THIS WEEK — DESIGN TECHNIQUES

Four Steps to Effective Virtual Classroom Training

BY RUTH CLARK

With tools like Elluminate, Centra, and Live Meeting, realizing the full potential of effective distance learning is a matter of leveraging online visual, auditory, and interactive features in ways that promote learning. Many organizations are turning to the virtual classroom as the centerpiece of their blended learning strategy in order to save costs and reduce inefficiencies associated with traditional classroom venues. But like any technology, virtual classroom tools are only as good as the ways in which they are used. In this article, I'll summarize my four step model for exploiting the features of synchronous e-Learning tools in ways proven to maximize their learning potential.

Which is better: Traditional classrooms or virtual classrooms?

Hundreds of research studies have compared learning in a classroom to learning from various forms of electronic distance media. Luckily you don't need to look for all of those individual studies because in a recent meta-analysis Robert Bernard and several colleagues have gathered and analyzed them for you. (See the citation in the Resources section at the end of this article.) The histogram from that meta-analysis (shown in Figure 1 on page 2) plots the frequency of effect sizes from over 300 of these comparisons. See the Sidebar on page 2 if the concept of "effect size" is new to you.

As you can see, the majority of effect sizes fall between -.50 and +.50. In other words, most of the research comparisons showed no practical learning advantages or disadvantages of electronic distance media over traditional classroom sessions. You can also see that there is a great deal of variability in the histogram. Some electronic distance learning classes resulted in **much** better learning outcomes than some traditional

> *Research now shows that traditional classrooms and virtual classrooms (synchronous e-Learning) are about equally effective overall. It's not the medium that makes the difference; it's the way in which the designer and the instructor use the features that are available. In this article, one of the outstanding e-Learning designers in the world reveals guidelines that will help you use the virtual classroom for best results.*

A publication of

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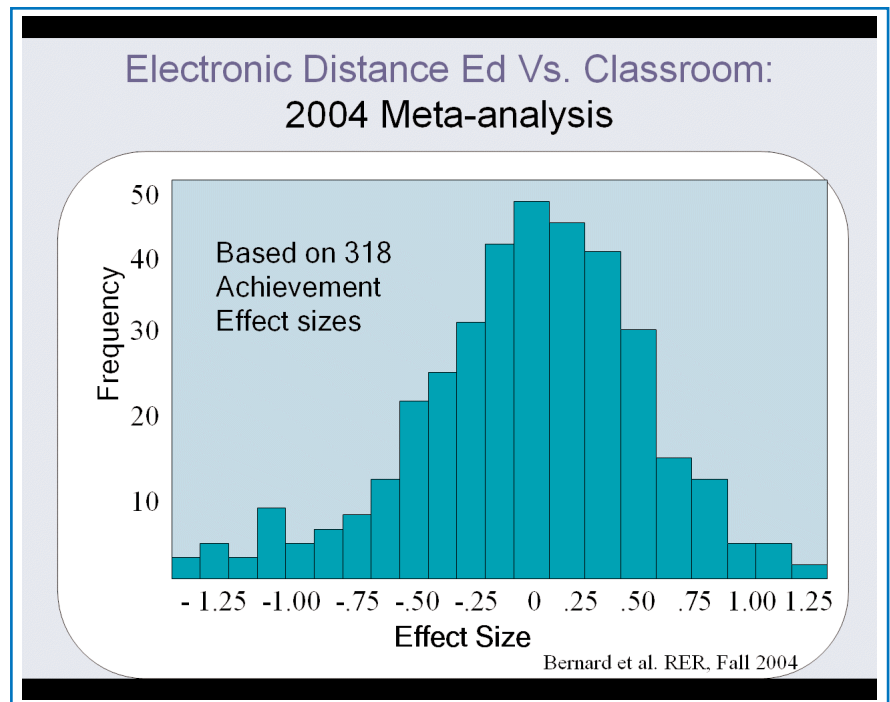
classroom sessions and vice versa.

The results of this review replicate
hundreds of media comparison studies
concluding that when the same lesson is
delivered in two different media, there
are no real differences in learning. The
reason? It's not the media that cause
learning. Rather, it's how the media are
used. In other words, it's the instruction-
al methods — things like graphics, ex-
amples, and practice exercises — that
lead to better or poorer learning, not the
medium through which the lessons are
delivered. The trick to successful use of
any delivery medium, electronic or tradi-
tional, is to exploit the features of that
medium in ways that lead to learning!

