courses in one tier, or e-Learning type) and vertically (courses which span multiple tiers). These solutions are known as blended solutions.

Key aspects of the four tiers are summarized in Figure 14-1 on page 202.

### 14.1.1 Tier 1: Learn from information

*Read it, see it, hear it.* This is basic knowledge transfer, ideal for new product launches, corporate strategy, or organizational announcements. These are materials where learners can quickly and simply get the information they need. Examples of materials used in Tier 1 e-Learning are:

- Informational Web pages
- Online Help
- Streaming audio
- Videos
- Recorded live virtual classroom sessions
- Web books
- Web lectures

### 14.1.2 Tier 2: Learn from interaction

*Try it, practice it.* Interaction in this tier is between the learner and a computer system—not with other learners or teachers. These are self-paced activities. The materials used in Tier 2 are usually specially designed for learning purposes. Various vendors, like SmartForce and NetG, offer standard course materials. Organizations can decide to create these materials themselves using tools like AuthorWare, Dreamweaver (both
from Macromedia) or IBM Knowledge Producer or Simulation Producer. Examples of e-Learning tools in Tier 2 are:

- CBTs/WBTs
- Interactive games
- Simulation programs
- Self-directed learning objects
- Quizzes, tests, and assignments corrected by the system

14.1.3 Tier 3: Learn from collaboration

Discuss it, practice it with others. Communication is facilitated by technology, which means that learners and teachers can work from different places. Collaboration tools enable learner-to-learner communication, group learning, or learner-instructor communication. Combining all these can form a sense of learning community, like the one illustrated in Figure 14-2.

Collaborative e-Learning can be asynchronous or synchronous.
Asynchronous collaboration
Asynchronous collaboration tools do not require learners and teachers to be online at the same time to communicate with each other. Messages, questions, or assignments can be posted and answered at any moment. Others can read them and respond when they are online. Figure 14-3 compares asynchronous resources and materials with those of synchronous e-Learning.

The following are examples of asynchronous tools that can be used in an e-Learning environment:
- Discussion forums
- Question and answer forums
- Individual or group assignments corrected by teachers
- TeamRooms
- E-mail

Synchronous collaboration
Synchronous collaboration provides online communication in real-time. Teachers and learners come together electronically at a given time, without leaving the workplace or home; they use tools such as chat, audio, video, and whiteboards. Figure 14-4 contrasts the need in synchronous e-Learning for being present at the same time as other learners with the time flexibility of asynchronous e-Learning.

The following are examples of synchronous tools used for learning purposes:
- Live virtual classroom
- Instant messaging
- eMeetings

Figure 14-3  Synchronous versus asynchronous collaboration
Figure 14-4  Synchronous and asynchronous collaboration in e-Learning

14.1.4 Tier 4: Learn from co-location

*Live it, experiment.* Finally, classroom and mentoring take their place. Tier 4 represents high-level learning activities that do not rely on technology. There will always remain situations where traditional classroom-based training will be most effective; where learners need to get together with an expert, and physically interact with others or with objects.
14.2 e-Learning components

In the previous sections, we discussed the various types and approaches to e-Learning, and their advantages and disadvantages. Now we want to present the different components which make up the framework needed to deliver the various types of e-Learning.

![Figure 14-5  A total learning system framework](image)

Writing a generic description about the components of an e-Learning infrastructure is difficult. The terms included in Figure 14-5 are widely used; however, each vendor has its own interpretation. Many products are based on a mixture of functionality (like a learning management system with content authoring capabilities) which makes them hard to position with each other and with other more generic Information and Communications Technology infrastructure components. In the following sections, we present an overview of these components.

14.2.1 Learning management system

A learning management system (LMS) plays a key role in the e-Learning environment. Its primary function is to manage learner information, administration, and access to courses. It is most often referred to as the “learning portal” that links users with the various learning activities. In some cases, it is
used to manage the course catalog and to link different types of e-Learning activities together in order to deliver a blended solution.

An LMS often delivers the following functionality:

- Learner enrollment
- Learner administration
- Tracking management and information scoring
- Reporting
- Curriculum management
- Competency management
- Skill gap analysis
- Classroom-based training management
- Live virtual classroom management
- Sessions and learning activities scheduler
- Learning resource management
- Course catalog, including advanced search capabilities
- Common course authoring management

An LMS usually relies upon a standard HTTP server for delivery and uses a relational database system for its data storage. Examples of LMS systems are Saba, Docent LMS, Blackboard, Oracle LMS, IBM LMS¹ and TopClass.

The current LearningSpace 4 and 5 Core module is officially not positioned as an LMS. It does not provide all of the typical LMS functionality, such as support for classroom-based training, although in Figure 14-5 on page 207 it would probably best fit in the LMS part. The Lotus developers are working on a full LMS product for planned availability in 2003.

### 14.2.2 e-Learning authoring tools

E-Learning authoring tools usually refers to tools that are used to create asynchronous Web-based Training or Computer-Based Training courses. Some are more sophisticated than others. The more sophisticated ones are often programs that must be installed on the user's local computer, and that require some technical expertise to use.

Some of these authoring tools may be generic Internet authoring environments used to create learning materials, such as Macromedia Authorware, Macromedia

¹ At the time of writing, IBM is in the final testing stages of its own LMS system.
Dreamweaver, and IBM Knowledge Producer and Simulation Producer. There are also light versions of such tools that do not require any technical skills and that are available through a Web browser.

Other authoring tools can be product-specific; they are used to create, for instance, courses within their particular virtual classroom environment.

14.2.3 e-Learning delivery systems

e-Learning delivery systems are the programs used to render learning content to the learners. There are many different types of e-Learning delivery systems in the market.

14.2.4 Web-based training delivery

Web-based training (WBT) is usually based on Web standards (HTML, GIF, Flash objects, and so forth). These materials can be delivered by any standard HTTP server, such as Apache, IIS, or Domino. Standard NetG or SmartForce courses are examples of WBT materials that can be delivered by any HTTP server. Some authoring environments ship with a proprietary delivery server.

14.2.5 Asynchronous collaborative delivery

Lotus LearningSpace Collaboration 4 and 5 offer asynchronous discussions. LearningSpace 3.x also offers asynchronous instructor-moderated assignments. Both tools are based upon standard Domino applications and are delivered by the Domino HTTP task. Other asynchronous collaborative products may be based on Java programs served by a standard HTTP server and using an underlying relational database.

14.2.6 Synchronous collaborative delivery

Live virtual classroom systems run either standalone or integrated with an LMS. Some virtual classroom products rely on a separate HTTP server for course delivery and an external LDAP server for user management and authentication.

Lotus LearningSpace 4 and 5 offer a separate Collaboration Module, which also includes virtual classroom functionality. However, these collaboration modules cannot be used separately from LearningSpace 4 or 5 Core Module from a licensing point of view.

The new IBM Lotus Virtual Classroom is delivered in two modalities:

- Standalone, aimed at the low end of the learning market, such as internal training and informal sessions
LMS-integrated, aimed at high-capacity, scalable use

Other virtual classroom products in the market include Centra Symposium, Placeware, WebEx, Interwise, and Microsoft Netmeeting. Some of these products are dedicated e-Learning products, while others are more generic e-Meeting products that can be used in a learning context.

14.2.7 Learning content management systems

A learning content management system (LCMS) is a framework used to manage the design, development, and reuse of learning objects. It is a multi-developer environment. The output content can be used in a variety of learning methods, like CBT, WBT, Personal Digital Assistant (PDA) format, or print.

From a technical point of view, the functionality can be very similar to generic Web content management systems. Examples of LCMSs are Docent CDS/Outliner, Centra Knowledge Server, and TopClass.

14.2.8 Informal learning

Informal learning is perhaps the most popular and least recognized way of learning. Even when you do not realize it, you are constantly experiencing informal learning in your workplace, by way of informal discussions with your colleagues, e-mails, ad hoc comments, and so on.

**Instant messaging systems**

Instant messaging can be a very useful tool within a learning environment. It can be used for all kinds of informal learning or social activities within a learning environment.

- CEOs can organize virtual office hours so their staff can communicate with them and get the information and direction they need.
- Learners can communicate with each other or with their mentors.
- Remote learners feel part of a group, and that they are not alone out there.
- Employees and colleagues can contact experts or mentors on a particular subject and obtain instant knowledge.
- Basic issues or problems can be solved remotely by using desktop-sharing technologies.

Some instant messaging systems require local clients installed in the users’ PCs, while others are based on browser plug-ins or Java applets which can be downloaded on first use.
Another important aspect of instant messaging systems to consider when integrating them in a learning environment is LDAP compatibility. LDAP is a standard Internet directory used as a central user management system, enabling such functionality as single sign-on (SSO) authentication.

There are various public services that offer free instant messaging, like ICQ, AOL and MS Messenger. If a company decides to deliver its own instant messaging system, Lotus Sametime is an excellent candidate.

Knowledge management systems
Knowledge management (KM) systems can be a part of a learning solution. KM and e-Learning used to be two separate worlds, but they are now starting to converge. A KM system can, for instance, allow curriculum planners, instructors, or learners to search for subject matter experts in the corporation, or find existing relevant materials within a company’s intranet. In an informal learning scenario, these systems are also useful to quickly identify experts for quick mentoring solutions. Examples of KM systems are Lotus Discovery Server (DS) and Autonomy.

14.3 Blended solutions

Once we have seen the different approaches to e-Learning and the various underlying technologies required to deliver it, let us see what blended learning is about. Blended learning means different things to different people:

- To combine different modes of Web-based technology in a single learning program (live virtual classroom, and asynchronous collaborative work)
- To combine various pedagogical approaches (for example constructivism, behaviorism, and cognitivism) to produce an optimal learning outcome with or without instructional technology
- To combine any form of instructional technology (such as videotape, CD-ROM, Web-based training, film) with face-to-face instructor-led training
- To mix or combine instructional technology with actual job tasks

Blended learning has been very successful in early adoption by corporations and learning organizations. This is due to the fact that it satisfies a number of requirements:

- Different learning objectives require different approaches and blended learning provides an adequate framework to satisfy such objectives.
- Its versatility allows corporations to gradually introduce learners to e-Learning, making adoption more natural.
Working in a blended environment enables instructors and instructional designers to develop the skills needed for e-Learning and to gradually transfer existing programs and resources.

Existing learning resources, such as CD-ROM CBTs, may not be suitable for conversion to another more suitable format (backwards re-purposing). A blended solution allows you to capitalize on the initial investment in such materials.

