ONLINE LEARNING FOR PROFESSIONALS IN FULL TIME WORK

A GUIDE TO WHAT WORKS AND WHAT DOES NOT

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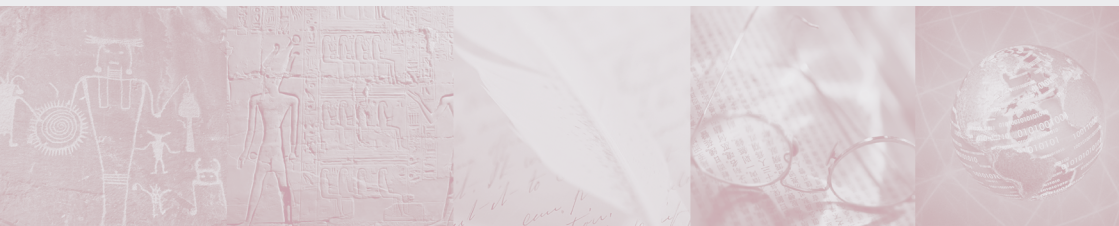
PREFACE

There is no shortage of books on all matters relating to information management and information technology. This booklet adds to this large collection and attempts to do a number of things:

- offer non-technical readers an insight into the few principles that are important and reasonably stable;
- present the material in a context relevant to the work of those involved in international relations;
- awaken the curiosity of readers enough that they will progress beyond this booklet and investigate and experiment and thus develop knowledge and take actions that will meet their particular needs.

The format of these booklets and their contents evolved from courses given by the authors over the last few years in various environments and the feedback of the attendees. Readers' feedback on these booklets would be greatly appreciated by the authors so that future editions can be improved. The coordinates of the authors are given at the end of this booklet.

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Main issues and recommendations

I forget what I was taught.
I only remember what I learnt.

Patrick White

SUMMARY OF MAIN ISSUES AND RECOMMENDATIONS

It might be unusual for a short booklet such as this to start with a summary. However, this is a special, relatively new and fashionable topic that merits a few clear statements upfront.

This booklet covers many aspects of online learning and we believe it will be of particular relevance to those who want to set up online learning facilities for their organisations, those who are interested in evaluating online learning and, in particular, those who are interested in taking online courses to increase their knowledge.

Many other terms are used for online learning, including *distance learning, long-distance learning, e-learning, collaborative learning, flexible learning, home study, correspondence education* and *open learning.*

A simple definition of online learning is "the delivery of a learning or training programme through electronic means". Online learning has recently become very popular both in academic circles and in professional organisations.

Despite its popularity and growth, many online learning initiatives have not been successful.

This booklet focuses on online learning for professionals in full time work, and does not discuss online learning in the academic world, which may use the same technologies, but with significantly different objectives.

Organisations that recognise the need for the continuous development of their staffs' skills are referred to as "learning organisations" and they are briefly discussed in this booklet.

This short introduction invites readers to explore the full text of the booklet by offering them, as a starting point, the following issues and recommendations which apply to all learning:

Issue no. 1: The benefits of well thought out and professionally delivered online learning facilities are many: the provision of job-related learning in the workplace, access to support, facilitation and expertise throughout the learning process, cost-effectiveness compared to other learning models such as classroom instruction, the ability to reach a larger number of individuals, effective use of time and many more.

However, if online learning is not carried out to a high standard, none of these benefits will materialise and, in a worst case scenario, the exercise will prove to be an expensive, disruptive and frustrating failure.

Issue no. 2: Implementing an online learning strategy does not come cheap. It is true that a totally asynchronous, self paced and self assessed Computer Based Training package will only cost from a few Euros to a few hundred, but this does not constitute online learning.

Online learning content can cost from 15,000 Euros for a one-hour course with low-end graphics to over 60,000 Euros for the same with animation, extensive graphics, audio and sophisticated assessment tests.

Anyone wishing to install their own Learning Management System, authoring tools, etc., is looking at upwards of 300,000 Euros in initial costs before developing or purchasing any content or setting up learner administration facilities. These can easily double the initial investment and will incur significant running costs over time.

In addition, lecturers and facilitators need to be paid, and those taking courses – despite the future benefits to be derived – are unproductive during their learning time. These costs should be estimated on the basis of 1 Euro per minute.

Issue no. 3: Return on investment is hard to determine, while costs are easy to determine and are incurred at the time of training. The benefits to the organisation are hard to measure (for example what is the financial value of having increased staff motivation?) and not immediate. It may take considerable time for an employee's performance to improve as a result of increased knowledge, and for improved attitude to be readily observed by management.

Issue no. 4: Professional staff working as "knowledge workers" – collecting, analysing and performing complex operations with information – need to be skilled in problem solving, continuous learning, col-

laboration and creativity. Online learning is well suited to provide training in these skills but only to people who are prepared to be responsible for their own learning.

Issue no. 5: Time management is an absolutely vital skill for the success of online learning. This has two dimensions: (1) today's pressures on professionals and the increasing demands made by the permanent connectivity that cell phones and e-mail have introduced to work and personal lives; and (2) the degree to which learning in the workplace is accommodated by the rapidly changing priorities of an organisation.

Issue no. 6: Online learning is a complement to face-to-face instruction and training, not a replacement. Online learning is not a panacea for an organisation's learning difficulties and shortcomings. Introducing online learning without attention to where it may be useful, why it is an appropriate mechanism and how it should be combined with other training methodologies, is a guarantee of failure.

Issue no. 7: Online learning works particularly well in selected areas of professional training, in particular in those areas of cognitive content with a substantial procedural or technical orientation. It does *not* work well in those areas that require close interaction, for example inter-personal skills.

Issue no. 8: Online learning is defined as being able to provide training "anywhere, anytime". Employers that interpret this to mean that learner-employees can do this training in their home outside working hours are in for a disappointment. Facilities must be provided in the workplace if the scheme is to be accepted by employees with enthusiasm and motivation.

Issue no. 9: It would appear that "everyone" is now engaged in online learning. Many sources offer course material, learning management systems and emerging standards. Given this sufficiently large sample of material and systems, and assuming that the laws of statistics apply, it can be deduced that a percentage of offerings will be exceptional, much will be average and another percentage will be of poor quality.

The online learning industry may be putting more emphasis on technology than on content. The result of this approach is nothing more than e-books which may be dazzling in presentation but are not an in-

effective online learning medium. Just because a course is stored on a website, it does not mean that it is effective for online learning.

Recommendation 1: Ensure that your strategy for deploying online learning is based on a clear definition of purpose.

Recommendation 2: Take the time to formally evaluate online learning offerings, both systems and content. This booklet provides lists of the many things that need to be evaluated. It may also be worth consulting the few established methodologies which have been published, or evaluations conducted by experienced consultants.

Recommendation 3: Recognise the risks to learning that your organisation will have to face. These include ineffective content, poor design, insufficient learner support, conflicting priorities in the workplace and the learning environment and cultural matters, such as where and when the learning should take place. Good evaluation strategies and methodologies are essential to avoid these risks.

Premises and promises of online learning

*Education is learning what
you did not know you did not know.*

Daniel J. Boorstin

Online learning is based on several premises and promises – essentially that it can be particularly effective for professionals, that it is easy to implement and quick to deliver results, that it is cost-effective and that online learners love it. This is all true, but not all the time and not for everyone.

We know that learning is a process, and so is learning to learn. We also know that both play fundamental roles in life, human and otherwise.

For most of human history, learning involved a close physical interaction between master and learner with guidance by example. We just need to look to the evolution of hunting, agriculture, tool making, the guilds and other professions to confirm this. Indeed, it could be argued that traditional education retains substantial elements of this history. For example, why does the education system close down during the summer and why are so many educational organisations still ordered like factories (benches in neat rows, school uniforms, everyone with the same textbooks, etc.)?

Add to this that a great deal of emphasis in traditional education remains on basic literacy in what in the United Kingdom is known as the 3Rs: reading, writing and arithmetic. However, the work of adult professionals requires two higher classes of literacy: *functional literacy* – fluency in reading and writing in a specific context and *critical literacy* – the ability to extract and convey meaning through written, visual and spoken means.

