# An Overview of Distance Learning for Decision Makers

This short overview will support decisions about implementing distance learning in national and international education and professional training institutions. It discusses why organizations are choosing distance learning (DL) solutions, the variety of DL designs and modes available, tools for DL, common concerns about DL and how to address them, the resources required for DL and the demands on staff and student time, and finally, some suggestions on implementing a sustainable distance learning program.

## 1. Motivations for Distance Learning

The move to increase offerings of distance learning is being driven by several compelling organizational and societal demands:

- **Globalization:** The need to train a dispersed workforce in multi-national enterprises and international organizations.
- **Specialized expertise:** The number of professionals sharing a specialized discipline, such as many of the environmental forecasting specialities, may be extremely small in many countries and regions. DL helps to reach a critical mass of students in a cost-effective way when those needing training are dispersed due to their narrow specializations. DL can also make effective use of limited subject matter experts as trainers, allowing them to facilitate training from their home institutions.
- **Equal Opportunity:** The desire to increase access to education and training opportunities world-wide, particularly in developing countries with few other options
- **Convenience:** For many professionals, opportunities to be away from the job are limited. DL can be flexible and fit any working schedule as long as dedicated time for training is provided. DL is convenient, but it still takes time.
- **Relevance:** DL can be easily integrated into the work environment, and thus offers opportunities for immediate application or testing for relevance. It can even function as performance support on the job, and not simply training.
- **Independence:** Some students prefer the independence of distance learning, even when classroom opportunities exist. DL creates less disruption to home life, and often allows for personalized learning approaches, both in terms of pacing and choice of activities.
- **Reduced costs:** Reducing costs is often one of the primary reasons for using DL, but there are still costs. Travel and facilities costs go down dramatically, and these are often the most costly aspects of training. However, costs for teacher time are similar to other forms of training, or even higher when developing a new DL course because more fully-developed training resources are usually required. Costs for new technology and its maintenance, and training existing or hiring new staff with skills to to deliver should also be considered.
- **Empowering learners:** DL can favour and help develop self-directed and independent learners by encouraging them to be responsible for their own learning decisions. Distance often allows learners to take more responsibility for what and how they learn. In this way, DL can develop life-long learners who are independent, inquisitive and proactive.

## 2. Designs for Distance Learning

Distance learning can take many forms. It is probably even more varied than classroom learning in terms of the variety of ways courses can be structured, the technologies that can be used, and the variety of ways to engage students in learning. Deciding which designs to use is important because you need an approach that best meets the needs and constraints of your students and your institution, and because becoming proficient and comfortable working with DL approaches will can take time and effort.

Below we look at the variety of dimensions of DL and the choices they offer.[1] DL forms can be combined in any way that works for a particular context.

| Dimension | Forms DL can take |
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| **Formality** | • Fully credited university courses<br>• Mandatory or recommended professional development courses<br>• Non-formal continuing education courses<br>• Open enrollment courses like MOOCs<br>• Informal conferences and professional meetings<br>• Informal online learning communities of practice |
| **Synchronous-level** | • Live, fully synchronous events that use Web conferencing technologies<br>• Time-bound asynchronous events (e.g., one semester or several weeks), but not live<br>• Fully asynchronous or self-paced lessons (e.g., resources from COMET, Eumetcal, VISIT, etc.) that are available for use at any time<br>• Blended approaches that use self-paced materials along with live events, usually in a time-bound context (days, weeks, or months) |
| **Development Approach** | • Training is borrowed without adaptation from a provider (e.g., existing online resources)<br>• Training relies on content and presentations provided by subject matter experts, without additional redesign other than organizing<br>• Course is designed by trainers<br>• Course is designed by a team made up of trainers, subject matter experts, instructional designers, and instructional technology specialists)<br>• Course is a mix of existing educational resources and content created by trainers<br>• Course includes existing resources that have been adapted for the local context |
| **Learning Outcomes** | • Intended outcomes are primarily recall of background |

[1] Lowenthal, P. R., Wilson, B., & Parrish, P. (2009). Context matters: A description and typology of the online learning landscape. In M. Simonson (Ed.), *32nd Annual proceedings: Selected research and development papers presented at the annual convention of the Association for Educational Communications and Technology*. Washington D. C.: Association for Educational Communications and Technology.