**Blended learning in practice**

Now that we know what blended learning is about, you may be interested to read about some real life examples of how e-Learning can be introduced to existing training programs to create blended solutions:

- **Put assessment online.** One of the easiest places to start is to move a test or assessment online. A financial services organization created a blended solution for a customer service course. They kept their traditional instructor-led, two-day course and put the multiple-choice test online. This allowed the training department to automate scoring and made it easier to track and report scores.

- **Follow up with a community of practice.** A technology company teaching their IT staff a new programming language created a threaded discussion for learners to access after training. This allowed learners to stay in touch with classmates and to ask questions, share insights, and post resources.

- **Make reference materials available.** A government organization, as part of the training for their support staff, provided links to reference materials for learners to use after the training program. The links enabled learners to explore topics in greater depth and reduced their reliance on three-ring binders of information, which tended to become outdated in a matter of months.

- **Deliver pre-work online.** The IBM management development program Basic Blue™ is a great example of pre-work being done online. Managers attending Basic Blue must complete pre-work online courses before being issued tickets and travel authorization for the face-to-face portion of the program. Online pre-work saves costs associated with shipping material, and the ability to track scores ensures that learners show up prepared.

- **Provide online office hours.** A company that has invested in a set of CD-ROM courses to teach a new desktop application uses online office hours (using Lotus Sametime) to supplement the CD-ROMs. Learners who want to add the human touch can get help from a real person who can answer questions, help learners devise strategies for learning in a self-paced mode, or simply provide moral support.
Use mentoring/coaching as a tool. A manufacturer training service engineers in a five-day, face-to-face class uses online coaching as a way to extend the classroom experience. They found that learners needed someone to talk to after the class who could help them with problems they encountered in the field. Using a coach, graduates of the face-to-face program were able to ask questions and those questions enabled the coach (classroom instructor) to improve the face-to-face classes.

Provide job aids. A pharmaceutical company delivering an online course for new sales people supports the course with high-tech job aids. The course teaches a propriety selling method linking specific strategies with each phase of the sales cycle. After completing the course, learners are issued a personal digital assistant (PDA) to help them organize their sales calls and the PDA provides job aids. These job aids allow the reps to review the selling strategies and to access short hints from the course.

Access experts. After a recent training event in Singapore, IBM Mindspan sales engineers wanted to learn more about the architecture of the products shipping later this year. The people best able to answer questions and explain the architecture were development experts in Cambridge, Massachusetts, USA. As a follow up to the face-to-face class delivered in Singapore, a live virtual classroom program was created, providing sales engineers in Asia with access to the developers in Cambridge. The session included application sharing, white boards, and some document sharing.

Create a “lifeline.” IBM has a lifeline application called Blue Pages.™ It is a telephone directory with the added ability to find people with the skills we need. We can search for people who are experts in artificial intelligence, the Americans with Disability Act, or translation and international skills for bi-directional languages. This kind of online tool allows our learners to access expertise outside the formal classroom and to get answers quickly from the best sources.

Maximize e-mail and messaging. E-mail is probably one of the least appreciated ways of extending blended learning solutions. Using e-mail distribution lists before, during, and after learning events is powerful. You can send learners attachments with new information directly, point learners to additional resources, suggest advanced classes, and remind learners of when they need to get re-certified.

14.4 Blended learning and live virtual classrooms

Now that you have the big picture of e-Learning, you can use Table 14-1 as a starting point for deciding what e-Learning type, relative to other learning solutions, is appropriate for your requirements.
## Table 14-1 Learning solution suitability matrix

<table>
<thead>
<tr>
<th>Learning solution</th>
<th>Suitable for...</th>
<th>Unsuitable for...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier one: learning from information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static Web pages</td>
<td>• Just-in-time learning&lt;br&gt; • Broadcasting&lt;br&gt; • Self-paced&lt;br&gt; • Distributed learning&lt;br&gt; • Content that changes&lt;br&gt; • Low development time and cost</td>
<td>• Collaboration&lt;br&gt; • Coaching</td>
</tr>
<tr>
<td>Audio and video clips</td>
<td>• Intuitive learning&lt;br&gt; • Step-by-step instructions</td>
<td>• Content that changes</td>
</tr>
<tr>
<td><strong>Tier two: learning from interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactive CD-ROM (CBT)</td>
<td>• Off-the-shelf content&lt;br&gt; • Multimedia content&lt;br&gt; • Delivering lots of content&lt;br&gt; • Static content&lt;br&gt; • Self-paced&lt;br&gt; • Distributed learning&lt;br&gt; • Self-assessment</td>
<td>• Low budget development&lt;br&gt; • Rapid development&lt;br&gt; • Collaboration&lt;br&gt; • Content that changes&lt;br&gt; • Instructor assessment of learners</td>
</tr>
<tr>
<td>Web-Based Training (WBT)</td>
<td>• Standard off-the-shelf content&lt;br&gt; • Self-paced&lt;br&gt; • Changing content</td>
<td>• Collaboration&lt;br&gt; • Instructor assessment of learners&lt;br&gt; • Self-assessment</td>
</tr>
<tr>
<td><strong>Tier three: learning from collaboration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threaded discussion</td>
<td>• Self-paced&lt;br&gt; • Distributed learning&lt;br&gt; • Content that changes&lt;br&gt; • Collaboration</td>
<td>• Getting instant feedback&lt;br&gt; • Broadcasting&lt;br&gt; • Instructor assessment of learners&lt;br&gt; • Self-assessment</td>
</tr>
<tr>
<td>e-Meeting</td>
<td>• Broadcasting&lt;br&gt; • Getting instant feedback&lt;br&gt; • Low development time/cost&lt;br&gt; • Distributed learning&lt;br&gt; • Collaboration&lt;br&gt; • Unstructured sessions</td>
<td>• Monitoring take-up&lt;br&gt; • Assessment&lt;br&gt; • Delivering lots of content&lt;br&gt; • Long sessions&lt;br&gt; • Self-paced</td>
</tr>
</tbody>
</table>
Use Table 14-2 as a guide to the effectiveness of learning solutions that exist in the separate tiers, based on specific criteria.

**Table 14-2 Learning solutions by tier**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Tier 4</th>
</tr>
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<tr>
<td></td>
<td>Async</td>
<td>Synch</td>
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<td>Distance learning</td>
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<td>Just-in-time learning</td>
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</tr>
<tr>
<td>Just-in-time development</td>
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<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Criteria</td>
<td>Tier 1</td>
<td>Tier 2</td>
<td>Tier 3</td>
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<td></td>
<td></td>
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<td>Async</td>
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<td>Low development cost</td>
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<td>Low delivery cost</td>
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<td>Collaborative learning</td>
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<td>Self-paced learning</td>
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<td>Structured programs</td>
<td>X</td>
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<td>Instructor-led</td>
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<td>Self-assessment</td>
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<td>Instructor assessment of learners</td>
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<td>Off-the-shelf third party content</td>
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<td>Broadcasting</td>
<td>X</td>
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<td>Complex topics</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Tracking learner progress</td>
<td></td>
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<tr>
<td>Mentoring</td>
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<td>Hands-on experience</td>
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<tr>
<td>Delivery to large groups</td>
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Making the case for e-Learning

In this chapter we describe the main factors which have fostered the development of e-Learning, and discuss how e-Learning can answer your business training needs.
15.1 The learning evolution

The great majority of organizations have only just begun to search for ways of building and maintaining ongoing capabilities in e-Learning. According to a 1999 IBM Mindspan Solutions-sponsored Mercer Management Consulting study, most companies that are using distributed learning today have maintained the traditional focus on training (education in preparation for a specific job), and have not yet expanded their vision to the broader uses and possibilities offered by e-Learning. These usage patterns will change as three trends emerge:

- The emphasis will shift from training to continuous learning, from education in preparation for a job to education as a continuing activity within a career. Looking forward, the emphasis will continue to shift to performance support with the integration of knowledge management capabilities.

- e-Learning content will expand beyond its current concentration on IT and certification programs and will focus on meeting business needs: shortening time to market, integrating acquired operations, or implementing new systems, for example.

- Customized content will become more important than off-the-shelf courseware as e-Learning initiatives focus on the structural goals of an enterprise.

Mercer Management Consulting found that there are innovative enterprises that have moved beyond training to focus on e-Learning as a tool for business process transformation. Many of these early-adopters have had success with e-Learning as the solution for a specific business process problem. Interestingly, the champions who have fostered these successes have not always been directors of training programs. Instead, they have come from across the organization in areas such as sales and marketing, with e-Learning used to speed new product roll-outs, for example, or to maximize time spent with customers.

e-Learning will most probably feature in your corporate learning policy. There is a growing trend towards the implementation of e-Learning in corporate learning. In fact, according to Online Learning Magazine, the percentage of organizations using e-Learning to train employees grew from 16% in 2000 to 24% in 2001. 30% of organizations that responded to an IDC e-Learning survey¹ said that their customers are using e-Learning.

In Figure 15-1 on page 219, you can see how spending in e-Learning has evolved in the last six years and the dramatic projections for the next few years. You can also appreciate that the big jump starts between years 2000 and 2001.

¹ Source: e-Learning Vendors: “These are Your Customers IDC” October 2001
This takeoff coincides generally with the boom days of the Internet and globalization efforts in the world.

**Figure 15-1  e-Learning spending**

So the obvious question comes to mind: why are organizations spending this money to implement e-Learning?

**15.2 Value propositions**

The nature and competitiveness of the market requires that companies keep their costs down, reduce their time to market, and improve the quality of their products. Corporations turn to e-Learning as a means to achieve those targets and remain competitive.

Figure 15-2 on page 220 shows some of the main factors that have had a direct impact in the marketplace and, in turn, on e-Learning.
15.2.1 Cost reduction

One area where e-Learning can help your corporation to remain competitive is the reduction of costs associated with learning. With e-Learning you can dramatically improve cost savings.

**Travel costs**

This area of improvement is particularly relevant to geographically dispersed corporations in which travel, living and hotel expenses consume a significant portion of the learning budget. Either instructors must travel to different training locations, or learners must all meet at a particular venue. We must also add the cost of the time invested by both instructor and learner to go to the training venue.

e-Learning can offer common, accessible virtual places for people to get training, from either their workplace or home computer. Learners can access it at the time they choose, and follow the course or curriculum at their own pace in an asynchronous manner via discussion threads and mail. They can also meet at the same time in a live virtual classroom environment.

**Instructor costs**

In some cases, when the training must be performed simultaneously in different places, or when there is a very tight schedule, companies are sometimes forced
to employ more than one instructor (either internal or external), who in turn needs training, in order to provide enough traditional classes.