Distance learning, where the teacher and the learner are not physically in one another's presence, has been around for many years. It began with correspondence courses, gradually bringing in more personal contact between teacher and learner through the use of television (as used by the Open University in the UK in its earlier years), albeit in broadcast rather than interactive mode, and radio, used in interactive mode (well established in Australia).

Similarly, the use of Computer Based Training (CBT) to facilitate learning has been around for several years and has provided many valuable

pointers in terms of course design, learner involvement and the concepts of self-paced and self-assessed learning.

Computer Based Training offers the possibility of multimedia design and simple forms of self-assessment, for example, true/false or multiple choice questions. Its fundamental difference from online learning is the lack of interactivity with peers, lecturers and facilitators. It is basically the electronic equivalent of the older correspondence learning model and has retained the format of lectures and textbooks.

While proven to be very useful, CBT allows technology to do the teaching, as the system controls what material is presented.

In the last ten years, the Internet has created a revolution in distance and computer based training by allowing *time* and *place* to be redefined and, at the same time, enabling interaction between individuals and groups as shown.

	One	Many
Many-to-	Assignments Requests for assistance	Threaded discussions Communities of Practice
One-to-	E-mail + attachments Webcam Voice-over-IP Shared workspace	Video-conference List servers Links Websites

Developments in distance learning have created the discipline of online learning, which in turn has been enthusiastically adopted around the world as a means to increase the outreach of formal education.

The inclusion of interactivity and multimedia in online learning, together with the global nature of the Internet, has created the need for additional forms of literacy, in particular:

- *visual literacy* - extracting meaning from information presented in graphic and visual form, which happens to match well the way the brain works;
- *evaluative literacy* – the means to assess whether or not the information found through searching the web has the quality required to be applicable to a particular problem;
- *community literacy* – the ability and willingness to exchange information and collaborate with others even when they are only known through their online personality.

The potential of online learning has been recognised for quite some time as a result of the convergence of rich content, relative ease of access and use and, other than in the least developed countries, affordability by the general public.

> An Internet connection does not necessarily imply that someone is "information rich". Just as living next door to a public library doesn't by itself make a person more knowledgeable, there is nothing automatically informative about being wired.
>
> "The Myth of an Emerging Information Underclass"
> *by Gary T. Dempsey*
> (http://www.cato.org/dailys/11-20-97.html).

It should not be forgotten that while technology and access to information are potentially educational in themselves, they are not always used in an educational manner. Also, some forms of technology, for example cell phones with SMS (Short Message Service) and other two-way pagers provide communications but not necessarily knowledge. On the Internet, anyone can become a "publisher", leading to much inaccuracy or misinformation being presented as valid or important. Many of the most popular applications on the World Wide Web are not intended for education but for entertainment, such as multiplayer games, file exchanges through Napster and similar peer-to-peer exchanges.

The benefits of successfully implemented online learning include:

- the ability to deliver learning opportunities to anyone, at anytime, almost anywhere;
- a learning experience that is often perceived as being "better" than classroom instruction;
- easier access to experienced professors, lecturers, facilitators and mentors;
- access to massive information resources through the World Wide Web, including commercial information service providers (such as, for example, Lexis-Nexis or the Economist Intelligence Unit);
- the possibility for learners to actively participate in the learning process, in particular shy learners who may hesitate to participate fully in a more traditional learning environment;
- access to online learning and technical support;

- a foundation stone for the building of online communities of interest.

Several other topics relevant to online learning will be discussed in this booklet:

Everybody is doing it: Online learning has become a major new business and there are thousands of courses on offer, as was the case with correspondence courses in the recent past. However, this does not mean that everyone is doing it well. In fact, there is evidence that the reverse is true.

Access to technology and services: Many corporate environments have their own intranets and significant bandwidth and technical capabilities. However, for learners who need to use the Internet from home, the digital divide may present a real barrier in terms of bandwidth and service quality in developing countries and in many rural areas in developed countries. In some countries, the cost of access to the Internet may also be too high a percentage of the potential learner's monthly income.

Adequate information management and technology skills: Online learning requires a fair degree of information and communications technology skills from learners, and considerably more than just the ability to connect to the Internet and use a browser. Advanced online learning and collaboration techniques require familiarity with the use of search engines, e-mail and Internet chat, the use of hypertext as a tool, webcam and voice-over-IP and other skills of this kind.

Information overload and shovelware: The mere facts that in mid-2003 one of the major search engines had catalogued over 3 billion pages and that over 40 million websites currently exist clearly show that it is easy to be deluged by information. Many of the courses currently available for online learning are described by their reviewers as "shovelware" – the dishing out of information in indiscriminately large amounts.

Time management and conflicting priorities: It is hard enough to be a full time learner. To be a learner while working full time requires a mastery of time management and collaboration with employers to ensure that adequate time is granted for learning while balancing the inevitable conflicting priorities that will emerge in the workplace.

By mid-2003, online learning has not only been implemented by educational organisations but also by most large companies and organisations around the world to provide an effective process to increase skill levels in their workforces. Organisations such as IBM, CISCO and Intel are widely considered to represent 'Best in Class' examples of online learning.

Setting up an in-house online learning environment is neither cheap, simple nor quick to do. Given that it is particularly hard to measure the return on investment for training, at least in the short term, gaining the benefits of online learning requires serious commitment from an organisation and much attention to the various aspects that determine the success of such a scheme.

This booklet will focus primarily on online learning for professionals in full time work, discussing the following aspects of this discipline:

- the special learning needs of professionals in full time work;
- the different modalities of online learning, their advantages and limitations;
- the critical success factors for online learning;
- the factors that influence course design and delivery;
- the perspectives of online learning gained from experience;
- the steps beyond online learning: online collaboration and online negotiation;
- the components and architecture of online learning systems;
- the processes through which online learning can be evaluated: making the right choices and monitoring the results.

Diplo's experience in providing online learning is presented as a case study.

Learning organisations, adult learning and online learning

Learning disabilities are sad in children and tragic in organisations.

Anonymous

Training is a topic that is talked about and practiced by most organisations. However, the degree of commitment to training can be merely lip-service, in the sense that training is infrequent, limited to a few people and a frequent target in cost reduction initiatives.

Organisations that are dedicated to the provision of additional knowledge for their personnel in an informal learning environment with the aim of improving their skills, work performance and career prospects, can be referred to as Learning Organisations.

WHAT ARE "LEARNING ORGANISATIONS" AND WHAT DOES THIS MEAN FOR ADULT LEARNING?

This booklet focuses on professionals in full time work who need to acquire new skills and knowledge.

Unlike during the late 1800s and early 1900s, learning is no longer a one-time event with the assumption that the degree obtained should provide the graduate with all the knowledge he (women graduates at the time were few and far between) would need for the rest of his professional life.

Rapid innovation and its spread across the world requires professionals to do more than just read journals to keep up-to-date with developments. It calls for continuous learning.

The role of online learning is to create an environment that facilitates the construction of knowledge to maintain up-to-date competencies and enhance performance and potential.

Peter Senge's book, *The Fifth Discipline: The Art and Science of the Learning Organisation*, published in 1990, had a profound influence on the recognition of the value of knowledge in organisations. In 1997, the *Harvard Business Review* identified this book as one of the seminal management books of the last 75 years.

In his book, Peter Senge defines Learning Organisations as:

…organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.

Senge also sees learning as getting to the heart of what it is to be human and how this applies to both individuals and organisations. For a "learning organization it is not enough to survive. For a learning organization, *adaptive learning* must be joined by *generative learning*, learning that enhances our capacity to create."

COMPETENCY LEVELS AND LEARNING CONTEXTS

Before considering online learning and what it can deliver, it may be useful to examine the five distinct competency levels acquired through learning. Effective online learning needs to go beyond the lowest two levels to deliver real value.