The DVEP model for virtual classroom effectiveness

Based on research explained in my
recent books, I have developed a four
step model summarized in Figure 2 on
page 3 to guide exploitation of the virtual
classroom for best learning. In this arti-
cle, I'll give you some tips on how to
implement each step, along with some
resources for more information. Let's
start with an overview of the DVEP mod-
el. (DVEP stands for Define, Visualize,
Engage, and Package.)

Step 1 — Define

In Step 1 you begin by defining your
business goals and the knowledge and
skills needed to achieve them. As you

**Electronic Distance Ed Vs. Classroom:
2004 Meta-analysis**

Based on 318
Achievement
Effect sizes

Frequency

50 40 30 20 10

- 1.25 -1.00 -.75 -.50 -.25 0 .25 .50 .75 1.00 1.25

Effect Size

Bernard et al. RER, Fall 2004

Figure 1 *Effect sizes: traditional classrooms versus virtual classrooms*

SIDEBAR *What is an Effect Size?*

Even though learning from two lesson versions (such as one delivered in the class-
room and one delivered via synchronous e-Learning) may show statistically significant
differences, the actual learning differences may be so small that the findings are of lit-
tle or no practical importance. Unlike statistical significance, effect sizes indicate prac-
tical significance. Effect sizes of less than .30 tell us that any differences between
the versions being compared are too small to be of practical relevance. In contrast,
effect sizes of .70 and higher mean that the differences are large enough that there is
practical benefit from adopting the better version. For the statistical details on effect
sizes see page 47 in *E-Learning and the Science of Instruction*, listed in the Resour-
ces section of the main article. (*Editor's Note:* A longer and somewhat more technical
explanation of effect size can be found online in the ERIC Digest. See "Effect Size and
Meta Analysis," by Carol Boston at http://ericdigests.org/2003-4/
meta-analysis.html.)

plan your training, you consider the instructional methods you will need to achieve your instructional goals. For example, if you are building software skills you will need to show software demonstrations followed by hands-on practice. Therefore you will need to select a delivery medium that can effectively display demonstrations and provide for practice. You will want to assign learning goals and topics to the virtual classroom (VC) that take advantage of the types of instructional methods it can deliver.

Step 2 — Visualize

E-Learning in both its synchronous and asynchronous forms demands compelling visualization of content. As you can see in Figure 3, right, the largest amount of screen real estate in the virtual classroom tools is commanded by the whiteboard — a place where instructors can display visuals and where participants (in any physical location, either local or remote) can interact with those visuals.

In Step 2 you select and design the various types of visuals you can use to best promote learning. Once selected, you follow evidence-based guidelines to explain those visuals using the audio, text, and cueing facilities of the virtual classroom.

Step 3 — Engage

Experienced trainers know that frequent meaningful learner interaction with the content is the main path to learning. From polling options to direct messaging to break-out rooms, the virtual classroom tools offer a plethora of opportunities to engage your learners. It's up to you to exploit these in ways that lead to learning.

Step 4 — Package

Success using any technical delivery medium requires an infrastructure that effectively prepares participants prior to the program, supports them during the event, and promotes transfer of learning to the job afterwards. Packaging the virtual classroom program requires attention to all of the elements that precede and follow your virtual classroom event.

Now that I've overviewed the DVEP model, let's look at each phase in more detail.

Step 1 — Define outcomes, methods, and media

In the definition phase, you define your business goals along with associated

knowledge and skills. Then you identify the instructional methods needed to achieve your learning objectives. Finally, you select a blend of delivery media that can best deliver the instructional methods you have identified.

Aligning your training to business goals is not unique to the virtual classroom so I will not devote space to that topic here. You will find more information on matching training to business goals in a forth-

coming *Training & Development* article (June, 2005); please refer to the Resources section at the end of this article. Instead, I will focus on how to blend your instructional media and how to decide which instructional goals best match virtual classroom delivery technology.