On the other hand, with e-Learning you can have one single instructor, either delivering a live worldwide broadcast or moderating collaborative sessions with learners from all over the company.

**Time away from workplace costs**

Time away from the workplace is a cost that is often overlooked. While an employee is away taking a course, this person does not produce, and therefore it should be considered an added cost.

With e-Learning, training delivery is shortened. Learners can work from their workplace computers. They can choose to run the sessions during off-peak periods when training will not take up production time.

**Venue costs**

Whether there is travel involved or not, there are certain costs associated with face-to-face sessions which cannot be avoided, namely: maintenance of the training room or lab; rental of rooms at different locations such as hotels or business centers; provision for refreshments; rental or maintenance cost of required equipment such as computers, overhead projectors, screens, and so on.

e-Learning might not require a special venue. Moreover, once you have made an initial investment in an e-Learning infrastructure, you can reuse the resources over and over again—network, software, and videoconferencing facilities.

**Reuse of materials**

When a traditional face-to-face training session has been delivered, it is over. If learners missed it, or had problems in following it because it was about an unfamiliar topic, they will not able to revisit it.

With e-Learning, learners can go back to the training environment as many times as required and reread the topics or replay the sound or video tracks. The recorded sessions or discussion threads will always be accessible, at any time of day or night, until they become obsolete and are archived.

e-Learning also allows you take modules and reuse them or update them when necessary. You do not need to start anew.
15.2.2 Globalization

In addition to the economical constraints and fast-paced change, organizations are also faced with additional geographical factors.

Large global corporations, which are present in different countries or continents, often need to train their staff on certain new processes and procedures (sales strategies, new products, or expense policies, for example). In such cases, face-to-face training would be extremely expensive, or not feasible at all, resulting in employee dissatisfaction and decreased efficiency.

They must also address global market requirements, and as such they need to adapt their processes and structures to give adequate service to their customers. This means that corporate knowledge, policies, procedures, strategies, or technology need to be spread all around the world, taking into account different locations, time zones, cultural aspects, and so forth.

The traditional approach of sending instructors to field locations to explain the latest improvement in the invoicing procedures is, in most cases, not feasible anymore. Now you need to spread this knowledge in a global, flexible and sometimes participative manner (you may want to have access to the immediate feedback of your audience). As processes are becoming global, learning processes must also become global.

e-Learning can bring all the relevant people together, either synchronously or asynchronously, and facilitate the appropriate training or learning environment in an adequate time frame.

15.2.3 Mobile workforce

The increasing mobility of workers and the move to home-based work are also driving the trend from classroom-based learning to distributed e-Learning. Again, this trend is accelerated by the new technological developments, such as fast connections and pervasive devices such as wireless phones or PDAs.

By providing quick and accessible training to your field workforce, you will be sure that they will always be competitive.

15.2.4 Reduced cycle times

In the last few years, there has been a significant shift from a task-oriented to a knowledge economy. Organizations are experiencing a shift to e-business economy, influenced by fast technological developments, shorter product life cycles, and mergers and acquisitions.
A given technological area of expertise which is of capital importance today may become obsolete in a few months.

When two companies merge, their internal processes must change and this knowledge needs to be spread across their staff.

A significant proportion of an employee’s skills and knowledge, particularly in the technical environment, becomes outdated in a period of three to five years.

To keep up with this continuous change and to gain competitive advantage, corporations need to make sure that their employees are up-to-date in their skills and knowledge. Efficient, fast to develop, and accessible learning methods are therefore critical for the success of a company.

In the next few years, a large proportion of corporations will require skilled workers who are able to evolve at the same pace as the market requirements—so much so that it will become increasingly more difficult to find and retain skilled workers.

To cope with these changes, organizations need to re-skill employees to operate effectively in the new environment and under the new requirements, and e-Learning has an important role to play in this field.

15.3 Learning and return on investment (ROI)

These considerations lead us to a situation that most corporations face: how do you calculate the cost of training in relation to the return on investment?

The calculation of ROI in learning is neither tangible nor immediate. Results are usually perceived at least six months or more after the training has been delivered.

You can use ROI calculations to identify and measure tangible and intangible benefits of training programs, including, but not limited to, the following:

- Increase in productivity
- Reduction in cycle time
- Performance improvement
- The fair share of the sales training contribution to your business bottom line
- Other measures specific to your training situations
- Recommendations on future improvement in training investment decisions and/or program development and implementation
Return-on-investment (ROI) is a key financial metric of the value of business investments and expenditures. It is a ratio of Net Benefits to Costs expressed as a percentage.

This formula can be expressed as:

\[
\text{ROI} = \left( \frac{\text{monetary benefits} - \text{cost of the training}}{\text{cost of the training}} \right) \times 100
\]

For example, evaluation research determines that there is a 10 percent increase in the number of sales following the implementation of a selling skills training program for an organization’s sales personnel. Other data from the organization's financial system reveal that each one percent increase in sales is equal to increased annual revenue of $25,000. Further, it is known that the training program cost $75,000. For this example, ROI is calculated as:

\[
\left( \frac{250,000 - 75,000}{75,000} \right) \times 100 = 233\%
\]

This means that for every $1 invested in the training program, the organization realized a net benefit of $2.33 in the form of increased revenue from additional sales.

### 15.3.1 Steps to calculating ROI

ROI relates to a specified period of time, typically one to two years.

Once key objectives for training have been identified, you need to keep accurate records of the data related to them (sales figures, number of customer support calls, productivity rates, overall overtime hours, days of absenteeism, and so forth). Then you will need to keep monitoring them after the training has been delivered.

1. First you measure all of the costs associated with the particular training program over this period:
   - Analysis, design and development costs
   - Promotional costs
   - Administrative costs
   - Tutor costs
   - Learner costs (time, expenses, lost productivity)
   - Equipment and facilities costs
   - Evaluation costs

2. Then you measure the financial benefits obtained over the same period:
   - Labor savings
   - Productivity increases
   - Cost savings

3. Then you can calculate the ROI.
There are many approaches available, so it can be difficult to select the most appropriate one. It is important to focus on the following questions about the proposed training to be evaluated:

- **Feasibility**—Will it be ready in time? Will all potential participants have the necessary resources to attend this meeting (for instance, do they all have access to Web cams to attend a live virtual classroom)?
- **Accuracy**—Will it address the problems it is supposed to fix, within the time frame we expect?
- **Credibility**—Are our instructors up to the task? Do we have experts in that field who can deliver the appropriate information?
- **Costs**—Will the cost be within the budget’s constraints?
- **Time**—Will participants (including learners, managers, and others) be available to attend the training?

Generally, two approaches are better than one.

It is not unusual for the ROI in training to be an extremely large figure. Even when a portion of the improvement is attributed to other factors, the numbers can still be impressive. But it should be understood that ROI figures are not precise, though every effort is made to isolate training’s effect. An ROI figure represents the best estimate, given the conditions, time, and resources the organization is willing to commit.

### 15.3.2 A case study using live virtual classroom technology

In this section, we describe a real case study in which a retail bank developed and delivered traditional instructor-led staff training for a custom application; we also show how running the same training using Virtual Classroom could have helped them to improve their delivery time and costs.

**Traditional delivery approach**

The initial challenge was to train 700 users in 70 locations on a new custom software application which was to be deployed in all branches. Management, project leaders, and training specialists got together to discuss this project. They reached the following conclusions:

- The course would take two days to deliver per location (including travel time). It would be split into three modules: one general course for all employees, and the other two specific to business areas.
- It would require 12 instructors to travel to the different branches to deliver.
- It would take five weeks to deliver it to all branches and employees.
- They would have to rent training rooms at each location.
The course content would be developed in slide presentations and hand-outs.

They would need to organize job coverage for the employees while they are involved in the training.

At the end of the project, they came up with the following figures:

<table>
<thead>
<tr>
<th>Initial costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course development</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 instructors - 5 weeks</td>
</tr>
<tr>
<td>Instructor travel - 60 weeks</td>
</tr>
<tr>
<td>Training rooms - 240 days</td>
</tr>
<tr>
<td>Materials - 700 units</td>
</tr>
<tr>
<td>Learner salary - 700 x 2 days</td>
</tr>
</tbody>
</table>

| Total cost               | $810K         |

*Figure 15-3  Cost of course delivered with traditional methods*

**Live virtual classroom delivery approach**

Taking into account the same training requirements, IBM e-Learning experts came up with the following scenario.

- The customer would need to develop the same course in the same media (slide presentation and hand-outs).
- The course would be structured in the same three parts: Module 1 for all learners, Module 2 addressed to 90% of the learners, and Module 3 addressed to 66% of the learners. Employees would not be expected to take the sessions which were not relevant to them.
- The customer would need to set up the appropriate infrastructure: servers, network, software, and licenses.
- Using Virtual Classroom, the same 12 instructors would take 8 days to deliver the same content.
- All the instructors would be based at one central location; they would not need to travel.
- Since the training would be online, learners could access it from their own workplace computers.
- Hand-outs would be supplied as well.
- No job coverage would be required, because the modules would take only two hours, and colleagues would be able to cover for each other.
- The sessions would be recorded and could be rerun as refreshers or for training new employees.

The IBM experts came up with the following figures.

<table>
<thead>
<tr>
<th>Initial costs</th>
<th>$250K</th>
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<tr>
<td>Course development, infrastructure, servers...</td>
<td>$250K</td>
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<tr>
<td><strong>Delivery</strong></td>
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<tr>
<td>12 instructors - 8 days</td>
<td>$35K</td>
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<tr>
<td>Instructor travel</td>
<td>$0</td>
</tr>
<tr>
<td>Training rooms</td>
<td>$0</td>
</tr>
<tr>
<td>Materials - 700 units</td>
<td>$15K</td>
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<tr>
<td></td>
<td>$160K</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>$460K</td>
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</table>

*Figure 15-4  Cost of course delivered using virtual classroom techniques*

**Cost benefits**

The initial obvious advantage of live virtual classroom training is that it can be delivered faster: 96 versus 300 learner-days worth of training. In some situations, fast delivery is critical for an organization's performance.

In addition to this, Figure 15-5 on page 228 shows the cost comparison of both approaches. This gives us a good picture of the cost implications of each approach.
Since the traditional learning development costs are much lower, as they do not require any specific setup (except the availability of a business application such as Freelance or PowerPoint), the virtual classroom approach seems to be far more expensive.