Level 1: Awareness

Awareness involves learning *about* something. Usually achieved through articles, magazines, books and websites, it provides the basic definitions of what a subject is and involves. At this level, an individual may be able to talk about the subject (sometimes indulging in the "False Authority Syndrome" by believing that elemental knowledge is enough), while in practice he or she is completely unable to perform any tasks related to the subject with any degree of competence. One advantage of level 1 competence is that it can be acquired in a matter of hours.

Level 2: Conceptual

Progress into level 2 involves exploration of the question "why", to provide a deeper understanding of the many aspects of a given subject, how they interrelate and the various areas of uncertainty that exist in each area.

Conceptual competence requires a more structured approach that includes textbooks, various forms of Computer Based Training, introductory courses and workbooks with exercises that can be self-assessed. Level 2 may involve learning by rota, and dealing with problems which have only one correct answer. Level 2 competence can usually be attained in days/months.

Level 3: Functional

Functional competence requires practice in the chosen subject. This is the level of applied learning where an individual works together (either in physical proximity or through online collaboration) with a mentor or other more experienced person or persons to develop a deeper insight into practical aspects of the chosen subject. This is today's equivalent of the apprenticeships offered by the workshops of guilds and still offered in many organisations. Acquiring functional competence seldom takes less than several months and, as a guideline, a typical management or engineering apprenticeship lasts one to two years.

At this point the learner knows that there are multiple possible answers for a given problem and works to develop the mechanisms through which to select the most appropriate one.

Level 4: Competent

At this point, the practitioner is able to work independently solving real-life business problems in real time, but his or her experience may not yet be sufficient to become a mentor or supervisor to another person still at the functional level.

Having reached Level 4, the practitioner also knows that complex problems are never solved, only transformed, and that expertise is needed to select the answer with the fewest undesirable side effects.

Level 5: Expert

The practitioner now has the right combination of knowledge and experience to help others move from the functional to the competent level. This would normally take several years of professional practice.

Returning to learning and organisations, two structural issues should be considered. While it is common for Human Resource departments
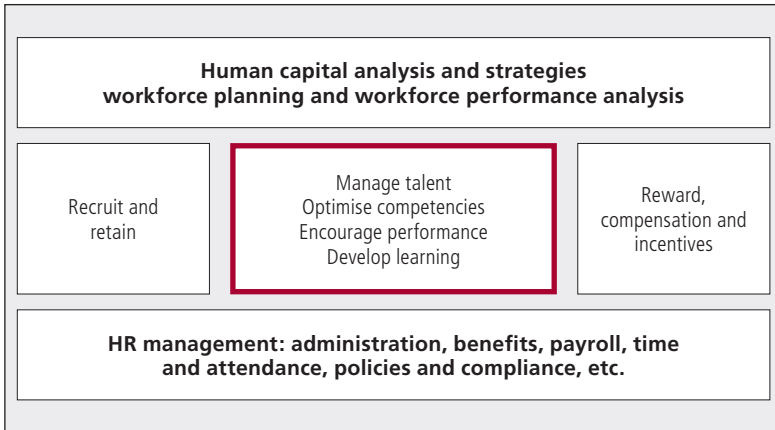

The medical profession jokes that the principle for training surgeons is:

"Watch one. Do one. Teach one."

It is not unusual for management consultancies to send people at Level 3 to their clients and use consultancy assignments paid by the client to facilitate progression to Level 4.
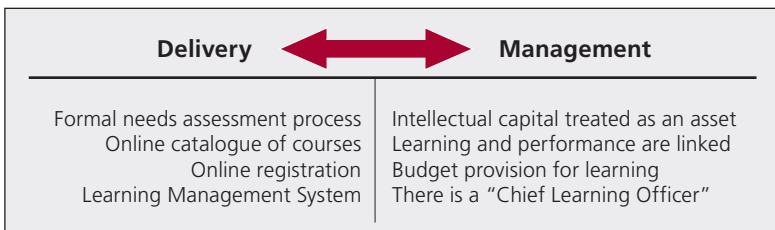
to claim that "people are our most valuable resource", from the perspective of the staff, this does not always seem to be the case.

Human capital analysis and strategies
workforce planning and workforce performance analysis

Recruit and retain	Manage talent Optimise competencies Encourage performance Develop learning	Reward, compensation and incentives

HR management: administration, benefits, payroll, time and attendance, policies and compliance, etc.

An organisation that is active in, or considering online learning to develop the competencies of their staff, will derive the most benefit from this investment if its human resources department has an explicit responsibility, as described in the central box in the figure above.

Managing talent represents a special skill for organisations and their managers. When this is not done properly, the usual result is that the people with the most potential to take the organisation forward are the first to leave. This becomes particularly acute in organisations that have rigid recognition, reward and incentives schemes, or those that do not operate as meritocracies.

The second issue arises from the need to develop learning as shown above. For this to be recognised by the staff as an integral part of corporate ethics and strategy, visibility is important. This visibility needs to address both managerial and delivery issues.

Delivery ⬅➡ **Management**	
Formal needs assessment process	Intellectual capital treated as an asset
Online catalogue of courses	Learning and performance are linked
Online registration	Budget provision for learning
Learning Management System	There is a "Chief Learning Officer"

ADULT LEARNING

It is clear that professionals in full time work are usually independent and self-directed individuals who bring *knowledge*, experience and the objective to *apply* what they learn.

Being problem- rather than subject-oriented, they have a good ability to comprehend the relevance of their learning in terms of their immediate problems. A consequence of these factors is that online learning opportunities will be more effective when they are offered as "just in time" rather than as "just in case".

1. Analytical skills: the process through which a situation or problem is dissected into smaller and smaller components through the use of logic. While essential in problem solving, analytical skills are, by themselves, not sufficient to deal with complex situations as they are constrained by the theoretical and logical frameworks of the familiar.

2. Systems thinking: the process through which it is possible to comprehend the whole and understand the inter-relationships that exist between the various parts, bringing together a body of theory, observation and practice (systems thinking is also the cornerstone of Peter Senge's book *Fifth Discipline*). This discipline is not in as widespread use as analytical thinking.

3. Creativity: the process through which insights and solutions are created outside of familiar and established theoretical and logical frameworks.

The acquisition of knowledge requires three attributes from the learner:

4. Curiosity: the willingness to recognise limited knowledge and then make an effort to search for more.

5. Openness: the reaction to the unknown that says "how interesting" instead of rejecting it. To quote Vanessa Mae, a young violinist with classical training who plays all types of music: "The people who say 'I know what I like', are actually saying that they like what they know".

6. Time and energy: needed for all learning and most other activities in life. Thomas Edison said that, "invention is one percent inspiration and ninety-nine percent perspiration".
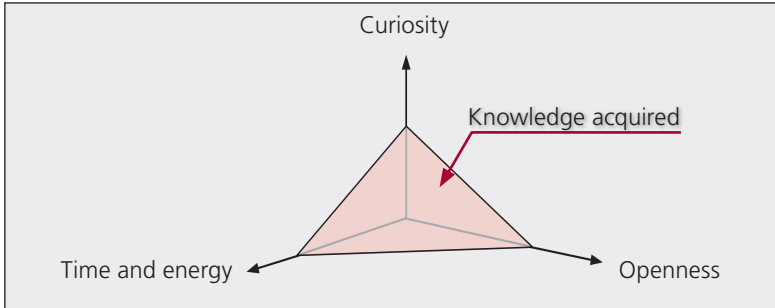
It is interesting to note that curiosity, openness and time and energy are also the cornerstone of creativity, a learnable skill requiring one more component: the willingness to take a risk.

Readers interested in well-established tools and techniques to support analytical, systems and creative thinking may find the following books particularly appropriate:

- Tony Buzan, The Mind Map book
- Edward De Bono – De Bono's thinking course
- Edward De Bono – Serious Creativity
- Jordan E. Ayan – Aha!: 10 Ways to Free Your Creative Spirit and Find Your Great Ideas

The first three books have been published in several countries.

Learning styles

Before even discussing online learning, a number of personal attributes appear to be pre-requisites for any adult professional learner.

Recent studies in applied psychology have confirmed the existence of a number of different learning styles. Understanding of these different learning styles is important in improving personal learning and managing learning groups, as the balance of different learning styles has an impact on learning efficiency.