Select the best blend

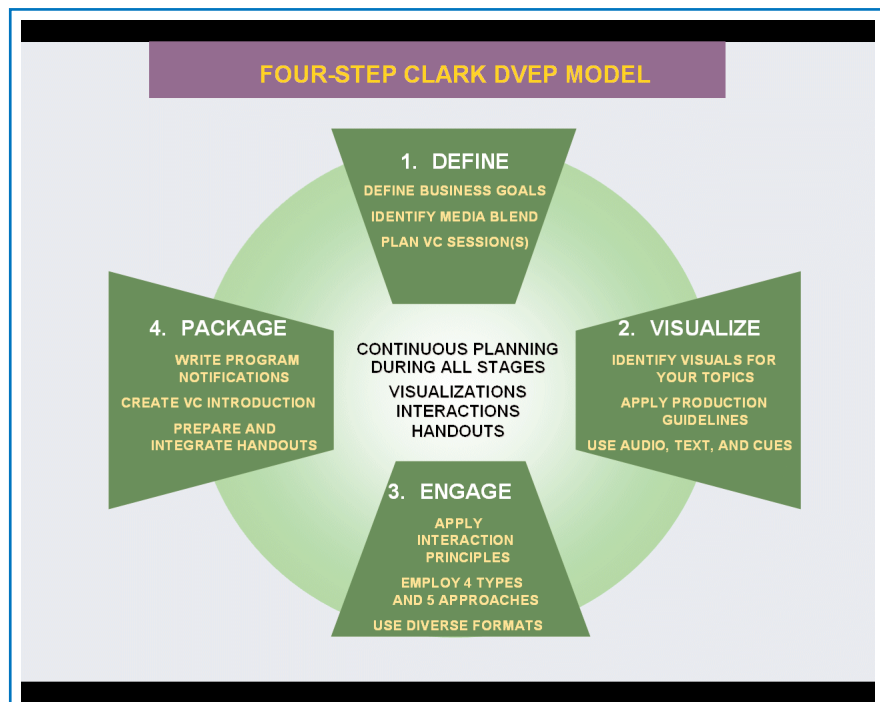As I mentioned above, it is instructional methods that cause learning — not
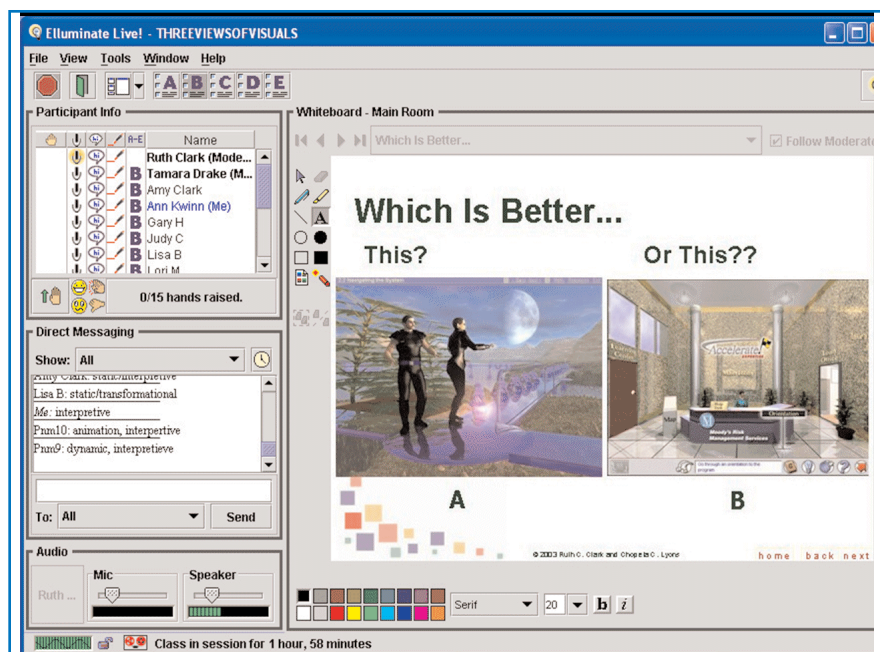

Figure 2 *The DVEP model*

Figure 3 *The whiteboard dominates virtual classroom screen real estate*

the delivery media. Not all media can carry all instructional methods. For example, some synchronous e-Learning tools have no facilities for displaying visuals. If your instructional goals require methods that involve graphics, these tools would not be a good choice.

To plan your media blend, begin by listing the main instructional methods needed to achieve your training goals. As an example, Figure 4, below, summarizes a blended learning plan for a training program designed to help new supervisors learn to develop and conduct legal hiring interviews. Each medium in this plan has

been selected because of its strengths in delivering the instructional methods needed for the instructional goals.

As you think about which delivery medium to use for your various instructional goals, consider the following questions:

Does the learning outcome require time for reflection?

If yes, consider some form of asynchronous learning environment. For example, in our interviewing skills class, following the virtual classroom session participants complete an assignment to construct real-world interview questions at their work stations. This type of task

takes time and reflection and is more efficiently completed at each learner's pace and local environment.

Does the learning outcome benefit from high social presence?