The initial development costs in the virtual classroom approach include course development, as well as infrastructure, hardware, software, setup and consultancy fees. Although $210K (net cost excluding course development) is a large figure, this is an expense which can amortized across subsequent training sessions. Moreover, if the course is recorded, it can be re-run for refresh or new staff training purposes.

Also, the cost in instructor salaries\(^2\) using the virtual classroom approach amounts to about 30% of traditional training costs. However, if you have internal instructors, you can use them to deliver other courses, thus saving additional outsourcing costs.

An obvious difference is in travel and training room\(^3\) cost savings. Together they add up to 20% of the overall traditional delivery cost. Notice that with these savings only, you are paying for almost 80% of the cost of initial virtual classroom setup and required infrastructure.

Finally, if we aggregate all the potential savings together, we see that even with only one course you are better off cost-wise using Virtual Classroom, and the savings have paid for an infrastructure that can be used to deliver subsequent training sessions in other subjects.

\(^2\) We are assuming an average cost of $1800 per instructor per week.

\(^3\) We take an average rental fee of $400 per day for a room for 10-15 attendants.
As you can see from this example, Virtual Classroom can help you reduce both training costs and delivery times. The virtual classroom approach also allows you to target specific training to the people who require it. Finally, the absence of travel is also a benefit for both instructors and learners.

15.4 IBM, an e-Learning company

e-Learning has become a big idea at IBM; the corporation is both selling and using it. IBM Global Campus, an internal application, is a great example of how to use e-Learning in a corporate environment. It is the central learning area for all IBM employees.

It offers thousands of courses ranging from business etiquette to programming C++. There are various delivery types, ranging from classroom-based training to L-VC sessions and Web-based training. There are some excellent examples of blended solutions, such as a project management program consisting of three days of classroom training, which requires learners to complete a Web-based course before going to class.

Selling the e-Learning concept is important for IBM. There is a dedicated team, IBM MindSpan, focused just on the delivery of e-Learning products and services. Figure 15-6 shows an overview of the IBM Mindspan organization.

IBM can be an ideal partner for customers in the e-Learning area. IBM can deliver a complete e-Learning solution. A wide range of e-Learning products, including Lotus LearningSpace, that can be packaged with IBM hardware. For implementing e-Learning solutions, IBM Global Services departments can deliver technical expertise.
Figure 15-6  IBM Mindspan organization
Cultural adoption and organizational readiness

Successful e-Learning deployment can answer the learning needs of the whole organization and is not restricted to training or skills acquisition.

In this chapter, we discuss the strategic and cultural perspectives of an effective implementation of e-Learning that includes live virtual classroom. We also explore the benefits experienced by an organization that fosters a culture of learning through its deployment of e-Learning. We discuss the structures, roles, and processes involved.
16.1 Learning strategy in the organization

In the new knowledge-based environment, organizations are looking to e-Learning as a foundation for good human capital management and growth strategies that impact the bottom line. In short, e-Learning is directly linked to business outcomes. The successful implementation of e-Learning, including Virtual Classroom, therefore, has implications for all units of an organization. Adoption of this strategy is a concern all across the organization.

The learning organization is one that both fosters and grows from the learning of its individuals, including personal development through e-Learning. The development and growth of the organization relies on corporate learning strategies that are clearly and frequently communicated to all individuals within an organization: from the CEO, to administrative staff, to service personnel, to customers and suppliers. In the sections that follow, we describe ways of encouraging buy-in to learning strategies.

16.2 Share the vision across the organization

Think of an organization’s culture as its personality or mindset. Culture relates to the values, assumptions, and norms that exist within both processes and individuals. The outputs of a culture include:

- Behaviors and attitudes
- Approaches
- Strategies

Actively managing cultural change is a key element in successful organizational change, such as the implementation of e-Learning and the development of the learning organization. This may be addressed by:

- Leadership
- Language (mission, operational, individual)
- Principles and commitments
- Time and resources

Organizational cultures (or macro mindsets) are largely an aggregation of the mindsets of individuals. In this sense, it is vital to gain commitment at the personal level to be able to effect wholesale cultural adoption.
Approach

Appeal directly to employees by highlighting their importance to the success of the e-Learning objectives of the company, and highlight the benefits to them of being part of a learning organization. This is a dual process that requires leadership for:

- Empowerment (enabling people to make a difference that is **tangible** to them)
- Commitment to a team effort (encouraging people to pull together)

So what are the “e-Learning objectives of the company”? This is where we need to be clear about strategy.

16.3 Lay the foundations for an e-Learning strategy

It can be very easy to overlook the basics when implementing changes that appear to be technology-led. Here are some basic questions that should be clearly addressed during virtual classroom deployment:

- What business objectives do we want virtual classroom to meet?
- What are the benchmarks for the realization of these objectives?
- Do we view virtual classroom “success” as:
  - **Quality** of training delivery
  - **Feedback** on the learning experience
  - **Return on Investment** compared with traditional deliveries
  - **Cycle time** for training development and delivery
  - **Wider access** to finite resources (such as subject matter experts)
  - Other factors

Approach

Learn about the people and processes currently in place for learning and training in your organization. For example:

- How much is currently spent on training?
- What kind of training is it (cognitive, psychomotor, affective)?
- Who delivers the training?
- Where is this training delivered?
- Who receives the training, and why?
- Who develops materials?
Start making connections and explore possibilities. For example:

- What would be the effect of being able to deliver the same training in half the time?
- What would be the effect of cutting the cost of travel to training venues? Could you afford to spend more time or money (or both) on training?
- In what ways would a shorter development time for training affect the business?
- Are there any finite resources that could be better shared using a live virtual classroom, such as top-level subject matter experts?

From this research, develop a clear idea of how live virtual classroom could help the business and write a white paper. Publish this within the organization and encourage debate and involvement from others.

16.4 Implement the strategy

Here we discuss some practical considerations to keep in mind when carrying out your strategy.

16.4.1 Integrate technologies

When we watch e-Learning being adopted in businesses today, we find it is being done on a project-by-project basis. That is fine for now, but as organizations continue, they are going to encounter new problems as their employees are faced with different interfaces, multiple registrations, non-standard software, and many online curricula with information presented in different formats.

Companies that are already experiencing these problems are turning to learning management systems (LMS). A good LMS will offer registration, tracking, testing, and administration, all coordinated by a single application that can be strategically and centrally installed, implemented, and administered.

The picture can be completed with the introduction of e-Learning portals—single Web sites through which learners can access any online course. We will see e-Learning portals and LMS being integrated with Knowledge Management (KM) systems, as companies move towards becoming full e-Learning organizations.

**Approach**

Where you introduce a live virtual classroom in parallel with other training solutions, consider how it will be incorporated within existing systems such as:

- Course catalogs or portals
Can current LMS systems or processes be integrated with the live virtual classroom? Would new processes fit with previous training programs that are still operational?

16.4.2 Do not “roll-out”

You “roll-out” software, but when developing the e-Learning enabled learning organization, this is a negative term. It suggests imposition (doing something no matter what), but learning does not happen like that.

**Approach**

Do not deploy—*employ*. Use the virtual classroom where it is appropriate, and do not force it. Champion successful uses and allow others the time to make the connection between their needs and the ways in which Virtual Classroom can answer them.

16.4.3 Culture change takes time

This is a classic excuse for those trying to implement new ideas that have the potential to fundamentally change an organization. However, we have already identified that the effectiveness of the live virtual classroom can have a direct impact on the bottom line: in e-Learning, training needs to keep pace with the business cycle.

**Approach**

Start with projects in which virtual classroom can be used quickly and effectively, rather than trying to apply it wholesale to the organization’s training needs. Early successes will gain attention from other potential adopters.

Identify where the need for new modes of learning is greatest and target them where appropriate.

A live virtual classroom will always be attractive because of its short development and deployment cycle. But use it only where a business goal is clearly identified, and when there is a clear advantage to using it over alternatives. Refer to
Chapter 14, “Blended learning and e-Learning components” on page 201, for help in comparing the live virtual classroom with other learning types.

16.5 Transitioning to new roles

For a detailed look at the kind of roles involved in the live virtual classroom, refer to Chapter 8, “Roles and responsibilities” on page 125.

16.5.1 Overcoming resistance

In practice, resistance is usually seen as insurgency and as a threat to the viability of the new project. It is usually countered by selling the project even harder, or asking senior management to give the orders for a drive for corporate-wide commitment.

However, resistance is a sign of perceived and real objections, and is therefore both important and valuable. It is vital to understand what it is and where it comes from if we are to work with it and use it to reach project goals.

There are two broad sources of resistance to new projects:
► Lack of information about the project and its objectives
► Feeling left out or threatened by the project implementation

Approach
Avoid a big launch that attracts “before” and “after” comparisons for the live virtual classroom. Instead, communicate regularly and specifically about the implementation of the live virtual classroom, so that people do not feel pushed out—let them “pull” in on the project.

Listen to objections and understand them. If they come from lack of information, then inform. If the objections address something that is not considered in the deployment white paper, then consider the issues raised and incorporate them explicitly into your project plans.

16.5.2 Traditional training personnel in a new context

The introduction of the live virtual classroom to an established program will require a re-examination of the roles of those delivering the program. For example, some face-to-face instructors might take on the role of subject matter experts rather than session facilitators. Such transitions need to be considered carefully.
Approach
Allow all training staff (including administrators and behind the scenes personnel) to practice taking part in several live virtual classroom sessions with virtual classroom trainers, perhaps to study a new subject. Ask them which roles they identify with. Encourage early planning of transition resources (for example, time to convert existing presentations; or training for producers and facilitators).

16.6 Assess the effectiveness of e-Learning

This section is a guideline for managers evaluating the educational effectiveness of the e-Learning solutions in their company.

16.6.1 Ten things we know about good learning

Here is an overview of what constitutes effective learning. The concepts outlined here are presented in detail in many places. See “Related publications” on page 281 for references to additional information.

Use this list of ten elements as the starting point to educate decision makers in your organization. This is far from an exhaustive list, but these items are easy to understand, and managers can relate them to their prior experience.

1. There are four phases in any instructional interaction, including e-Learning. Anything less is not effective learning. The four phases are:
   - Presenting information
     The author of the lesson provides the learner with content and information or a foundation for achieving the instructional objectives.
   - Guiding the learner in practice
     The interaction needed to assess that the learner has understood the concepts, principles, and procedures presented has been provided.
   - Practicing by the learner
     This moves information from short-term memory to long-term memory, and develops mastery of the content.
   - Assessing learner learning
     Was the instruction effective? What is the next step for the learner?