Researchers describe four main learning styles:

- Activists – those who rush to grab immediate experiences;
- Reflectors – those who are thoughtful, methodical and good listeners;

- Theorists – those who probe, ask questions, and build models and frameworks;
- Pragmatists – those who are practical, realistic and keen to try things out in practice.

ONLINE LEARNING AND ITS MODALITIES

It has already been stated that online learning consists of "the delivery of a learning or training programme through electronic means". Two key features of online learning are:

- programmes can be designed to cater to a more diverse range of learners, learning styles, needs and interests, than can normally be accommodated by traditional study programmes;
- course participants can interact with their instructors and peers throughout the course in different ways, ranging from electronic mail to online Internet chat.
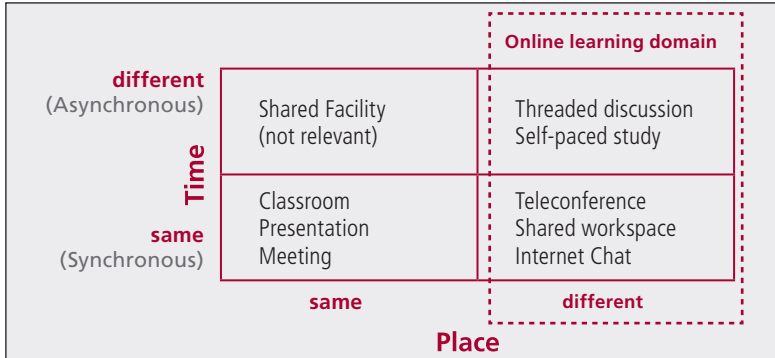
Online learning is suitable for accommodating different learning styles through a richer instructional environment, which also provides greater access to learning material and support.

An online learning environment can include any or all of a number of aspects ranging from learning experiences mediated through interactive multimedia to an entire course delivered via the Internet.

Its main difference from simpler forms of totally self-paced Computer Based Training, all of which can be carried out without a connection to the Internet, is that interactivity is provided between learners (peers) as well as course facilitators, instructors and other players.

Its main difference from simpler forms of totally self-paced Computer Based Training is that interactivity is provided between learners (peers) as well as course facilitators, instructors and other players.

Online learning can take various forms, depending on the relative time and location of the learners and the instructors. The matrix in the figure below illustrates the three relevant combinations for the provision of learning ("same place, different times" is excluded as it merely represents the use of a training room or classroom at different times).

		Online learning domain
different (Asynchronous)	Shared Facility (not relevant)	Threaded discussion Self-paced study
same (Synchronous)	Classroom Presentation Meeting	Teleconference Shared workspace Internet Chat
	same	**different**

Time

Place

The relative merits and disadvantages of each of these combinations are discussed later in this section.

Traditional face-to-face instruction requires the participants to be in the same place at the same time. However, the simultaneous involvement of people located in different places is also well known through practices such as video-conferencing, where participants at separate locations can play an active role (this was not the case with the use of broadcast television in distance learning, as this medium did not provide the possibility of interaction).

The most interesting online learning environment is that in which learners are located in different places and different time zones and where at least a substantial part of the learning is done at different times.

In terms of these different modes of learning, the main merits and disadvantages for professionals engaged in full time work are:

Mode	Merits	Disadvantages
- Same time - Same place - Face-to-face	- Builds community for future collaboration	- Difficult to organise - Significant travel expenses - Timid people participate less
- Same time - Different places	- Avoids travel expenditure - Relatively easy to organise	- Technologies not yet mature - Complex with many parties - Timid people participate less
- Different time - Different places	- Maximum flexibility - Gives everyone an equal chance to participate	- Requires technical skills - Impersonal

Before considering these different modes of learning in more detail, it is first necessary to take into account the different philosophies and ap-

proaches to online learning. These influence the choices of the mix between synchronous and asynchronous facilities and also have a determining role in deciding the scope and timing of a face-to-face event.

Regardless of the model adopted for the use of online learning, effective learning practices for professional adults have four main components:

Learning itself, which uses instructional material that includes examples, demonstrations, illustrations, instructional sequences and tests.

Doing, supported by exercises, case studies, annotation tools, negotiation tools, templates, wizards and other support features.

Referencing, where the learner uses initiative to research, validate, cross-reference and extend the scope of information provided in the course material. This referencing can be done through libraries, web resources and other similar sources.

Collaborating, greatly enabled by the Internet, allows the learner to interact with peers, experts and communities of practice in order to validate and expand the learning process and thus progress from the lower levels of competence to the higher ones, as discussed in Section 1.
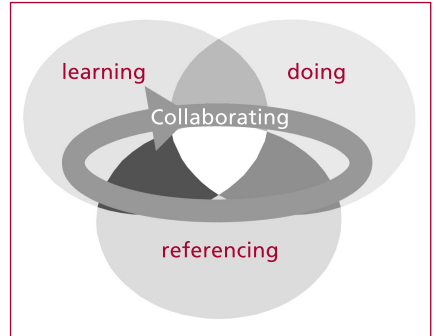
BLENDED LEARNING

As its name suggests, blended learning consists of a mix of methods designed to provide learning opportunities and environments meaningful to professionals in full time work.

This mix consists of three distinct components:

Asynchronous and self-paced

This component basically provides the learner with the necessary background material in the form of documents, CD-ROMs and links to relevant websites (either documents, virtual libraries or access to selected information providers).

This component has no instructor. The individual is responsible for deciding how to plan the time needed to go through the material and carry out the assessments and tests included. These tests are intended to inform the learner of the degree to which the material has been understood and should be conducted before the synchronous part of the course.

The tools that support the asynchronous component include e-mail and threaded discussions, and require appropriate directories and list servers to be set up for this purpose.

Synchronous – driven by the course programme

This component is based on material presented by an instructor – thus requiring all the course participants to be available at the same time. Its most significant feature is that of real time interaction between the individuals taking part in the course, which results in the creation of a true community of learners (when the course is successfully run).

The instructor may be "present" through a video-conference, an audio-conference, a webcam, voice-over-IP or, in its simplest form, Internet Relay Chat (IRC).

The choice of modality is defined by availability and affordability – Internet Relay Chat is the cheapest method in the above list and a video-conference where participants at various locations can interact with one another is the most expensive and complex.

Similarly, collaboration between the participants may take the same forms and may include a "collaboration tool" that provides a shared space where users can view and annotate shared documents.

Meeting room or face-to-face

A proven arrangement, when practical, is to launch the blended learning with a face-to-face conference where all learners meet for a period of typically one to two weeks, during which they:
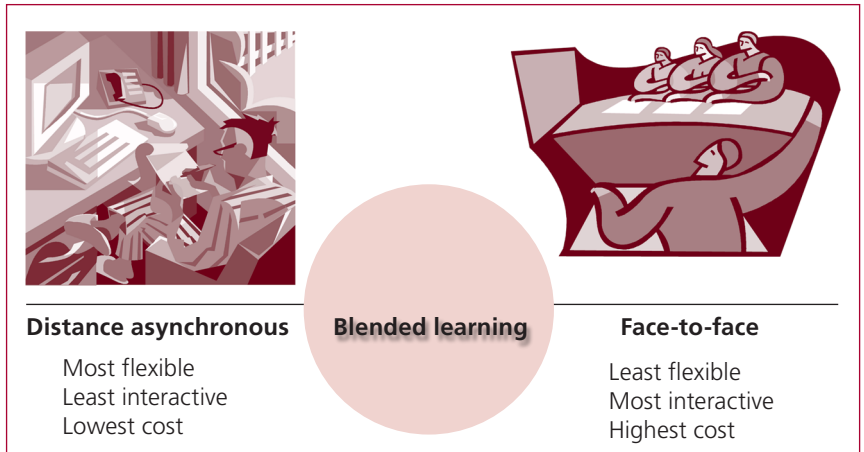
- become familiar with each other as "people" and build informal relationships rather than knowing each other only through a picture, biography or e-mail;
- become familiar with the lecturers and instructors;

- receive demonstrations and hands-on training with the various components of the learning technologies (logging on, accessing course material, participating in threaded (asynchronous) discussions between sessions, IRC sessions and so on;
- learn how to obtain support on course content and technical matters once they return to their home locations (Help Desk, FAQ pages, e-mail and phone contacts).