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| | information<br>• Outcomes include basic skills and procedures<br>• Outcomes include higher level performance, analysis, and decision-making |
| **Technologies/Media** | • Documents in various file formats<br>• Online resources with multimedia (audio, video, text, animation, or interactions, etc.)<br>• Online captured presentations or lectures<br>• Collaboration tools like discussion forums, wikis, shared documents, social networking sites<br>• Online webinar software<br>• Streaming video (e.g., YouTube, Vimeo)<br>• Course management systems, like Moodle<br>• Content designed for mobile learning devices, like tablets and smartphones |
| **Teacher Role** | • Self-directed (no trainer)<br>• Teacher-guided (trainer for support only)<br>• Teacher-led (trainer leads or facilitates activities) |
| **Communication Strategy** | • Frequent communication between teacher and participants, as well as between participants (e.g., in discussion forums)<br>• Frequent communication between the teacher and individual students<br>• Limited teacher communication, but frequent communication with fellow participants (e.g., for dialogue and peer assessment)<br>• Very limited communication, mostly independent learning |
| **Class Size** | • Independent learning, no class of fellow students (hundreds or thousands may be using resources at once)<br>• Normal class sizes of 10-40 participants<br>• Large classes of more than 40 participants (may use peer guidance in addition to guidance from trainers)<br>• Massive class sizes (massively open online courses—MOOCs) |

## 3. Tools for Distance Learning

The variety and capabilities of the tools available for distance learning grows each year. Many of these are described in generic terms below, along with recommendations for their use. The expansion of tools is driven primarily by a desire to make learning environments richer and more interactive through Web-based applications. These tools have proven so useful that they have been adopted also to make classroom courses more interactive and personalized.

When reliable Internet connectivity is available, which is still problematic in some regions, Internet sound quality and graphic resolution now rivals that of TV and books. However, so many things must work together, such as operating systems, computer networks, internet connectivity, hardware, file formats, and operator skills, that challenges will always exist. DL deliverers should have back up plans for potential technical difficulties, but these are easy to implement.

***Synchronous Tools***

Live online sessions and meetings are not just convenient and cost-effective; they are becoming a quite natural form of communication in all professional environments. A number of powerful Web-based software applications are now available, offering choices in cost and features. Free web applications are also available, and are likely to grow and improve, and may force vendors to offer less expensive options. A sample of the tools currently available include:

Tools for Purchase:

- Citrix Online: GoToMeeting/Webinar/Training (http://www.gotomeeting.com)
- Adobe Connect (http://www.adobe.com/products/adobeconnect.html)
- Cisco WebEx (http://www.webex.com/)
- Saba Meeting/Classroom/Webinar (https://cloud.saba.com/)
- Any meeting (http://www.anymeeting.com/)
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Free Tools:

- join me (https://join.me/)
- BigBlueButton (http://www.bigbluebutton.org/)

Live online sessions can be as effective as classroom sessions when well-planned and well-executed. However, they require different approaches. The eLearning Guild offers a free handbook with guidelines for Synchronous e-Learning at http://www.elearningguild.com/publications/index.cfm?id=6&from=content&mode=filter&source=publications&showpage=2.

| Common Features | Uses |
|---|---|
| Audio conferencing | Presentation, discussion, questions, providing feedback, and other forms of student interaction. |
| Video conferencing | Providing more personal connection (e.g., via Webcam), showing images, animations, and presentation slides |
| Polling | Learners can give immediate responses to question. Responses can be shared or kept hidden. This feature is good for assessing comprehension. |
| Chat | Learners can type questions at any time in an unobtrusive way, or answer open-ended questions without audio. It is critical for communicating about technical difficulties in setting up a session. |
| Participant list | The list shows all learners that are present, and can indicate various technical and physical states: audio connected, offline, hand raised to ask a question, stepped away, etc. |
| Icons | Participants can click icons to indicate their feelings or understanding. These might include a raised hand, smiling face, a confused face, applause, agree/disagree icons, etc. These are very useful with large groups, in particular. |
| Application sharing | The teacher can show any application on their computer to students—to share documents, data and visuals, charts and graphs, etc. The teacher can allow students to do the same to share assignments, local data, etc. |

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| Breakout rooms | The teacher can set aside private rooms for small groups of students to interact, as if they were working at their own table in a classroom. |

***Asynchronous Collaboration Tools***

Synchronous tools allow for live sessions regardless of geographical dispersion, but asynchronous tools offer many significant advantages. They give participants opportunities to collaborate at a distance, time to think and reflect before responding during a learning activity, time to compose their contributions (especially important for learners working in a second language), as well as the freedom to complete assignments and and contribute whenever they have time—before or after work, or even when travelling.