2. Performance-based and content-based objectives are the foundation of effective programs.

Lessons must be developed based on clear objectives, because objectives drive the four phases of instruction. The book Component Display Theory by Merrill (1994) suggests objectives should be classified on two criteria: performance and content.
Performance refers to the three types of performance possible: remember, use (apply), or find (create a new instance). Content refers to four kinds of knowledge: facts, concepts, procedures, and principles.

Based on a content-performance matrix, Merrill has identified optimal ways to present content, practice skills, and test knowledge. Good training programs have objectives that are clear, and measurable content and performance.

3. Relevant and problem-centered programs are best for adults.

Effective lessons are relevant and problem-centered. For example, learners do not want to know how to use a word processor. They want to learn how to create a document, write a resume, or draft a letter. Good programs offer relevant content that is easy to transfer to the workplace.

4. Limited learner control and deliberative structure enhance learning.

Learning is enhanced when programs delimit, sequence, and pace instruction. Well-structured programs reduce demands on short-term memory by organizing information into small pieces that are easy to remember and manipulate. The learner's skill and the complexity of the content should dictate the amount of structure and the amount of control granted to learners.

5. Meaningful feedback improves performance.

Feedback during guided practice should provide prompts that are instructive. Effective programs use feedback to develop the learner's ability to self-diagnose their problems and eventually correct errors without prompts.

6. Effective assessments test what has been taught.

Use a performance/content matrix to ensure that you have assessed the learner's mastery of the stated goal (performance/content). For example, if the goal of the course is to teach learners how to calculate the standard deviation, the test should assess if the learner is able to apply the procedures required to calculate the standard.

That is, the test should avoid testing the definition of the standard deviation or testing the memorization of the steps, but instead it must determine if the learner can use the procedure to calculate the standard deviation. Effective online learning programs match test items to stated objectives.

7. Adequate practice leads to mastery.

The phrase “practice makes perfect” may sound trivial, but there is a great deal of research that supports this cliché. There must be adequate practice if learners are to develop fluency and mastery of content.

There is no formula for determining how much practice is required. Based on the content and learner's skill level, the program must offer an adequate number of practice items and the items should range from simple to complex.
8. Actively engaging the learner increases learning.

Interactions should go beyond simple multiple-choice questions that provide linear branching (correct/incorrect) and the “provide an interaction every three screens” approach. Questions should offer the opportunity to move the learner forward to new information, backward to review information, and sideways to provide supplemental information. Active engagement results in increased enjoyment and engagement.

9. Multimedia can reduce the effort required to convey a message.

The choice of media should be driven by the performance and content objectives.

10. Teaching is only half of the instructional transaction.

   e-Learning programs require motivated learners with fundamental computer skills and the tenacity needed to develop metacognitive skills for this environment.

   The books referenced in “Related publications” on page 281 offer a wealth of information on online learning and teaching.

### 16.6.2 Quality assurance

Good learning programs include quality monitoring and development mechanisms from the outset.

#### Approach

- Approach learning programs as you would any project. Ensure that objectives, benchmarks, deadlines, budget, and responsibilities are all clearly defined and adhered to.

- Seek feedback at all levels. Use it.

- Encourage peer review among instructional designers and facilitators.

- Run pilot programs. Gather detailed feedback; make alterations to the program if necessary; re-test.
Appendix A. Technotes

This appendix contains relevant Technotes that have been collected from the IBM support site. Since new Technotes can be added to the database at any time, you should search for the latest documentation and support at:

http://www-1.ibm.com/support/search/
Installing on the Session Server takes too long

Problem

The installation of IBM Lotus Virtual Classroom on the Session Server seems to “hang” or take an extremely long time to finish. What's wrong?

Solution

The late stages of the installation must connect to the Catalog Server (to both the Domino Server and Virtual Classroom) in order to register the Session Server as part of the deployment. The connection can take a long while to time out. If you are familiar with Domino, you are waiting for the functional equivalent of a “Server not responding” message. This problem is most often the result of network issues.

Check the troubleshooting procedures in the next section.

To troubleshoot a lengthy install

1. Are both Domino and Virtual Classroom running on the Catalog Server?
   - If No: Start them both and reinstall Virtual Classroom on the Session Server.
   - If Yes: Continue with the next test.

2. On the Session Server, ping the Catalog Server by its numeric TCP/IP address, for example, ping 19.168.60.5.
   - If this test fails: Correct the network problem and reinstall Virtual Classroom on the Session Server.
   - If this test succeeds: Continue with the next test.

3. On the Session Server, ping the Catalog Server by fully qualified host name; for example: ping catalog.example.com
   - If this test fails: Correct the problem and reinstall Virtual Classroom on the Session Server. You may have to register the names and addresses in the DNS or create local host file entries.
   - If this test succeeds: Continue with the next test.

4. On the Session Server, ping the Catalog Server by short name; for example: ping catalog
   - If this test fails: Correct the network problem and reinstall Virtual Classroom on the Session Server. You may have to register the short names in the DNS or update/create local host file entries.
If this test succeeds: Continue with the next test.

5. On the Catalog Server, especially under Windows 2000, make sure the computer's Network Identification is in lowercase and contains the DNS domain name (for example, catalog.example.com, not CATALOG.example.com and not simply “catalog”).

   Under Windows 2000, you can get to Network Identification by right-clicking the My Computer icon, choosing Properties, and clicking the Network Identification tab.

   - If the name is wrong: Uninstall Virtual Classroom from the Catalog Server. Correct the name and reboot the Catalog Server. Reinstall Virtual Classroom both on the Catalog Server and Session Server.

   - If the name is right: Continue with the next test.

6. Download NPing (also known as NotesCONNECT) to the Session Server and run it. Refer to Online Resource #2755, “NotesConnect Utility For Use When Troubleshooting IP Connectivity Issues”.

   In the Target Host Name or IP address field, enter the name or numeric address of the Catalog Server (you can choose which one since you already can reach the computer with either).

   - Click Connect to ping the Domino Server's protocol port (1352). Do you get a connect reply?

   - In the Service List, choose HTTP to ping the Domino Web Server's protocol port (80). Do you get a connect reply?

   - In the Service List, choose Other. In the Target Port Number, enter 4002 (the first of the communication engine's ports) and click Connect. Do you get a connect reply?

   - In the Target Port Number, enter 4003 (another of the communication engine's ports) and click Connect. Do you get a connect reply?

   - In the Target Port Number, enter 4004 (another of the communication engine's ports) and click Connect. Do you get a connect reply?

   - In the Target Port Number, enter 4005 (another of the communication engine's ports) and click Connect. Do you get a connect reply?

   - In the Target Port Number, enter 4006 (the last of the communication engine's ports) and click Connect. Do you get a connect reply?

If any connection failed: Correct the network problem (a firewall is probably blocking the ports) and reinstall Virtual Classroom on the Session Server.

If all connections succeeded: Ask the Customer Support analyst if he or she can escalate the incident.
Eliminating SMTP relay weakness

Problem

The IBM Lotus Virtual Classroom Catalog Server is an open SMTP relay. How do you turn it off?

Solution

Follow these instructions to eliminate the SMTP relay weakness:

2. From the File menu, choose Database -> Open.
3. On the Open Database dialog box:
   – At the end of the Server field, click the down triangle. Click the hierarchical name of the Catalog server's Domino Server (for example, catalog/CertifierName).
   – In the Database list, highlight the DomainName's Address Book. (This database is also known as the Domino Directory.) If you have the right database, the File name field displays NAMES.NSF.
   – Click Open.
4. Click Server in the left column. A list of sub-categories appears.
5. Click Configurations (fourth from the top) to open to the Server\Configurations view. You should see a line for the Catalog Server (for example, catalog/CertifierName).
6. Double-click the Server document for the Catalog Server (for example, catalog/CertifierName).
7. On the Action bar, click Edit Server Configuration.
8. Click the Router/SMTP tab.
9. Click the Restrictions and Controls subtab.
10. Click the SMTP Inbound Controls sub-subtab.
11. In the field Deny messages from external internet domains to be sent to the following Internet domains, type an asterisk (*).
12. In the field Deny messages from the following external hosts to be sent to external internet domains, type an asterisk (*).
13. In the Action bar, click Save and Close.
15. Exit the Lotus Notes client (from the File menu, choose Exit Notes).

Optional: To prevent other computers in your DNS domain from relaying mail through the Catalog server (if you are worried about spammers that are inside your organization), edit the Catalog server's NOTES.INI file (for example, C:\Lotus\Domino\notes.ini—not C:\Lotus\Notes\notes.ini). Add this line to the bottom of the file:

SMTPALLHOSTSEXTERNAL=1

16. In the Domino server console window, type: restart server, and press E.
    The window disappears and then reappears within ten seconds.
    Wait until you see the message: HTTP server started.
## Analysis Worksheet

<table>
<thead>
<tr>
<th>Training need</th>
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<td>Knowledge/skills gap</td>
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<td>Other factors</td>
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<td>Personnel</td>
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<td>Timeframe</td>
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<td>Other</td>
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<td>Audience profile</td>
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<td>Live virtual classroom experience</td>
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<td>Motivation</td>
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<tr>
<td>Software</td>
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<tr>
<td>Connection Speed</td>
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<td>Firewalls/proxies</td>
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</table>
## Script Worksheet

*Table C-1  Worksheet to create a session script*

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<thead>
<tr>
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<th>Tool</th>
<th>Content</th>
<th>Action</th>
<th>Discussion</th>
<th>Duration</th>
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# Curriculum Map Worksheet

**Table D-1  General description of curriculum outcomes**

<table>
<thead>
<tr>
<th>Course outcomes</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Enabling outcomes</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Available resources</th>
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</table>

**Table D-2  Detail of outcomes**

<table>
<thead>
<tr>
<th>Enabling outcome</th>
<th>Activity description</th>
<th>Timeframe</th>
<th>Delivery method</th>
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</thead>
<tbody>
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LotusScript user export routines

In this appendix, we show how to create a number of agents to help you easily export Domino Directory user entries from your existing Domino setup in a format which can be imported directly by the Virtual Classroom import facility.
E.1 Before you begin

To safely implement these routines in your Domino Directory, you need:

- A minimum of Designer access to your Domino Directory
- A Domino Designer client
- Working knowledge of Notes/Domino design and LotusScript programming language, in case you want to customize the routines to your needs
- A local copy of your Domino Directory or access to a non-production server

**Note:** The agents and LotusScript routines we describe in this section are safe to run on a production server. They do not modify any of the contents of your Domino Directory. They merely read the database to extract data to an external .txt file.

It is always advisable to initially test agents in a local replica of your Domino Directory or in a non-production server, for extra safety.