While such a conference adds to the cost of an online learning programme, experience shows that the value gained is very high. This initial contact removes barriers to communications and creates a community atmosphere that while difficult to quantify in accounting terms, is essential to learning organisations.

The blended learning model: advantages and disadvantages

Online learning involves almost universal use of the blended model for many reasons:

Distance asynchronous	**Blended learning**	**Face-to-face**
Most flexible Least interactive Lowest cost		Least flexible Most interactive Highest cost

- Blended learning works effectively in the academic and corporate environments.
- The total amount of face-to-face or "classroom" instruction is a small percentage of the total course time.
- Blended learning minimises the amount of travel and other unproductive time.

- It gives individuals flexibility in how and when to study.
- Individuals are encouraged to learn independently and to strengthen their time-management skills.
- A blended approach develops a high level of interaction leading to collaboration, communication and contact between course participants, frequently retained after the completion of the course.
- The asynchronous component in particular allows less extroverted participants a greater chance to participate and collaborate.

However, these advantages cannot be exploited by everyone. Blended learning can only succeed if several barriers are appropriately dealt with. The main barriers to consider are:
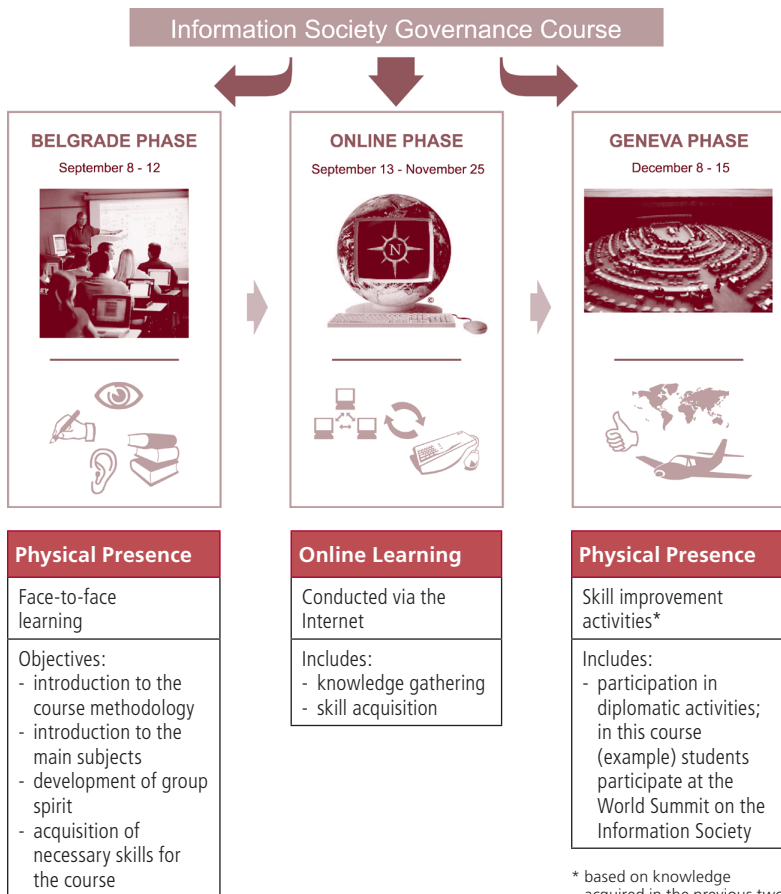
- Courses must be designed with the involvement of experts from the beginning of the design process.
- This approach does not work for people who are poor time managers: good personal discipline is essential to avoid procrastination leading to overload and abandonment of the course.
- Blended learning can overwhelm the unprepared: the face-to-face component must give due attention to briefings on what can be expected, including workload.
- The technology learning curve: blended learning requires several "new" tools to be learned, such as threaded discussions, collaborative tools, learning management systems, Internet Relay Chat and many others, some of which are discussed in the next section.
- Course design: as online learning remains a new discipline, examples of poor didactic and technical design abound. Bad design can invalidate all the benefits of this approach.

AN EXAMPLE OF BLENDED LEARNING: DIPLO

Diplo, which publishes these booklets, has ten years experience in providing online learning to diplomats. Its approach to blended learning combines face-to-face and online learning. This approach reflects the way in which professionals communicate. After meeting in person, they

begin to exchange e-mail and adopt online communication. After some time they meet again.

This pattern has developed into a powerful model for creating online communities. The chart below shows the stages of a recent course on Internet Governance organised in 2003 through cooperation between the Diplomatic Academy in Belgrade, Diplo and the support of the Swiss Agency for Development and Cooperation.

Information Society Governance Course

BELGRADE PHASE
September 8 - 12

ONLINE PHASE
September 13 - November 25

GENEVA PHASE
December 8 - 15

Physical Presence

Face-to-face learning

Objectives:
- introduction to the course methodology
- introduction to the main subjects
- development of group spirit
- acquisition of necessary skills for the course

Online Learning

Conducted via the Internet

Includes:
- knowledge gathering
- skill acquisition

Physical Presence

Skill improvement activities*

Includes:
- participation in diplomatic activities; in this course (example) students participate at the World Summit on the Information Society

* based on knowledge acquired in the previous two phases

Critical success factors for online learning

The only place where success comes
before work is the dictionary.

Anonymous

CRITICAL SUCCESS FACTORS

Online learning is not a panacea. It does not always deliver the desired results and it does not suit everyone. This section explores the factors that have been demonstrated to have a major impact on the success of online learning programmes. These factors form the basis for evaluating online learning before, during and after its implementation.

These critical success factors are grouped in the following categories, each discussed below:

- factors related to learners;
- factors related to course design and content;
- factors related to the faculty;
- factors related to technology;
- recognition and reward.

FACTORS RELATED TO LEARNERS

TIME MANAGEMENT

The picture to the right illustrates a number of important factors in learning. One particularly critical in online learning is *time management*, as the needs of full time employment frequently create a conflict of priorities for the learner.

Faced with critical work-related deadlines, equally critical deadlines for assignments, online sessions scheduled for particular dates and times, not to mention domestic and personal commitments, deciding on the right priorities requires careful time management and good negotiating skills with managers and family members to meet all these responsibilities.

In addition, the learner must have access to assistance for dealing with phone calls, requests for "urgent meetings" and other such interruptions during the time he or she is participating in an online session.

MANAGEMENT SUPPORT

While management usually encourages individuals to engage in online learning, the support provided varies and is driven by work priorities, the manager's personality and other factors that are outside the learner's control. True support for learning activities means allowing learners enough time during office hours to participate in synchronous online events and complete at least some assigned work, even if it means realigning work priorities.

WORK ENVIRONMENT

Not all work environments are suitable for online learning. A poorly designed open plan arrangement offers no privacy and may be noisy, making it difficult for the learner to concentrate. The provision of a secluded environment for online activities of this kind is a major positive support point.
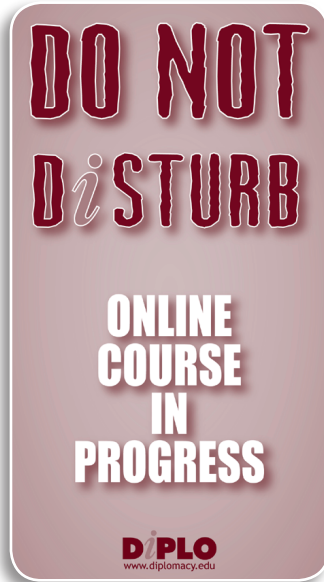
FACTORS RELATED TO COURSE DESIGN AND CONTENT

Although computer based training has been around for over twenty years and online training for the last ten, not all of the material offered online today is appropriate for the target learners discussed in this booklet. This section discusses in more detail the practices generally judged by practitioners and researchers to be the most effective in designing a course and its contents.

The figure on the right illustrates the four most important features of course design and content.