If yes, consider a face-to-face classroom venue. In an interview class, learning to conduct effective interviews requires role plays. This is best facilitated in the classroom, where the learner can experience all of the social cues relevant to communication skills, such as interviewing.

Can the learning outcome be achieved by reading or independent research?

If yes, consider an assignment in the form of an article or Internet search. The interview class gives participants a pre-reading on legalities of interview questions followed by an assignment to email the instructor a completed worksheet in which they identify questions that are legally defensible. Pre-work such as this acts as an audience equalizer by giving everyone a common knowledge base when they enter the virtual classroom. It also allows you to use the virtual classroom for interactive work and discussion rather than for disseminating information.

A Blended Media Plan for an Interviewing Course

Instructional Event	Media	Reason
Pre-reading with worksheet	Text and email	Self-study and reflection time needed
Class on effective interview questions	Virtual classroom	Practice and discussion on legalities of questions
Write sample questions	Self-study and email	Reflection time needed
Practice conducting interviews	Physical classroom	Role play practice and in person feedback

Figure 4 *Blended learning plan summary*
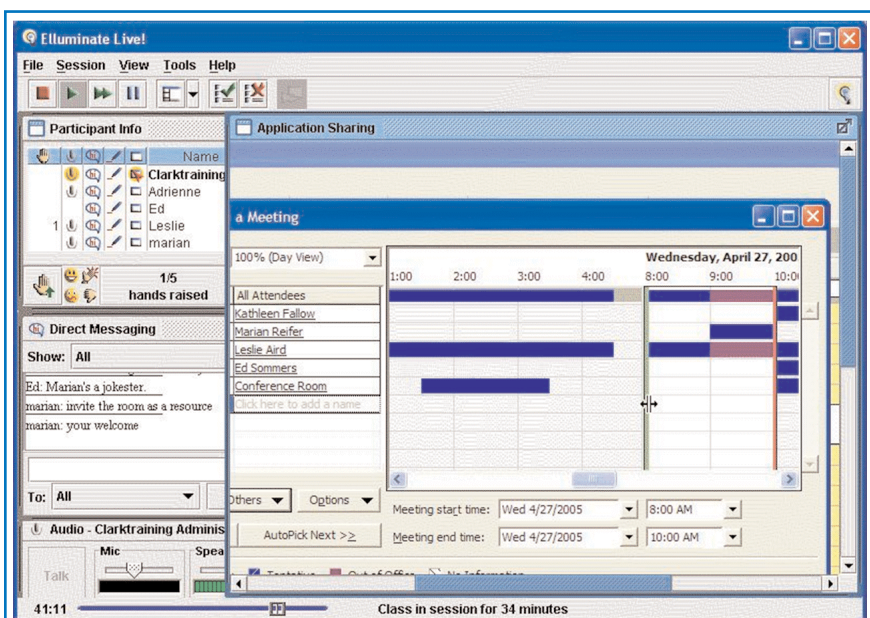
Figure 5 *Application sharing in the virtual classroom*

When to use the virtual classroom

Use the virtual classroom in ways that take advantage of its main features that promote learning, including the whiteboard and other media projection facilities such as application sharing, audio, interactive tools, and breakout rooms. Reserve the virtual classroom for learning goals that are best promoted by:
1) Display, explanation, and discussion of relevant visuals
2) Interactions using virtual classroom facilities such as polling, whiteboard, and chat
3) Collaborative work among small groups of participants

Of course, the virtual classroom may be selected for pragmatic reasons, rather than for its features that promote learning. For example, synchronous events tend to have higher completion rates than asynchronous venues. In addition, synchronous e-Learning is generally faster to design and deploy than traditional asynchronous e-Learning. Savings in travel costs and reduced time away from the job are two other predominant reasons organizations turn to the virtual classroom.

A word of caution! Misusing a medium

for its pragmatic benefits soon gives that medium an undeserved bad reputation. If virtual classrooms are used only to deliver lectures, for example, the buzz gets around that virtual classrooms are boring, irrelevant, or a waste of time. Or if face-to-face classroom courses are repurposed for the virtual classroom with no changes to accommodate virtual classroom features, your outcomes and learner responses will be suboptimal. For that reason, use the virtual classroom for the things it does best: to visualize content, to promote interactivity and to facilitate collaboration. If your learning outcomes do not make use of these features, select a more suitable delivery medium.