E.2 What the code does

This sample code does the following:

- It identifies the documents from which to export information (group or person documents); assesses their validity (they should have all the required information—all fields except password); extracts the data in a format ready for import into the Virtual Classroom:

  ShortName,DisplayName,MailAddress,Password

- It then saves the information in a file and sends a mail notification to new users informing them of their new account login and password access.

If you do not want to send mail notifications, you can comment out the code. On the other hand, if you want to add more information (such as the URL to access the virtual classroom Catalog server), you can customize it, as well.

For more detailed information on customization, refer to the comments and instructions included in the sample code provided.
E.3 Setting up your virtual classroom export routines

In the subsequent sections, we discuss how to create and implement the sample export LotusScript routines. For your convenience, we supply the code in the following way.

- Four agents to launch the export routines:
  - All documents from Groups view
  - Selected documents from Groups view
  - All documents from People view
  - Selected documents from People view
- One LotusScript library that holds all necessary export routines

E.3.1 Creating the UserMigration LotusScript library

Before creating any agents, we need to create the LotusScript library which will be called by them. If you are not familiar with the Domino Application Design, follow these steps:

- Open your Domino Directory database in your Domino Designer client. From the menu, select: **Create -> Design -> Script Library**.
- Go to the (Declarations) section.

> Copy the following code into your Clipboard and paste it in the programming panel:

```livescript
'UserMigration:
%REM
These routines will help you to export either group or people documents to a text file for import by the virtual classroom user import facility

virtual classroom requires the following format:
```
ShortName, DisplayName, MailAddress, Password

to get this information, we use the following information from the person document:

ShortName, FirstName + LastName, InternetAddress, we create a random password based on document creation date and FirstName.

%END REM

' We use global variables to be able to access all objects from any routine
Dim dB As NotesDatabase
Dim view As NotesView
Dim collection As NotesDocumentCollection
Dim memberitem As NotesItem
Dim doc As NotesDocument
Dim userdoc As NotesDocument
Dim username As NotesName
Dim maildoc As NotesDocument
Dim errorstring As String
Dim bodyitem As NotesItem
Dim shortname As String, firstname As String, lastname As String, internetaddress As String, password As String

' file vars
Dim filenum As Integer
Dim filename As String
Sub GroupViewMigration
    ' This entry point is shared by both selected and all documents agent. The difference lays in the Agent's 'Which documents should it act on?' setting:
    ' Selected documents or All documents in view.
    ' Declarations
Dim session As New NotesSession

    Set dB = session.CurrentDatabase ' Create our objects
    Set collection = dB.UnprocessedDocuments
    Set view = db.GetView("($NamesFieldLookup)"
    Call GroupProcessor(collection, view)
End Sub

Sub GroupProcessor(collection As NotesDocumentCollection, view As NotesView)
%REM
This routine checks for the type of group document to process (ACL and Mail Only), then gets to the users included in the group, performs an individual look up in the ($NamesFieldLookup) view and processes them individually using the DocumentProcessor function.

%END REM

' prompt for file name
filename = Inputbox ("Please type the full destination path and file name for your user export file.", "User Export Agent for L-VC", "c:\temp\users.txt")
If filename = "" Then
    Exit Sub
End If
filenum = Freefile()
Open filename For Output As filenum     ' open new file name for writing
Set doc = collection.GetFirstDocument  ' Get the first group document from the selected ones
Do While Not doc Is Nothing
    If Lcase(doc.Form(0))="group" Then
        If doc.grouptype(0) = "2" Or doc.grouptype(0) = "1" Then ' only dealing with Mail Only and Access Control List Only groups, we exclude servers and Multi-purpose groups
            Set memberitem = doc.getFirstItem("Members")  ' get all member groups in an item
            Forall memb In memberitem.values ' iterate though the member items
                Set username = New NotesName( memb)  ' create a user name, useful afterwards.
                Set userdoc = view.getdocumentbykey(username.common) ' find the person document in the directory
                If Not userdoc Is Nothing Then ' if found get all necessary information: shortname, full name and internet address.
                    errorstring = DocumentProcessor(userdoc)  ' call the DocumentProcessor routing which performs the field lookups, error reporting and file saving.
                Else

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errorstring = errorstring & memb & " - could not be found in the directory" & Chr$(13) ' error message when user could not be found in the directory.

End If

End Forall

End If

End If

Set doc = collection.getnextdocument(doc) ' get next group document
Loop

Close filenum ' Close the file

If Not errorstring = "" Then

Messagebox "The following entries are invalid since they lack one or more of the required pieces of information; click OK to close this dialog. " & Chr$(13) & errorstring, 48, "Entries With Missing Information" ' Final error reporting, if necessary

End If

End Sub

Sub PeopleViewMigration
 'This entry point is shared by both selected and all documents agent. The difference lays in the Agent's 'Which documents should it act on?'
setting:
'   Selected documents or All documents in view.

'Declarations
Dim session As New NotesSession

Set dB = session.CurrentDatabase ' Create our objects

Set collection = dB.UnprocessedDocuments

Call PeopleProcessor(collection) ' start processing

End Sub

Sub PeopleProcessor(collection)
filename = Inputbox ("Please type the full destination path and file name for your user export file.", "User Export Agent for L-VC", "c:\temp\users.txt")
If filename = "" Then
    Exit Sub
End If
filenum = Freefile()
Open filename For Output As filenum     ' open new file name for writing
Set doc = collection.GetFirstDocument  ' Get the first group document from the selected ones
Do While Not doc Is Nothing
    If Lcase(doc.Form(0))="person" Then
        errorstring = DocumentProcessor(doc) ' call the DocumentProcessor routing which performs the field lookups, error reporting and file saving.
    End If
    Set doc = collection.getnextdocument(doc)  ' get next person document
Loop
Close filenum      ' Close the file
If Not errorstring = "" Then
    Messagebox "The following entries are invalid since they lack one or more of the required pieces of information: "& Chr$(13) &errorstring,48, "Entries With Missing Information"     ' Final error reporting, if necessary
End If
End Sub
Function DocumentProcessor(userdoc As NotesDocument)
    shortname = userdoc.ShortName(0)
    firstname = userdoc.FirstName(0)
    lastname = userdoc.LastName(0)
    internetaddress = userdoc.InternetAddress(0)

    ' Start creating a random 8 CHARACTER PASSWORD consisting of a randomized formula based on the document creation date and part of the user name.

    ' YOU CAN CHANGE THE WAY THIS PASSWORD IS BEING CREATED, EXTEND IT, OR SWAP AROUND ITS COMPONENTS.
    Randomize 20
 Using IBM Lotus Virtual Classroom

```vbnet
firstpassword$ = Mid(Int(Day(Cdat(userdoc.created)) * Month(Cdat(userdoc.created)) * Year(Cdat(userdoc.created))) / Rnd()), 1, 3) ' first part of the password based on the first three integer numbers of the formula, based on the Creation date

secondpassword$ = Mid(firstname, 1, 3) ' second part of the password, based on the first three characters of the firstname

thirdpassword$ = Mid(Fraction(Day(Cdat(userdoc.created)) * Month(Cdat(userdoc.created)) * Year(Cdat(userdoc.created))) / Rnd()), 2, 2) ' Third part of the formula, based on the first two decimal numbers of the formula, based on the Creation date

If Instr(thirdpassword$, ".") > 0 Then ' checking for existence of a decimal point, if available, replace it.
    thirdpassword$ = Mid(Fraction(Day(Cdat(userdoc.created)) * Month(Cdat(userdoc.created)) * Year(Cdat(userdoc.created))) / Rnd()), 3, 2)
End If

password = firstpassword$ + secondpassword$ & thirdpassword$ ' constructing the password.

If Not shortname = "" And Not firstname = "" And Not lastname = "" And Not Internetaddress = "" Then ' if all data is available,
    fullstring$ = shortName & "," & FirstName & " " & LastName & "," & InternetAddress & "," & password ' prepare to store it in the file

Print #filenum, fullstring$ ' write to disk

' START MAILING SECTION - To prevent mailing notifications, START DELETING HERE

' if you don't want to mail documents, comment out or delete this whole MAILING SECTION

' in here we create a document which will be sent to the users, which notifies them of their login name, display name and password. This is sent to the user's internet address.

Set maildoc = New NotesDocument(db) ' create new MAILABLE document
' populating fields
    maildoc.Form = "Memo"
    maildoc.SendTo = internetaddress
    maildoc.Subject = "Your new access to virtual classroom"

' creating body of message with necessary information; you can modify this message if necessary. Chr$(13) is a carriage return
```
Set bodyitem = New notesitem(maildoc,"Body","Your new L-VC account is:" & Chr$(13) &Chr$(13) & " Login name: " & shortname &Chr$(13) & Chr$(13) & " Display name: " & FirstName & " & " & " & Lastname & Chr$(13) &Chr$(13) & "Password: " & password & Chr$(13) &Chr$(13) & "You will be able to modify your password once you have logged in the L-VC system")

%REM

'Uncomment this section if you want to add more information to your mail, as for instance, the URL to access the catalog server (below).

Call bodyitem.Appendtotextlist("You may access the L-VC catalog server at:
http://catalogservername.yourdomainname.com/LearningSpaceVirtualClassroom/V CMM.nsf")

%ENDREM

Call maildoc.Send( False ) ' send document

' END MAILING SECTION - To prevent mailing notifications, END DELETING HERE

Else

errorcase$ ="" ; in here we trap the missing bits which will be used later on to be displayed to the administrator in a dialog box
If  shortname = "" Then

errorcase$ = errorcase$ & " short name " ' no short name
End If
If  firstname = "" Then

errorcase$ = errorcase$ & " first name " ' no first name
End If
If  lastname = "" Then

errorcase$ = errorcase$ & " last name " ' no last name
End If
If  internetaddress = "" Then

errorcase$ = errorcase$ & " internet address " ' no internet address
End If
End If

errorstring =  errorstring & FirstName & " " & LastName & " - " & errorcase$ & Chr$(13) ' error string which will be appended and displayed at the end of the process

End If

Documentprocessor = errorstring
End Function

- You will notice that a number of new entries are created in the Script library; refer to Figure E-2 on page 262.
Finally, save the LotusScript Library and call it UserMigration. This name will be used throughout the example.

You may also decide to flag these particular design elements to prevent design refresh or replace, as shown in Figure E-4. Otherwise, the next time the database design is updated, they will be removed.
E.3.2 Creating the agents

Depending on the size of your Domino Directory and the way it is structured, you may need to use different agents. In this example we provide you with the following options:

- **LVC\Export** all groups from the Groups view
  
  This agent may be useful for a *bulk export* process if your organization makes extensive use of groups. This example only takes into consideration two types of groups: Access Control Only and Mail Only.