Compelling content ensures that a lesson or course is never boring and meets the learner's needs using appropriate design and presentation formats. Poorly designed content is described in the teaching profession as "shovelware".

Compelling content

Instructional design

Size of modules

Mixed media for impact

Focus on the learner
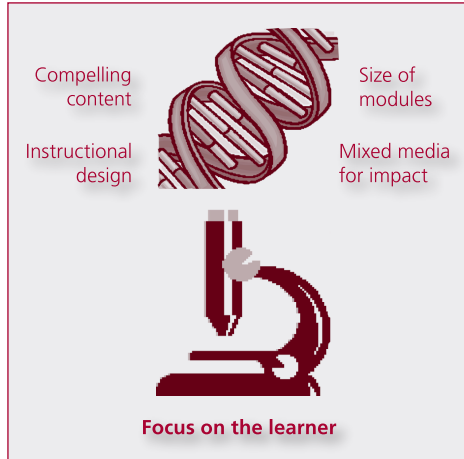
Instructional design is separate and distinct from content. It relates to how a lesson is structured for comprehension, self-evaluation and practice of the given topic. Despite the extensive research in instructional design over the last 40 years, a substantial number of courses in all kinds of educational and training establishments fail to follow well-proven guidelines (for example, those of Robert Gagne discussed briefly in this section).

The *size of the modules* in an online course is extremely important. Good design requires that each module should address a single learning objective, that is, deal with a well delimited topic, including a definition of the concept or process it covers, examples and tests.

Modules that are too large are likely to be inconsistent with the time and conditions available to the learner. While course designers often think of providing information on a "*just in case*"basis, effective design requires that attention be given to a "*just enough*" approach.

The use of *mixed media* (text and hypertext, images, animation, audio and video) supports the multiple ways in which the brain absorbs information and builds associations which become part of the cognitive and memory processes.

Designers sometimes choose to ration the use of bandwidth-intensive media, such as video-streaming, on the grounds that some learners may not have access to an Internet connection with adequate speed.

However, another option is to produce a CD-ROM version of this particular material to be used as a complement to the online material.

FACTORS RELATED TO THE FACULTY

Just as much as learners need to be instructed on how to learn in an online environment, the faculty providing the courses also needs to learn how to work with professionals in an environment where traditional teaching techniques cannot be applied. In an online learning environment, the learner has more control over the process than in a classroom environment and the role of the faculty changes from lecturing to facilitating, advising, counselling and assessing.

All of these functions need to be conducted online and under circumstances where the faculty may not have personally met all of the course participants. What they have to work with is a biography, a summary of professional experience, contact through electronic mail and telephone and perhaps a photograph.

The attributes of a good faculty member, regardless of title, include flexibility, empathy and good online communication skills. In an international environment, such as with international organisations or multinational companies, faculty members must also possess an adequate level of cross-cultural awareness and sensitivity.

GUIDELINES FOR THE FACULTY

For those most frequently in contact with the learners, it is a good idea to consider certain key questions to ensure that the course will be successfully completed. These include:

Technical support: whenever technology is imperfect (see also the paragraphs below), does technical support address the problems quickly and sufficiently?

Pedagogical support: do the learners truly understand the structure of the course, its lessons and modules as well as their assignments? What should be done when they don't?

Academic and managerial oversight: how good is the quality of thinking of the individual learners? How do they interact with their peers? What should be done when the expectations of the faculty are not met?

Social rules and oversight: what is the general atmosphere of the online course proceedings in terms of human relations? Is it formal or informal? What is allowed (e.g. jokes) and what is discouraged?

Following is a list of ten points to be remembered by every faculty member, particularly those working in an online environment:

1. Mentoring the learners is a fundamental responsibility of every faculty member.
2. Faculty members must be fully committed to the course and the learners.
3. Learners need assistance to be well prepared for the course.
4. Learners and faculty members must have strong and effective contact.
5. Learners must be encouraged to collaborate with each other.
6. Active learning (involving interaction, simulation and case studies) is essential.
7. Learners, tutors and facilitators need prompt feedback on their performance.
8. Every task must be given adequate time for completion.
9. Encourage everyone to have high expectations.
10. Accept that everyone has a different way of learning and different talents.

FACTORS RELATED TO TECHNOLOGY

The technical implementation of online learning should be totally transparent to the learners, in other words:

- All the tools and software packages required for the course should be intuitive and require no extensive training.
- Any tools or facilities that are not intuitive should have an appropriate training module and supporting documentation in the same style as the rest of the course.

- Access controls (such as passwords) should be effective enough to maintain confidentiality and prevent learners from accessing each other's material without consent.

RECOGNITION AND REWARD

Online learning puts significant demands on all learners, particularly professionals engaged in full time work. A typical online course requiring one to two hours of online participation per week would normally require ten to fifteen hours of additional study, preparation and assignment work per week.

Invariably, many of these hours are taken from an individual's time outside of work, however well intentioned and cooperative an employer may be in granting facilities to the learners. At the end of the course both the learner and the employer should benefit from increased knowledge and improved forms of work and collaboration.

In most circumstances, online learning will be seen by course participants as the traditional mix of "carrot and stick".

The stick is easy to understand: failure to keep up and actively participate when working in an organisation that values knowledge, virtual teams, online collaboration and personal initiative will not be compatible with successful career development and, in extreme cases, may prove sufficient for displacement or removal.

The carrot is not as easy to define but should have at least one of two components: recognition and reward.

While many organisations refer to employees as "our most valuable resource", this is not always reflected in practice. Recognition is simple, cheap and popular and does not require any particular management effort.

The Chief Executive or another senior executive could, for example, formally congratulate individuals completing an online course and advise them that their personnel records will reflect their achievements and that these will be a factor in their career evolution. Similarly, completion certificates, commemorative pins or other tangible evidence could be given in recognition of the personal commitment and effort invested in completing the course.

"Reward" is often understood to mean financial gain. While this kind of reward is always appreciated by the recipients, it is often impractical in organisations that have fairly rigid job classifications and salary scales. It is, however, a measure that should be considered for the absolute best learners.

However, another reward mechanism can be used to good advantage: that of credits towards a higher academic degree such as a Master's. To achieve this, the course provider needs to negotiate the appropriate accreditation mechanisms with one or more recognised academic organisations, which would almost certainly need to audit the course content, delivery and assessment.

Effective course design

Education's purpose is to replace an empty mind with an open one.

Michael S. Forbes

Course design has been shown to be critical in online learning. This section explores three aspects of effective course design:

- content: includes all the items and skills that the course will teach;
- instructional design (or didactics): creating material in such a way that it can be learned and retained;
- technology: the infrastructure and tools used to deliver an online course.

CONTENT

Knowledge about particular subject area

How to convert content into online course?

Sucess

Learning Management System Authoring Tools

Course Structure Evaluation

what is technologically possible?

TECHNOLOGY   **DIDACTICS**
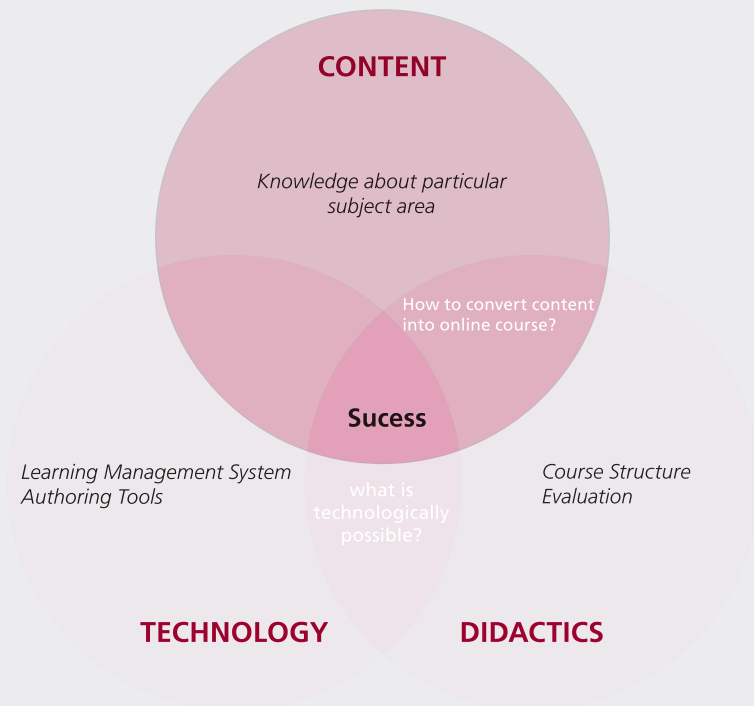
While it is possible to obtain these main components of course design from many sources, the success of online learning is determined by the overlap between subject and didactics.