Step 2 — Visualize your content

As you review your outline for your virtual sessions, invest extra effort in visualizing your content. The "wall-of-words" approach is a real turn-off in all forms of e-Learning including the virtual classroom. If your message can be best communicated with words, then give learners a reading assignment and bring them to the virtual classroom to discuss and apply what they read. Here are some specific guidelines for visualizing your content.

Select visuals for their learning functions

In *Graphics for Learning*, my colleague Chopeta Lyons and I reviewed recent research on best use of visuals. (Two **eLearning Developers' Journal** overview articles based on the book are listed in the Resources section.) We recommend that you use visuals for their communication and psychological functions — not for their surface features. As a general rule, you should de-emphasize decorative graphics that can distract learners and depress learning in favor of representational visuals that illustrate the job environment, along with explanatory visuals that promote deeper understanding.

For example, Figure 5 on page 4 shows a portion of a virtual classroom session using application sharing. In this lesson, Kathy Fallow of Vertex Solutions demonstrates how to use Microsoft Outlook to set up meetings. Her demonstration uses a combination of static screen captures (not shown) as well as the dynamic visuals in the application sharing facility. These types of visuals are job relevant, and help learners build mental models appropriate to the tasks they will need to perform on the job.

Explain visuals with audio and direct attention with cueing tools

Learning is better when you explain complex visuals such as software screens with audio rather than with text. This guideline, known as the *modality effect,* has been proven in many research studies. A complementary visual and auditory message makes best use of the visual and phonetic centers in memory and therefore minimizes memory load. In contrast, when you use text to explain visuals, the visual component of memory is overloaded and learning becomes less efficient.

Therefore, use narrative to explain visuals projected on the whiteboard or through other media projection facilities in the virtual classroom. While explaining visuals, use the many cueing tools available in the whiteboard to direct the learner's attention to the relevant portion of the graphic. Cueing is especially important for dynamic visuals such as an animated demonstration in order to direct the learner's attention to the features being described.

Don't use audio, however, to provide information that learners will need to reference. Because audio is transient, it does not work well when learners need continued access to words. For example, directions to an exercise should remain visible in text on the screen so that learners can refer to them as they work through the activity.
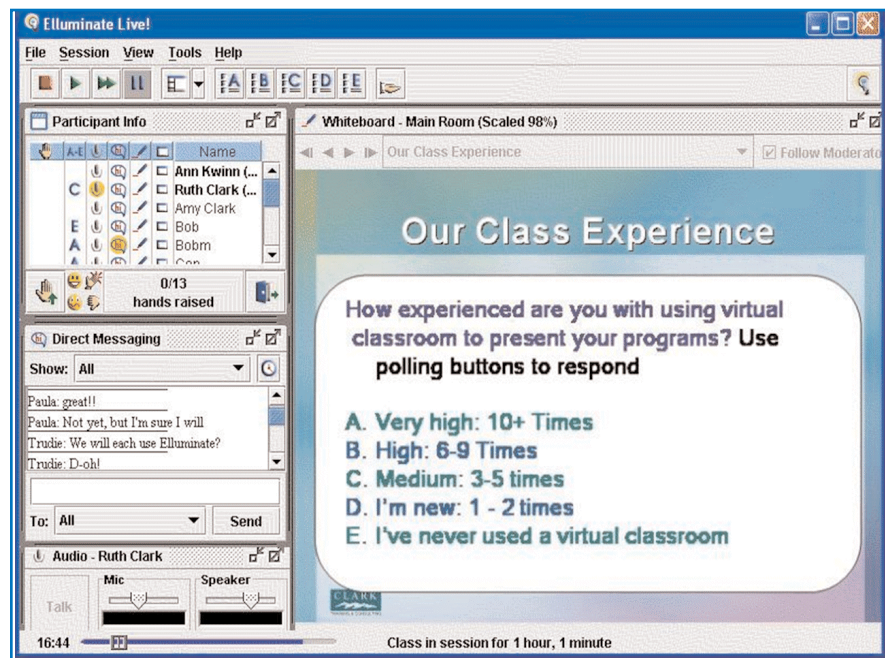

Figure 6 *Use plenty of demographic, attitude, and behavioral questions*

TABLE 1 *Four types of questions to ask in the virtual classroom*		
Type	**Description**	**Examples**
Demographics	Questions that ask about relatively permanent features of participants	• Job roles • Organization • Experience
Behavior	Questions that ask about things participants have done or are likely to do, and their reasons	• Reasons for attending this session • Number of times you have used application X • Which would you buy?
Attitude	Questions that ask about feelings	• Which do you prefer: • How did you feel about _____?
Knowledge	Questions that have correct and incorrect answers	• Which formula has the correct format? • What is the heat load of this product?