Asynchronous collaboration tools include discussion forums, wikis, blogs, and collaborative document sites (such as Google docs). There a numerous free sources of these tools, and most are also built into Course Management Systems, such as the open-source Moodle platform. The table below summarizes the tools and their general capabilities.

| **Tool** | **Uses** |
|---|---|
| Discussion forums | Forums allow discussions just like you'd have in the classroom, but written instead of spoken, and carried out over time. They provide the instructional dialog that can lead to clarification and deeper understanding. They may be structured as **free-form questions and answers, or debates, seminars, brainstorming, and decision-making sessions**. Contributions, or "posts," can include not just text, but also web links and attached documents, and can be organized in "threads" or structured conversations that make them easy to follow. Effective forums frequently require a good moderator to guide discussion. |
| Wikis and related tools | Wikis are for building **collaborative documents**. Wikis are public, not individual, and not traditional discussions. They are used to build a resource with group input. A familiar example is Wikipedia (http://www.wikipedia.org/), an extremely popular collaborative encyclopaedia. Wikis require rules about proper etiquette for collaborative development. Wikis are unique in that they are usually **intended for long-term use and continual updating**, and distinct from collaborative documents, although they share many properties (see below). |
| Blogs | *Learning blogs* are **individual writings** from students (or teachers) about their learning experiences, insights gained, questions that are being raised, and attitudes toward the content. **Blogs stimulate reflection** about learning and encourage students to tell what is confusing, most interesting and most challenging. Students learn by reading the blogs of fellow students also.<br><br>Teachers can also provide *instructional blogs* that share their ideas about the course and its topics in a **less formal way than lectures** or other prepared documents. |

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| | *Micro blogs* like Twitter can be used to share **short messages, news or reflections** quickly. With micro blogs, it is possible to follow the thoughts of others in near real-time. Feeds from micro blogs can be added to a course website in order to keep it updated with the most recent comments. |
| Collaborative documents | Related in function to Wikis, students can **collaborate on projects** at a distance to develop text documents, presentations, illustrations, and spreadsheets, using cloud-based development tools, like those in Google Drive. Technical guidance is sometimes required. New tools for collaborative document creation in different formats are continually emerging. |
| Social bookmarking | **Interesting and useful websites and resources** can be shared with peers through tools such as Delicious or Diigo, with an open or restricted access. |
| Video sharing | Video can be shared by teachers or learners on the course website or through publicly available services like YouTube or Vimeo. A training provider can even own a dedicated channel. Teachers might use screencasts, which **demonstrate software procedures or provides a website tour,** using commercial software like Camtasia or free web-based solutions that exist as well. Video content can be carefully planned or spontaneously created when needed. Learners might be asked to create screen capture videos or other forms of video for assignments to demonstrate skills. |

### *Other Asynchronous Media*

In addition to the tools listed above, which are used primarily for activities involving two-way dialogue and collaboration, DL nearly can take advantage of other online and offline media, such as CDs, print documents, resources designed for mobile devices, and self-paced web-based learning modules. Such materials are obviously useful for self-directed learners outside the context of formal distance learning courses, but they can be even more powerful when used within the context of a course as supporting educational resources. If bandwidth is a significant issue, these can be distributed by mail or by satellite broadcast.

### *DL Trends*

DL has significantly evolved in recent years. New approaches and technologies are constantly introduced, reviewed, evaluated and then accordingly improved or abandoned. For this reason it is worthwhile to follow the new trends in this rapidly transforming discipline through Blogs, professional discussion networks (like Linked-in) and journals. The ideals of openness, equality and free access to digital learning materials were raised at the inception of DL, and were one of its drivers. The Open Educational Resources (OER) movement has been at the center of this discussion. The movement aspires to make sharing of resources easier by clarifying copyright and reusability policies, and has been adopted or at least considered by a large number of education providers. The open accessibility trend has been one motivation for the proliferation of the Massive Online Open Course (MOOC) model, which permits any number of learners from around the world to participate in a DL course. This model has been created to balance the restricted access policy often adopted in learning management systems (LMS).

The popularity of tablets and mobile devices has triggered the need to consider them in planning for mobile learning (m-Learning). There is a significant movement to accommodate learners by taking into account the technologies and web-based services they use daily in their daily lives, or Personal Learning Environments (PLE). PLEs include space for learner-created and shared content (a contribution-oriented pedagogy as opposed to a consumption orientation).