BACKGROUND TO EFFECTIVE COURSE DESIGN

The previous section highlighted the fact that course design is a critical success factor for online learning. This section will explore the multiple aspects of effective course design. The two key components are: instructional design - creating material in such a way that it can be learned and retained; and compelling design - keeping the learner interested, stimulated and motivated.

First and foremost, it is important to acknowledge the work of two highly influential figures in the field of adult education: Malcolm Knowles (1913–1997), a champion of informal adult education and Robert Gagne (1916–), an experimental psychologist concerned with learning and instruction.

ROBERT GAGNE'S NINE EVENTS OF INSTRUCTION

Robert Gagne published a book in 1965 entitled *The Conditions of Learning*. In it, he presented a nine-step process he called "the events of instruction":

1. Gain the attention of the learner.
2. Inform the learner of the objectives.
3. Stimulate the learner's recall of prior learning.
4. Present stimulating material.
5. Provide the learner with guidance.
6. Elicit performance from the learner with the material.
7. Provide feedback to the learner.
8. Assess the performance of the learner.
9. Enhance the learner's ability to retain their learning and transfer it to other situations.

1. Gain attention

Without the attention of the learner, nothing will be learned. The learner's attention could be gained, for example, through a multimedia program with an animated title screen and sound effects that stimulate the senses. An even better way to capture attention is to start a lesson with a thought-provoking question or an interesting fact. Curiosity is a great motivator for learning.

2. Inform learners of objectives

The learner should find a list of learning objectives near the start of every lesson. This initiates the internal process of expectancy and helps motivate the learner to complete the lesson. These objectives should form the basis for assessment. It is usual to present such learning objectives in the form of "Upon completing this lesson you will be able to…"

3. Stimulate recall of prior learning

Associating new information with prior knowledge has been shown to facilitate the learning process. It is easier for learners to encode and store information in long-term memory when there are links to personal experience and knowledge. Recall can be stimulated by asking questions about previous experiences or about the understanding of previous concepts.

4. Present stimulating material

When new content is presented to the learner, it should be grouped and organised meaningfully, explained and demonstrated. To appeal to different learning modalities, a variety of media should be used if possible, including text, graphics, animation, audio, and video.

5. Provide the learner with guidance

To help learners understand and remember new knowledge for the long term, guidance should be provided together with the presentation of new content. Guidance includes the use of examples, case studies and analogies.

6. Elicit performance

Here, the learner is required to practice the new skill or behaviour. This provides an opportunity for learners to confirm their correct understanding, and repetition increases the ability to remember the material. This is today's equivalent to a statement made by Confucius two and a half thousand years ago, "I hear and I forget, I see and I remember, I do and I understand".

7. Provide feedback

As learners practice new behaviour, it is important to provide specific and immediate feedback on their performance. This is referred to as formative feedback.

8. Assess performance

Upon completing instructional modules, learners should be given the opportunity to take a test or assessment. This assessment should be completed without additional coaching, feedback or hints. Mastery of the material is typically recognised after the learner achieves a certain minimum score or percentage. A commonly accepted level of mastery is in the range of 80% to 90% correct answers.

9. Enhance retention and transfer to other situations

If the skills gained from training are not applied in the work environment, the course can be considered a failure for the trainer and the learner. Furthermore, it will be seen as a source of frustration by senior executives.

Despite having been around for some 40 years, Gagne's nine-step model is not always applied to training programmes. The many multimedia programs filled with gimmicky features and thousands of links to Web-based documents are not examples of sound instructional design. They may be valuable as references but as learning tools, they are ineffective.

IMPLEMENTING ROBERT GAGNE'S LEARNING EVENTS FOR ONLINE INSTRUCTION

The first principle of online learning is that the focus of the preparation of course material is on learning, not on teaching. The challenge for course designers is to provide:

- the right content;
- at the right time;
- delivered in the right way;
- to the right people;
- using the right technology.

Before examining how to apply the Gagne guidelines for learning events to online instruction, it is necessary to examine the various components that make up an online course and discuss the concepts of learning objects and re-usability.

We are all familiar with the structure of a book, which includes a title, a foreword, a table of contents, several chapters, references, an index, etc.

What makes a book different from textual material presented online is that generally, none of the parts of a book are *reusable*. Instead, they are totally integrated into a single unit comprised of its parts (chapters). When the structure of a book is translated into an online course, several issues are raised:

- It is hard to isolate and reuse portions of the content independently.
- If different portions have different authors, there may be copyright issues to deal with.
- The navigation of the course is strongly tied to the structure of the book.

These are not fundamental barriers to the successful transformation of print materials into an online course if the didactic and instructional aspects of course design are carefully prepared.

In topic areas where information changes frequently, and in cases where course providers wish to modify course content to reflect the experience gained each time the course is offered, the concept of *Reusable Objects* allows greater flexibility.

Although this booklet is intended to be non-technical and free of jargon, the term "object" is widely used in the software industry as well as in the design of material for online courses. Objects are simply modules of educational material that can stand on their own and be mixed and matched to build lessons. Learning Objects are collected in electronic libraries or repositories and, for many topics, can be obtained commercially from vendors.

This section focuses on the object model because of the clarity it brings to the definition of the various elements that come together to build a course.

Objects emerged from the software development industry and are simply pieces of software addressing a single function (for example opening a file), designed specifically for reusability. A programmer uses a library of such Objects of frequently needed functions to assemble a more complex program.

The primary benefits of reusability are that development time is reduced and the quality of the resulting software is greatly enhanced as each of the Objects consists of well tried and tested software.

The concept of Reusable Objects has been adopted by online learning course designers for the very same reasons.

Structure and organisation of a course

The picture below summarises the components of an online course based on the use of (Reusable) Learning Objects.

The basic element of learning content is the *Information Object.* An Information Object may be a block of text, a graphic, a table, a media file or any other delimited piece of information.

Information Objects may represent various types of information: facts, overviews of subjects, principles, procedures or processes. These (usually) small pieces of content are combined and aggregated to form a Learning Objective.
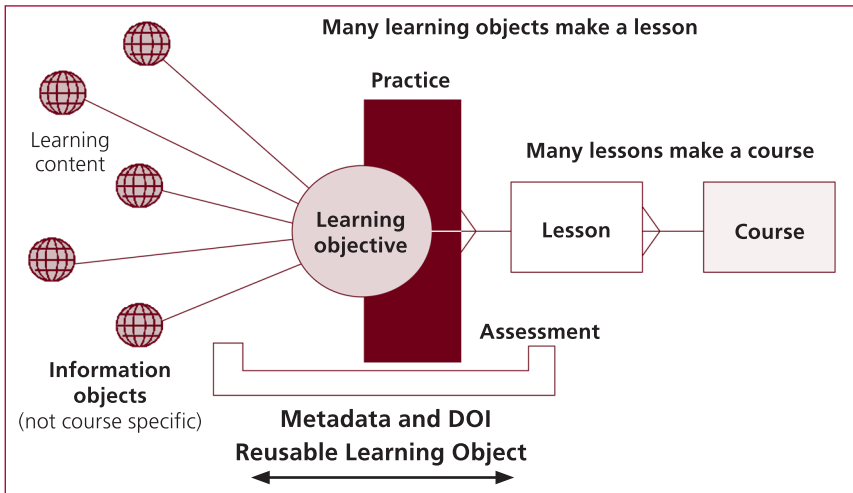
The most important feature in the design of an Information Object is that it should not be course specific: it should be reusable for several lessons and courses. For example, an Information Objective dealing with the use of hypertext annotations (see Section 8, Online learning architectures – sub-heading: Tools) could be incorporated into courses on diplomatic document dissection, online negotiations, collaborative document design, etc., without the need for modification.