- **LVC\Export** selected groups from the Groups view
  
  This agent may be useful if your organization makes extensive use of groups. It is adequate for exporting *updated* or *new* groups. This example only takes into consideration two types of groups: Access Control Only and Mail Only.

- **LVC\Export** all person information from the People view
  
  This agent may be useful if you want to export all your Notes/Domino users.

- **LVC\Export** selected person information from the People view
  
  This agent may be useful if you want to selectively export a number of Notes/Domino users.

When creating additional agents, it is advisable to use naming conventions. In order to avoid confusion, we recommend the use of cascading names.

To create a new agent, from either the Notes Client or the Designer Client, select: **Create -> Agent**; see Figure E-5 on page 264.
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Figure E-5 Creating a new agent

- Name your agent.
- Check the Shared Agent check box; otherwise, this agent will only be accessible from your Notes Client, and nobody else will be able to use it.
- In the Run combo box, select the **LotusScript** option.
- Go to the (Options) event and in the right-hand panel, underneath the text **Option Public**, type the following:

  Use "UserMigration"
Appendix E. LotusScript user export routines

Figure E-6 Typing in the LotusScript library to use

To create an agent that acts on all documents in the view (as shown in Figure E-6), then in the Which document(s) should it act on? combo box, select All documents in view.

To apply the agent to selected documents, choose Selected documents.

Now you must select the appropriate routine to run from the UserMigration LotusScript library. In the Initialize event:

- To act on Group documents, type: Call GroupViewMigration.
- To act on Person documents, type: Call PeopleViewMigration.

Figure E-7 Selecting the routine to use

Finally, save and close the agent.
You may also decide to flag these particular design elements, as shown in Figure E-8, to prevent design refresh or replace. Otherwise, the next time the database design is updated, they will be removed:

![Figure E-8 Preventing design refresh or replace](image)

With these routines, you will be able to perform any of the export routines you require. Whether you act on all the documents of the view, or on selected documents only, will depend on the settings you specified in the Which document(s) should it act on? combo box.

### E.3.3 Using the agents

You are now ready to run the agents.

Notice that these agents are created to be executed from a view. If you want to export Group documents, run your group agent from the Groups view. If, on the other hand, you want to export Person documents, run your person agent from the People view.

Should you run an agent in the wrong view, the code will bypass all the documents and will not export any documents nor send any notifications.

To execute the agents, do the following:

- From the appropriate view, select Action - LVC\The desired agent. The following dialog box prompts you to input a destination path\file name for your export text file:

![Figure E-9 Prompting for a destination export file name](image)
Type the appropriate destination path and file name.

After you click OK, the agent will execute.

As it processes documents, the agent creates and mails notification documents to the new virtual classroom users. If you want to switch this feature off, refer to the instructions included in the sample code.

At the end of the execution, the agent will present a final report if any invalid documents were processed (that is, documents which lack any of the following information: Short Name, First Name, Last Name or Internet Address, or user names, originally included in groups, who lack person documents in the Domino Directory); see Figure E-10.

Notice that in such cases, the entries will not be included in the exported .txt file.

To keep a copy of this report, you can make a screen shot. Alternatively, if you expect a long list of errors, you may decide to modify the routines so that this report is saved in a log file.

This is a sample of what the output users.txt file would look like:

```
TUser,Temp User,TempUser@corp.com,224Tem08
DNelson,Damian Nelson,DamianNelson@corp.com,119Dam36
MMolon,Maira Molon,MairaMolon@corp.com,127Mai38
JDavies,Jon Davies,JonDavies@corp.com,298Jon11
SUser,Server User,ServerUser@corp.com,179Ser54
NUser,New User,New_User@corp.com,179New54
```

**Note:** New users will be able to change passwords once they log in to the virtual classroom.
Troubleshooting

The notes in this appendix all relate to IBM Lotus Virtual Classroom Version 1. For future releases, refer to the product documentation.
Online Help

After installing and logging into Virtual Classroom, choose Help in the upper-right corner of the browser window and then click the Contents button to see the Help for Learners, Instructors, and/or Administrators, depending on your permissions group.

Known limitations

The information in this section describes the known software limitations of IBM Lotus Virtual Classroom. This information was gathered from the IBM support Web site. For up-to-date information, go to the following URL and follow the links provided for searching the technical support databases:

http://www.ibm.com/support

General information

Single server installation not available

Problem: (All users) A single-server installation is not a supported configuration with IBM Lotus Virtual Classroom v1.

Resolution: Use the recommended minimum configuration of two servers. See 6.3, “System requirements” on page 79 for more information. A single server configuration will be available in a future release.

Performance issues with Netscape Navigator

Problem: (Administrators and instructors) You may experience performance and various other issues when using Netscape Navigator as your browser.

Resolution: For optimal performance, administrators and instructors should use Microsoft Internet Explorer as their browser.

Page refresh

Problem: (All users) There is no auto-refresh of some pages. If you make changes to one page on the Learning Home, sometimes your changes are not reflected on other pages when you go to another tab.

Resolution: Make sure that you set your browser settings to check for newer versions of stored pages every time you visit the page.

For Internet Explorer, choose Tools → Internet Options. On the General tab, under Temporary Internet Files, click Settings.
For Netscape Navigator, choose **Edit -> Preferences.** On the navigator, click **Advanced,** and then click **Cache.**

**Netscape Navigator 4.7 - outline display**

*Problem:* (All users) When using Netscape Navigator 4.7 as your browser, even if you choose to display in a large font size, the IBM Lotus Virtual Classroom outline will still display with a small font size.

*Resolution:* If you need larger fonts, use Microsoft Internet Explorer.

**Netscape Navigator - page reload to display changes**

*Problem:* (All users) When you edit a page in IBM Lotus Virtual Classroom using Netscape Navigator, your results might not display after you save your changes.

*Resolution:* Choose **View -> Reload** to reload the page from the server.

**Bleeding text in margins of Help topics**

*Problem:* (All users) With some screen resolutions, the text along the margins in Help topics fades into the background of the topic.

*Resolution:* Use the scroll bar to re-size your Help window.

**Pop-up inhibitors**

*Problem:* (All users) Utilities that stop pop-up windows from displaying in browsers interfere with some features of IBM Lotus Virtual Classroom. For example, pop-up inhibitors prevent Web pages sent by instructors from displaying in learners' browsers.

*Resolution:* Turn off or uninstall the pop-up inhibitor utility.

**Installation**

**Installing Domino 5.0.10 Critical Fixpack 1 on a Catalog server**

*Problem:* (Administrators) QuickPlace 3.0 includes the Domino 5.0.10 Critical Fixpack 1.

*Resolution:* Refer to Installing Virtual Classroom. After you finish the steps in the “Install QuickPlace” section, and before you begin the steps in the “Install IBM Lotus Virtual Classroom on the Catalog server” section, you should install the Domino 5.0.10 Critical Fixpack 1 by following these steps:

1. Stop the Catalog server's Domino server. In the Domino server console window, type: `quit` and press Enter. When the Domino server has completely stopped, the window disappears.
2. Start the Domino 5.0.10 Critical Fixpack 1 incremental installer (5010_5010cf1ser.exe).

3. You see the Incremental Installer Release 5.0.10 -> 5.0.10CF1 screen.
   - The incremental installer should have correctly set the field “Notes program files have been found in” to the Domino program directory (such as C:\Lotus\Domino). If the directory is incorrect, fix it.
   - The incremental installer should have correctly set the field “and Notes data files have been found in” to the Domino data directory (such as C:\Lotus\Domino\Data). If the directory is incorrect, fix it.

4. Click Next to begin the installation.

5. You see the Incremental Installer Release 5.0.10 -> 5.0.10CF1 screen.

6. When the installation is complete, click Close.


8. As the server starts, you should see a line that begins with “Lotus Domino server 5.0.10CF1”. Wait until you see the following messages:
   - HTTP: Successfully loaded Web SSO configuration
   - QuickPlace: Successfully loaded Web SSO configuration
   - QuickPlace Server started
   - HTTP Web Server started

### 24-hour clock setting

**Problem:** (Administrators) During installation, Virtual Classroom uses the time format of your operating system to determine if it should display time in a 12-hour (that is, a.m./p.m.) format or a 24-hour format. You may not want time to display in this format when you schedule sessions. For example, in some languages, “a.m./p.m.” displays in English. In those languages, you might prefer to display time in a 24-hour format.

**Resolution:** After installation finishes, but before you begin scheduling sessions, you can change this setting. In the notes.ini file of the Catalog server’s Domino directory, you can modify the $LVCDateFormat setting to 0 to display time in a 12-hour format, or 1 to display time in a 24-hour format.

### Non-English character support

#### Turkish language version

**Problem:** (Administrators) When you start the Turkish language version of IBM Lotus Virtual Classroom, the Catalog server fails to start because it tries to switch
Appendix F. Troubleshooting

Resolution: Add a number sign (#) before the UserName in DIH.properties, located in the c:\lotus\lvc\etc directory (for example, #UserName=C:\Lotus\Domino\Data\server.id). IBM Lotus Virtual Classroom does not need to switch the server ID as long as the notes.ini file has the correct value in the KeyFilename parameter.

Whiteboard presentation files are renamed

Problem: (Instructors) Whiteboard presentation file names can only contain the following supported characters: 0-9, a-z, A-Z, space, -, _, and only one dot in the file extension. If you add presentation files with double-byte characters or any unsupported characters in their names, the files get renamed in the virtual classroom. You see the renamed file in the list of files in the whiteboard tools during the session. If you save whiteboard changes, the new file name appears in the Session Details page.

Resolution: File names should contain only supported characters. Rename the files before attaching them, making sure to use only ASCII English characters.

Attaching presentation files with double-byte characters

Problem: (Instructors) During a session, attaching presentation files with double-byte (Asian language) characters in the file names to the whiteboard causes problems; for example, the outline will be blank after the file is attached.

Resolution: Do not attach these files to the whiteboard during a session. Rename the files before attaching them, making sure to use only ASCII English characters.

Creating courses

HTML tags and angle brackets (&lt;&gt;) in text fields

Problem: (Instructors) When you include HTML tags in some text fields, such as when you create new questions for assessments, IBM Lotus Virtual Classroom interprets the HTML, rather than displaying the entry as text.

If you include the angle brackets (&lt;&gt;) in the text fields when you create a course, such as Course title or Course number, these fields appear cropped on the Course Details page.