## 4. Common Concerns about Distance Learning

For many organizations, their first experience with distance learning presents new challenges as they search for distance learning approaches that offer benefits similar to those they are familiar with from face-to-face courses. The list below describes some of the common concerns about DL and approaches that can address them.

***Lack of face-to-face contact to monitor attendance and learning***

Just as in the classroom, interaction is required to monitor if learning is occurring.

- Online teachers can **ask questions in discussion forums** to get students to demonstrate how well they are learning and to provide feedback
- Periodic **live sessions** can be used for more spontaneous discussion
- Frequent **course exercises and quizzes** can gauge student learning
- **Using a combination of interaction methods**, like discussion forums, wikis, online quizzes, course evaluations, and drop boxes for assignments, you can **monitor the involvement** of students.
- **Tracking functionality** in course management systems like Moodle allows **to check when and how often students login and view the various resources** of the course. When students are not attending, it is obvious.

***Less focussed time for learning and difficulty in managing attention***

Similar expectations can be placed upon learners in DL environments as those in classroom courses to ensure they dedicate time to learning.

- While it is easy for distance learning learners to be distracted by work and life obligations, if a similar amount of **on-the-job time is dedicated to learning** as is done for classroom learning, they are more likely to complete course obligations.
- **Requirements for participation and assignment completion** can be set, requiring students to invest time or risk failure. For example, students can be required to make posts to a discussion forum, complete a variety of learning activities, and submit assignments on schedule.
- A**utomatic notifications and reminders** can be set in a learning management system to keep students on track.
- **DL delivery specialists** can serve as facilitators to support subject matter experts and students in course and learning management.

***Limited or lower quality social interactions***

Both on-topic and informal communications can occur in DL environments if planned for and encouraged.

- A DL course can include **website forums for social interaction** not related to the course, for example a separate discussion forum or **instant messaging for private communication**.
- Other web-based **social networking tools**, such as Facebook, have been used successfully for creating social networks for learners to interact during and after courses.
- Course management systems can be used to give **groups of student** private areas in which to interact and develop **collaborative projects**. Students can be assigned to groups based on location, interest, and experience level. Groups of students can also review each other's work.

***Fewer options to modify training and gather feedback on when modifications are needed***

Flexibility can be built into DL courses just as in classroom courses, and many opportunities are available for gather feedback from learners during training.

- Before a DL course, **pretests** can be used to gauge the level of preparedness of students
- During a course, **exercises and quizzes** can gauge learning and identify the need for changes
- When required, **remedial or supplementary content** can be provided in the form of short lessons (simple documents or recorded lectures) can be used to supplement the content when needed, only for those students in need.
- Optional live sessions can provide remedial content for those students that need it.

**It is more difficult to assess learning**

DL provides many ways to assess learning and ensure honesty in the process.

- A DL course can use a **variety of assessment methods**, including online tests and quizzes, live question-and-answer sessions, and even tests proctored at the student's home location, if the stakes require it.
- **Techniques to ensure test honesty** in automatically graded online assessments can include restricting access to specific IP addresses, the use full-screen pop-up test windows that prevent other simultaneous browsing, putting a time limit on test access, randomizing questions and answers to produce unique tests or test formats, designing test questions that require complex thinking (not simple memorization of facts), and other approaches.
- Other **non-automatically graded methods of assessment** can make authenticated responses more evident, such as contributions to a project, essays, posts in a forum, peer-assessment.

***It is difficult to establish presence as a teacher in DL***

While it might feel more difficult to feel present at the start, many successful DL trainers have strategies to "break the ice" and establish good relationships with their learners

- **Teachers can demonstrate their energy and passion in many forms**: through their writings in forum posts, through their live or recorded presentations, and through their attentiveness in providing prompt and thorough feedback.
- Courses can include opportunities to **share personal histories and interests** through participant profiles and ice-breaker discussion activities. Opening sessions can establish a friendly but down-to-business tone that engages students from the start.

***DL relies too heavily on technology and good Internet connectivity***

Technology is central to DL, but good planning can avoid leaving learners behind if difficulties occur

- **Offline or asynchronous DL solutions** exist that do not rely on an Internet connection at all or they require little bandwidth.
- Choosing **simple formats with reduced file size** over multimedia content that require high bandwidth some specialized software applications can avoid technical issues.
- **Testing** your content and offering **backup solutions** will help too.