Step 3 — Engage your learners

Engagement with instructional content is synonymous with learning. If you have designed and developed good asynchronous e-Learning, you have learned the importance of frequent effective interactions. Happily the virtual classroom offers an abundance of opportunities for participation. Here are a few guidelines.

Provide frequent, job-relevant interactions throughout your VC session

Practice opportunities yield much better benefits when they are distributed throughout a lesson rather than lumped together at the beginning or at the end. To sustain attention and maximize learning, your interactions should be very frequent. The optimal frequency will vary with your content and your participants. However, if you find yourself having gone for more than two or three minutes without some type of interaction, you run the risk of over extending participants' attention spans and overloading their limited memory resources.

Further, you need to offer interactive opportunities that foster job-related knowledge and skills rather than trivial questions that merely ask participants to repeat back content. For example, rather than asking learners to list guidelines for writing legal interview questions, it would be better to ask them to construct questions that meet legal guidelines.

Use variety in question type and interaction format

Table 1 on page 5 summarizes four types of questions I recommend using in the virtual classroom. As training professionals we are most comfortable with knowledge questions that test understanding. However, you should also make ample use of demographic, attitude, and behavior questions such the one in Figure 6 on page 5. Demographic, attitude and behavioral questions help the instructor and the participants learn about each other's backgrounds, experiences and feelings related to your topic.

For example, in the introduction to my "How to Use the Virtual Classroom" course, I ask participants about their job roles, virtual classroom experience, and course goals. Questions like these establish social presence and help the instructor learn important information about the participants.

The virtual classroom offers many diverse tools for participant involvement. If you have a large group, the polling features as well as direct messaging provide an opportunity for everyone to respond. If you want reference and reflection on everyone's responses, ask participants to write answers on the whiteboard as shown in Figure 7, below. Use breakout rooms for small group discussions and projects. Just as in the physical classroom, small group assignments maximize engagement of all learners and offer the proven learning benefits of collaborative work.

Step 4 — Package your program

Get off to a good start by providing pre-information that helps participants with the technological issues and informs them of the logistics, course expectations and assignments, as well as any pre-work needed. Reinforce your welcome message with introductions in the virtual classroom that immediately engage your participants with the interactivity tools. Use meeting and greeting chats as participants enter the room, post your photo on an introductory slide, and ask demographic and behavioral questions to establish social presence during the early stages of your virtual session.

Design working aids for handouts

I recommend that in general, you DO NOT use copies of your slides as handouts. Instead, during your planning phases, ask yourself what kinds of working aids participants will need to apply their new knowledge and skills during and after the session. These may be step-by-step procedure guides, checklists, examples, or templates. Provide exercises that require participants to reference these handouts during the session so they are confident about using them later on the job.

Getting started in the virtual classroom

As you get started, take time to participate in some free Webinars. They are full of techniques you can adapt and apply to your sessions. And you can experience directly what did and did not work well for you from a participant perspective. Most virtual classroom tools offer free training that will get you familiar with all of the options you have and how to use them. In addition, get training that goes beyond tool features in ways that show you how to exploit those features for effective learning.

I recommend you select training delivered in the virtual classroom since you will learn directly from the content and indirectly from the way the class is conducted. I have included some options for training in the Resources list.

Finally, plan and conduct your first virtual classroom sessions with an experienced partner. Many organizations have a producer, someone with a lot of experi-
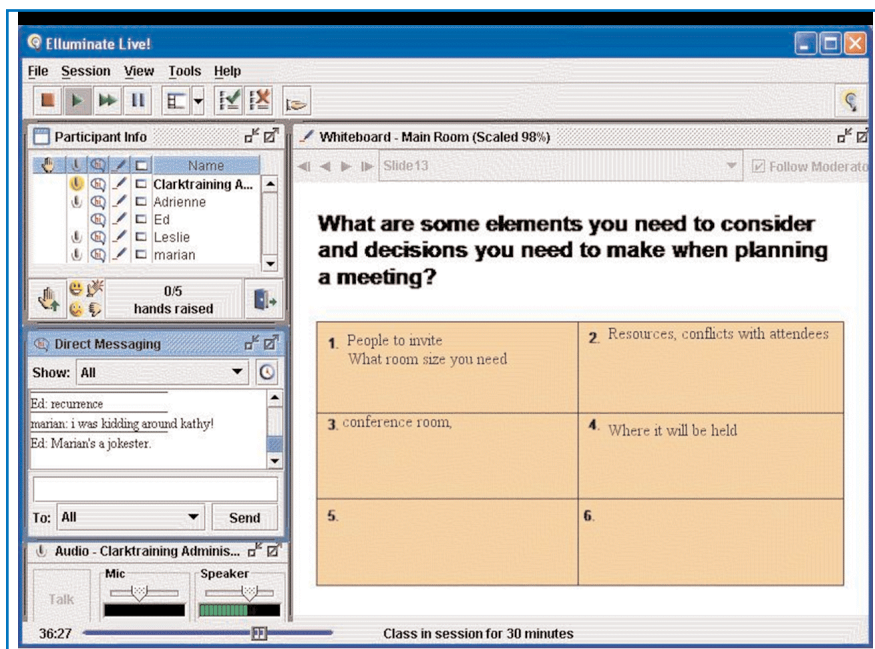
Figure 7 *Use the whiteboard to allow reflection on individual responses*