Resolution: Do not include HTML or angle brackets (&lt;&gt;) in text fields.
Specifying allotted times for outline items

*Problem:* (Instructors) If allotted times for items that you add to the outline contain decimal values (such as 15.5 mins), these items do not display in the outline during the session.

*Resolution:* Do not include decimal values in the field “Allotted time in minutes” when adding new items to an outline.

Angle brackets (<>) and semicolons (;) in text item outline

*Problem:* (Instructors) When you create text items in your course outline, if you include angle brackets (<>) or semicolons (;) in the name to appear in the outline, the text item will not appear in the outline during the session.

*Resolution:* Do not include these characters in the name for text items.

Assessments removed from a course still appear in the outline

*Problem:* (Instructors) If you create an assessment for a course and add it to the course outline, and then remove the assessment in the Learning Home, the assessment still displays in the session outline. In addition, if you send the assessment to learners, they can take and submit an “empty” assessment that contains no assessment questions. They receive no messages that the assessment has been removed.

*Resolution:* Manually delete the assessment from the outline.

No way to delete courses

*Problem:* (Administrator) There is no interface in IBM Lotus Virtual Classroom to delete a course once it is created.

*Resolution:* Mark the course as obsolete and then manually delete the QuickPlace for that course. From the Administration tab, check the Course Details page to see which QuickPlace directory is associated with the course that you want to delete, and then delete that directory using QuickPlace administration tools.

Two instructors can edit an assessment at the same time

*Problem:* (Instructors) Two instructors can open and edit the same assessment at the same time. When they save the assessment, a second copy of the assessments is created. One copy has the first instructor’s edits; the other copy has the second instructor’s edits.

*Note:* If you see the text: Replication conflicts when you save the assessment, refresh the page.
Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

Importing presentation files to display on the whiteboard

Problem: (Instructors) When you add presentation files to display on the whiteboard, Virtual Classroom allows you to add unsupported file types, but they do not display in the outline.

Resolution: Add only supported file types. See “Tips for creating presentation files for whiteboard display” in the Virtual Classroom Instructor’s Help for supported file types. You can use the Sametime Print Capture facility to convert unsupported file types (or any files that do not display) to a format that displays in IBM Lotus Virtual Classroom.

Scheduling sessions

One-hour requirement for scheduling sessions

Problem: (Instructors and administrators.) There must be at least one hour between the session start time you specify and the current time before you can do the following:

► Create a new session
► Edit a session
► Enroll yourself in a session or enroll learners (for administrators)
► Edit an outline

Except for editing an outline, you will see a warning message if you attempt any of these actions.

Note: For IBM Lotus Virtual Classroom v1, Edit will not display if there is less than one hour between the session start time and the current time.

Resolution: This is the correct scheduling/editing/enrolling session behavior. This will be the behavior for IBM Lotus Virtual Classroom V1. Sessions are available for instructors 15 minutes before the specified start time, except for sessions that are scheduled for 12:00 AM (midnight). These sessions will start exactly at the scheduled time.

Note: There is a button that allows you to create a practice session, if you wish to demo the session or practice during the one-hour delay; refer to the following item.
Practice sessions

Problem: (Instructors) Practice sessions are not documented in online Help.

Resolution: You can start a trial session of a course immediately (without the one-hour requirement) by clicking Create practice session on the Course Builder page. This session lasts one hour and has the following properties:

- It is a moderated session with chat, audio/video, and encryption turned on.
- It is not recorded.
- The person who created the trial session is the primary instructor and the only user. No one else can enroll.
- The session is not listed in the catalog, and the session document never appears on the My Sessions tab or in the list of sessions for this course.
- No e-mail notification is sent for this session.
- No whiteboards are saved, even if the instructor saves them during the session.
- Modem access is turned off.

Date display format

Problem: (All users) All dates in Virtual Classroom display in the following format: Month (spelled out), day, year (for example, November 24, 2002), regardless of geographic region or language.

Resolution: This is the supported date format for this release.

Specifying the date when scheduling sessions

Problem: (Instructors) When you are scheduling a new session for a course and specifying the date, you cannot manually type a date into the Date field.

Resolution: Click the calendar icon beside the Date field to choose date.

Unexpected sort order for scheduled sessions

Problem: (Instructors) If you schedule two sessions for the same date, but different times, the later session will display before the earlier session in the Scheduled sessions of the Course Builder page.

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

Remaining session time not working

Problem: (Instructors) If you select View Remaining Session time during a session, the time in the lower corner of the page displays elapsed, rather than remaining, time.
Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

**Not receiving e-mail notifications**

*Problem:* (Instructors and learners) If you are assigned as an instructor for a course, or you enroll in a session, and then you change your e-mail address, you will not receive e-mail notifications from IBM Lotus Virtual Classroom, such as for rescheduled or canceled sessions.

*Resolution:* This will be fixed in a future release of IBM Lotus Virtual Classroom.

**Enrolling in sessions**

**Required pre-session assessment**

*Problem:* (Learner) If you enroll in a class with a required pre-session assessment, the Status column for the session on the My Sessions page contains Enrolled, even if you have not yet taken the assessment. Note that until you take the assessment, you cannot attend the session.

*Resolution:* This will be fixed in a future release of Virtual Classroom.

**Unable to enroll in 21st or greater scheduled course session**

*Problem:* (Administrators and learners) If a course has more than twenty upcoming scheduled sessions, you cannot enroll in any sessions scheduled after the twentieth one. This if true whether you are self-enrolling, or if administrators are enrolling learners.

*Resolution:* You can try to enroll again at a later date. As sessions are completed, upcoming sessions gradually move up the queue to within the first twenty upcoming sessions. This will be fixed in a future release of IBM Lotus Virtual Classroom.

**Learners can enroll in overbooked sessions**

*Problem:* (All users) If an administrator or an instructor lowers the Maximum size value for a session, learners are still able to enroll in the session when the maximum has been met or exceeded. Administrators, however, cannot enroll more learners than the maximum.

*Resolution:* This will be fixed in a future release of IBM Lotus Virtual Classroom.
Running sessions

Buttons that are not active appear in certain interfaces

Problem: (All users) In some places in the IBM Lotus Virtual Classroom instructor and learner interfaces, certain buttons display that should not. For example:

- The Edit and Delete buttons display when viewing the default items in the Additional Materials folder
- The Edit button displays on the instructions page in the breakout outlines room
- The Reorder button appears for learners when viewing the Scheduled Items or Additional Materials folders, or any breakout outline folder.

Resolution: Ignore these buttons.

Questions added during a session

Problem: (Instructors and learners): If you create and send questions to learners during a session, they can see the questions and answer them, but learners and additional instructors will not see the questions in the outline. Therefore, they will not be able to click the question to see responses shown by the primary instructor.

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

Incorrect status for additional instructors

Problem: (Instructors) If you are assigned as an additional instructor for a session, your status displays as Enrolled in the “Sessions I’m Teaching” view and on the Session Details page. The status should be Secondary instructor.

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

Unable to invite others to a session

Problem: (Instructors) During a session, you cannot invite unenrolled users to the session. Choosing Session -> Invite Others does not work as intended.

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

User administration

Display of user names

Problem: (All users) In the Learning Home, user names appear as display names (Jean Smith). However, during a session, the Participant List displays
login names, followed by /LVC (Jean Smith/LCV). “LVC” is used to distinguish virtual classroom users.

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

If a user has multiple first names, Add to list sorts incorrectly

Problem: (Administrators): Users should display in the user name list of the Add screen sorted alphabetically by last name (for example, “Smith, Mary” displays after “Jones, Billy”).

However, if a user has two names for a first name (for example, Smith, Mary Beth), the user displays in the Add screen list sorted alphabetically by the second of the two first names (for example, “Smith, Mary Beth” displays before “Jones, Billy”).

Resolution: This will be fixed in a future release of IBM Lotus Virtual Classroom.

Adding new users by importing a file

Problem: (Administrators): When you add new users by importing files from outside Virtual Classroom, you must create a text file with the member information you want to import. While you can separate fields with a comma, you cannot put quotes around values.

Resolution: Do not use quotes. See “Importing multiple users from a text file” in the Virtual Classroom Administrator's Help for guidelines for preparing text files to import.

Users not added message

Problem: (Administrators) Sometimes, when adding users to a local directory from the Learning Home, Administrator tab, Virtual Classroom displays a message saying that the users were not added. Even though they appear in the list of Registered Users Add Users window, they are not added to the local directory. This may happen, for example, if IBM Lotus Virtual Classroom goes down or doesn’t start correctly.

Resolution: Delete the profiles for the users you just added and make sure Virtual Classroom is set up correctly before adding the users again. See “Removing users” and “Adding users” in the IBM Lotus Virtual Classroom Administrator's Help for more information.
**Live virtual classroom catalog server error**

*Problem:* (Administrators) You may see the following message displayed in the Catalog server’s LVC connector window:

```
log4j:ERROR No appenders could be found for category (com.lotus.quickplace.qom.QPThread).
log4j:ERROR Please initialize the log4j system properly.
```

*Resolution:* Ignore the message.

*Note:* You may see other messages displayed on other live virtual classroom server console windows. You can ignore these messages.
Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

IBM Redbooks

For information on ordering these publications, see “How to get IBM Redbooks” on page 282.

- *Lotus Notes and Domino R5.0 Security Infrastructure Revealed*, SG24-5341
- *Getting the Most From Your Domino Directory*, SG24-5986
- *Customizing QuickPlace*, SG24-6000
- *IBM Lotus LearningSpace R5 Deployment Guide*, SG24-6843

Other resources

These publications are also relevant as further information sources:

Education

- Facilitating a Live Training Session in LearningSpace 5
  - LS340 from Lotus Education
  - EL101 for IBM internal attendees
    http://www.lotus.com
- Designing a Live Training Session for LearningSpace 5
  - LS350 from Lotus Education
  - EL102 for IBM internal attendees
    http://www.lotus.com

Referenced Web sites

This Web site is also relevant as a further information source:

- The Management Assistance Program (MAP):
  http://www.mapnp.org/library/org_thry/culture/culture.htm

How to get IBM Redbooks

You can order hardcopy Redbooks, as well as view, download, or search for Redbooks at the following Web site:

  ibm.com/redbooks
You can also download additional materials (code samples or diskette/CD-ROM images) from that site.

**IBM Redbooks collections**

Redbooks are also available on CD-ROMs. Click the CD-ROMs button on the Redbooks Web site for information about all the CD-ROMs offered, as well as updates and formats.
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