## 5. DL Resource Demands and Costs

***Students***

Just like face-to-face courses, DL places heavy demands on students, including time to view course learning resources, to participate in live course sessions and asynchronous activities, and to complete course assignments and projects. Each of these activities is critical to distance learning, just as lectures, exercises, discussions, testing, and student projects are critical for classroom courses.

For this reason, learners studying for professional development should be allotted work time to dedicate to these tasks or they may not succeed in the course. It is not practical, nor fair, to assume that students will devote all the time required from their personal time just because they can access resources and participate in activities from home. Short, intensive DL "virtual" courses might require full-time dedication, but longer-term courses delivered incrementally, in the manner of university courses, might require 4-8 hours per week for participation. Institutions offering DL courses may want to obtain a "Course Contract" signed by the student and his or her supervisor or higher manager stating that this time will be allotted.

***Teachers***

Offering a DL course is demanding for the teachers as well. Even if many of the course resources are available from previous courses or from other training providers, these are merely the parallels to textbooks used in traditional courses. During the course, the teachers will likely dedicate time to developing and delivering live presentations, stimulating and facilitating discussion forums, leading other types of learning activities like case studies or real-time weather discussions, monitoring student progress, answering individual student questions, helping students find regional and local relevance from the learning resources, preparing supplemental materials, preparing and providing feedback on exercises, and assessing students. When classes include 30 or more students, this set of tasks becomes substantial. For large courses, as much 20

hours per week, on average, should be devoted to these activities. Having more than one teacher/facilitator can reduce the load.

In addition to delivery time, preparation time can also be substantial. These tasks might include planning and developing the course, researching topics, preparing presentations and other resources, preparing exercises and labs, localization and translation, syllabus preparation, and activity development, among others. This may take up to 4-8 weeks for a new course. Managing the course by facilitating registration, developing a course website, etc., will require additional hours.

## 6. Preparing for, Implementing, and Sustaining a DL Program

Developing a DL program requires careful planning and an investment of time for it to be a success. DL implementations that fail are often due to poor planning and preparation, and expectations that DL delivery methods are similar to those used in classroom courses. An organization can jump right in and perhaps learn from their mistakes for future offerings, but initial failures can sometimes leave a bad taste and discourage faculty and students from participating in future courses. It is better to be prepared and to have a good implementation plan.

***Preparation***

DL delivery will require investments in:

- Staff training in distance learning methods. This can include courses, workshops, or self-directed learning from books or free online resources. In addition to "on-the-job" experience, assume that teachers will need 40-80 hours to learn about DL methods.
- Purchase of commercial e-Learning software applications. Alternatively, it will require additional time to research free online tools. (Commercial purchases, or widely used open source tools, often come with professional technical support, which can save time as you begin DL implementation.)
- Time to learn how use e-Learning tools properly and easily.
- Time and skills to install and set up a course management system, or time to learn how to use the tools hosted by others (like WMO).
- Preparing to offer remote student support services (technical, logistical, academic, etc.)
- Time to analyze your learning needs to help determine what kind of DL may be needed and which tools will help.

***Implementation Plan***

An effective DL implementation starts with a plan that highlights all those things required for project. Of course, any successful implementation plan begins with well defined instructional goals and learning objectives, based on reliably determined needs and requirements.

Topic areas for a DL plan should include:

- Project goals and justification
- Staffing decisions (faculty, facilitators, developers, administrators, etc.)
- Technology requirements and alternatives
- Student selection processes

- Budget and any cost recovery solutions
- Curriculum and course schedule
- DL strategies to be used
- Staff training and preparation
- Content resources to be reused or developed
- Schedule milestones (planning, prototyping, testing, delivery, follow-up)
- Evaluation plan

**Sustainability plan**

One of the requirements for a good distance learning implementation plan is to know how the efforts can be sustained to support future offerings. This plan should have several components:

- How new faculty will be introduced to DL methodologies and to the tools for e-Learning delivery
- How the technological infrastructure will be maintained and kept up to date by dedicated funding and staffing assignments
- How the e-Learning infrastructure might be expanded if enrollments justify it
- What future DL courses might be offered, or what other courses might be supported via distance learning components
- How students will be recruited for new course offerings
- How the DL system can be used to create an ongoing learning community among students and faculty for continued interactions after the course, sharing experiences, asking questions, and sharing resources