ence using virtual classroom technology, available as a guide. The producer can help you develop your program and be with you during your sessions to manage all of the small tasks that will be new to you such as clearing the polling and responding to direct messages. As you gain comfort in the virtual classroom, you will be able to assume many of the producer's duties yourself. Ⓖ

Resources

Bernard, R. M. et al (2004). *How does distance education compare with class-room instruction? A meta-analysis of the empirical literature.* Review of Educational Research, 74:3, 379-439

Clark, R. and Kwinn, A. (2005) *Seven Paths to Align Training to Business Results*. Appearing in June 2005 issue of Training & Development. Available in June at www.Clarktraining.com

Clark, R. and Lyons, C. (2004) *Graphics for Learning*. Available at Amazon or www.clarktraining.com.

Clark, R. and Lyons, C. *More Than Just Eye Candy: Graphics for e-Learning. (Part 1 of 2)*. The eLearning Developers' Journal, August 11, 2003.

Clark, R. and Lyons, C. *More Than Just Eye Candy: Graphics for e-Learning. (Part 2 of 2)*. The eLearning Developers' Journal, September 15, 2003.

Clark, R. and Mayer, R. (2003). *E-Learning and the Science of Instruction*. Available at Amazon or www.clarktraining.com.

Virtual Classroom Training Resources

How to Use the Virtual Classroom:
http://www.clarktraining.com/synchronous%20Webinar.html

Synchronous e-Learning Training:
http://www.insynctraining.com/Insync/

Graphics for Learning Training:
http://www.clarktraining.com/Graphics%20for%20Learning.html

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Additional information on the topics covered in this article is also listed in the **Guild** *Resource Directory.*

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e-Learning for e-Learning Professionals...

The eLearning Guild's
ONLINE FORUM™
SERIES

The eLearning Guild has created *The Guild Online Forum Series*, a new series of online events that will be held throughout 2005. On the 2nd Thursday of every month (except January) you can register to participate as an individual, or as a group, in a one-day "virtual conference" that includes four highly interactive seventy-five minute sessions designed to explore a specific topic.

Here's how the Online Forums work:

Individual or Site Registration:

Participate as an individual or you can pay a site fee, set up your meeting room, and have your e-Learning team participate in an Online Forum as a group!
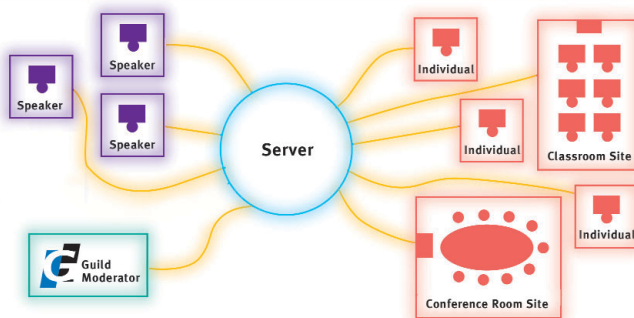
Here's a brief description of the next Online Forum in the series...

MAY 26, 2005

Intermediate and Advanced Flash Techniques for Creating e-Learning with Impact

This Online Forum will explore many "under-the-hood" tips and techniques from seasoned Flash experts. The sessions in this event will focus on the intermediate to advanced uses of Flash including animation techniques, developing 3-D with Flash, using Flash with other tools, how SCORM and other standards work with Flash, and sound management tips for Flash.

Target Audience: *Experienced e-Learning Developers, Programmers, Instructional Designers and others using Flash to develop e-Learning.*

To learn more about each upcoming Online Forum and to register, go to:
www.eLearningGuild.com

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Through this member-driven community of designers, developers, and managers of e-Learning, the Guild provides high-quality learning opportunities, networking services, resources, and publications.

Guild members represent a diverse group of instructional designers, content developers, web developers, project managers, contractors, consultants, managers and directors of training and learning services – all of whom share a common interest in e-Learning design, development, and management. Members work for organizations in the corporate, government, academic, and K-12 sectors. They also are employees of e-Learning product and service providers, consultants, students, and self-employed professionals.

The more than 16,000 members of this growing, worldwide community look to the Guild for timely, relevant, and objective information about e-Learning to increase their knowledge, improve their professional skills, and expand their personal networks.

Resource Directory
The Guild hosts the e-Learning industry's most comprehensive resource management system that includes more than 4,500 (and growing) e-Learning related resources in a searchable database. Guild Members can post resources and can update them at any time.

Surveys & Studies
The eLearning Guild conducts continuous polls and more than a dozen surveys and studies each year – including an annual salary survey. Guild Members have unlimited access to all data and analyses.

The eLearning Developers' Journal
The Journal provides in-depth articles about how e-Learning professionals can make e-Learning more successful in their organizations. It's a weekly online publication in PDF format and Guild Members have unlimited access to the searchable archive of every issue published.

Job Board
The Guild Job Board should be your first stop for solving employment related issues. Whether you are an employer looking to fill a key position or an e-Learning professional looking for a new job, you'll find success here.

Info Exchange
The Info Exchange enables members to ask questions of, and get feedback from, other members around the world in a discussion board format.

Member Discounts
Guild Members receive a 20% discount on all optional services offered by The eLearning Guild that are not included in your membership. These services include all face-to-face and online events produced by the Guild, special publications, and other services as they are developed.

The Online Forum Series
E-Learning for e-Learning professionals! *The Guild Online Forum Series* enables you, or your team, to explore the most pressing issues facing e-Learning professionals today with some of our industry's smartest people – right from your desktop or conference room.

Engaging Symposia
The Guild's unique and focused symposia drill into the most critical issues for e-Learning designers, developers, and managers. These are intensive learning events with limited enrollment. Participate in person or online, as an individual or as part of a team.

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The eLearning Producer Conference, held in the fall each year, offers comprehensive and in-depth content for all e-Learning professionals in a collegial environment conducive to learning and sharing.

Event Proceedings
If you attend a Guild event, you have immediate access to all event proceedings. If you do not attend, as a Guild Member you still have access to the proceedings 90 days after an event ends.

Guild e-Clips
A Guild Members-only publication sent by email. It's short, easy to read, and includes "clips" designed to keep members connected to the latest information about Guild publications, surveys & studies, and learning events.

eLearning Insider
The *eLearning Insider* is sent by email every other week and includes current e-Learning industry news, excerpts from Journal articles, highlights from Guild surveys, e-Musings, and information on Guild matters.

Professional Development Through Active Engagement
In order to maintain a vital community and provide relevant information, The eLearning Guild seeks the active involvement of all Guild Members and Guild Associates. Consider these ways to engage:

Speak at Guild Events: Members and Associates are encouraged to submit presentation proposals for any and all Guild events.

Write for the Journal: *The eLearning Developers' Journal* articles are written by industry leaders and practitioners just like you who are working in this field every day.

Join the Program Advisory Committee: This committee works to craft the program content of all events produced by the Guild.

Join the Research Advisory Committee: This committee works to identify the topics for Guild surveys and studies, and also develops the survey instruments.

The eLearning Guild organizes a variety of industry events focused on participant learning:

Online events…				Face-to-face events…		
The eLearning Guild's **ONLINE FORUM** SERIES	THE LMS/LCMS IMPLEMENTATION & MANAGEMENT **ONLINE** SYMPOSIUM	THE ELEARNING MANAGEMENT **ONLINE** SYMPOSIUM	THE RAPID ELEARNING DEVELOPMENT **ONLINE** SYMPOSIUM	eLearning **Producer** CONFERENCE & EXPO 2005	THE ELEARNING **INSTRUCTIONAL DESIGN** CONFERENCE	DEVLEARN 2005 THE ELEARNING DEVELOPERS' CONFERENCE & EXPO
Thursdays	July 27-29, 2005	October 5-7, 2005	April 27-29, 2005	March 14-17, 2005	June 20-24, 2005	November 15-18, 2005