Learning Objectives (LOs) are the core components of designing a lesson for a course. The rules for their design are few and simple:

- One Learning Objective deals with a single learning goal (for example protecting a computer against viruses). The design should be based on the "just enough" and "just in time" principles.
- One Learning Objective cannot link directly to another Learning Objective and cannot exchange data with another Learning Objective; they are totally self-contained.
- An external observer or user of a Learning Objective need not know what happens within the Learning Objective.
- All communication between Learning Objectives is handled by a Learning Management System. The functions of the Learning Management System are discussed in Section 6.

For every Learning Objective there must be a *practice* component, where the learner is able to apply the various learning events in a simulated environment. Each Learning Objective also contains an *assessment* component, which allows the learners to test their comprehension.

In the example given about hypertext annotations, the practice component could require the learner to create annotations on a text in electronic form and/or participate in an exchange of such annotations with other learners. The assessment component could involve having a course facilitator or online lecturer review and grade the learner's work.

When these two components have been successfully completed, the Learning Management System should allow the learner to progress to another Learning Objective. The Learning Management System keeps track of the learner's progress.

Associated with each Learning Objective is information about its nature, subject and content in the form of Metadata and, increasingly, additional information in the form of a Digital Object Identifier.

Design aspects

In an article published in 2002 (*Performance Improvement*, Vol. 41, No. 2), Cohen and Payiatakis wrote "…both instructional and graphic design must be compelling and engaging enough to keep the learner involved, interested and stimulated. The ideal future is a learning experience designed to be memorable, motivational and magical if it is to make a lasting impact on the capabilities of the learner.

The above statement is clearly unarguable. Research into distance and online learning shows that not all learners are successful and not all institutions and organisations providing the services are successful or even competent.

The same research identifies a number of design aspects critical to meeting the needs of learners and reducing non-completion rates. In the case of professionals in full time work, where the online learning is work-related, these are:

- conciseness (size and scope of module content);
- meaningfulness;
- design and usability;
- organisation of the material;
- variety in learner actions;
- interactivity.

Conciseness

The best training material, regardless of its method of delivery, is based on the concepts of "just enough" and "just in time".

Nonetheless, however concise, each part of the course should consist of several layers: the course material itself, as discussed above, including practice and evaluation sections, the possibility to search for information within the course material and reference material in the form of links to selected websites and finally, online manuals covering all aspects of the course. Their use should be driven by the needs of individual learners, their curiosity (and the time they have available).

Meaningfulness

For learners who are working professionals, the material presented must approximate and relate to the "real world" in which the learner lives and works. This context is substantially different from that of academic organisations providing instruction to undergraduates for whom a substantial part of the learning material is outside their life experience.

Design and usability

Despite many years of research into the design and usability of publications and information systems, many documents, websites, CD-ROMs and online learning courses continue to fail the most basic suitability tests.

Good design requires, as a first step, a clear definition of the target audience for the material, as this will define the redactional style and vocabulary used in all the text components. This definition of the target audience needs to include, at a minimum, their professional culture and vocabulary and what knowledge they are likely to have in tacit form.

Another aspect of good design is the appropriate use (from the perspective of the target audience) of text, hypertext, colour, graphics, images and animation, generally referred to as "multimedia".

The computer screen is, unlike a book, not an ideal vehicle for reading long segments of text. On the other hand, it lends itself well to graphics and animation. Good design implies minimising the amount of text and the use of maps and charts (clickable or not) to visualise information.

Online course designers can learn a great deal from the computer games industry which has mastered the use of multimedia to create entertaining and even addictive virtual worlds. Many examples can be found of the use of such an approach to create simulations (teaching pilots how to fly aircraft, war games used in military colleges, etc.).

Good design, however, is not enough to guarantee usability – the degree to which the learner needs to be taught how to use the course material. In design circles it is said that if your clients have to RTFM (read the f***ing manual), you have failed.

Unlike in some publications, where size is considered a good thing, (such as 50 or more pages of references at the end of a book) online

courses operate under the premise "less is more", excluding extraneous content, unrelated graphics and references that are available elsewhere.

While this booklet is not the place to discuss usability at any length, interested readers can refer to the book *Usability Evaluation of Online Learning Programs*, edited by Claude Ghaoui and published in the USA in June 2003. This book contains contributions from practitioners in computer science/IT, engineering, psychology, sociology, cognitive science, art and design.

Organisation of the material

Well designed course material should include the following parts:

A pre-orientation section: This often uses phrases such as: "…upon completion of this module (lesson/course) you will be able to …"

Asynchronous learning: During this phase learners prepare for online sessions at their own pace by exploring and studying the material. This is the equivalent of crawling before learning to walk.

Asynchronous practice and self-assessment: During this phase learners apply the material in the course module to a predefined set of problems, exercises and tests. This is the equivalent of having acquired the skill to walk without assistance.

Online sessions – asynchronous and synchronous: During this phase learners interact with their lecturer/facilitator/ peers and other experts supporting the course. These sessions usually involve real-life scenarios in a simulation mode during the learning phase and become totally real in online collaboration in the work environment.

At this point, the learner has reached the level of being able to run an obstacle course.

Another aspect of the organisation of the learning material relates to the assessment tests and how results of these tests are used to sequence the various components of the course (modules and lessons).

Typically, the outcome of the test is defined by an answer to an IF statement and a related THEN statement. Examples of such IF statements include:

If the test was completed with a score greater than X
If the test was completed with a score less than Y
If the number of attempts to complete the test exceeded M
If the time limit for the test was exceeded

Examples of THEN statements are:

Retry
Exit the module
Continue to the next module
Return to the previous module
Jump to module NN
Exit from the module/lesson

Assessments

Online learning depends heavily on the continuous assessment of each learning objective and much of this assessment is done without the participation of the instructor or facilitator. Self-assessment can, like the design of the course material, take many forms or combinations of these forms, as illustrated below:
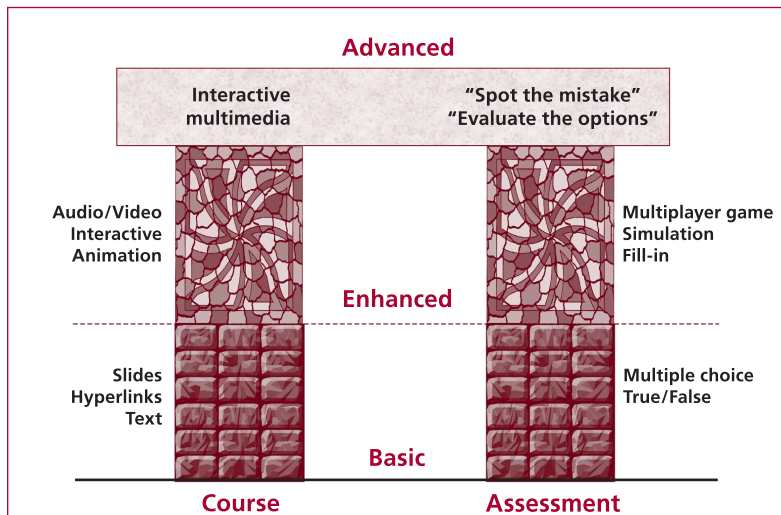
At the basic level of course design, modules consist primarily of text, hyperlinks within the text pointing to other material, and some basic graphics.

Basic levels of assessment consist of true/false or multiple choice type questions. These are poor indicators of comprehension and even when the assessment is designed to provide the reasons why an answer is incorrect, they are uninspiring to the learner.

Enhanced course material makes more extensive use of animation, richer multimedia and interactive features between the material and the learner as well as among learners themselves.

Enhanced assessment techniques include requiring the learner to fill in blanks in the form of a crossword, or a jigsaw puzzle, or provide answers specific to a particular simulated situation. Not all such assessments lend themselves to automated marking, and some require the intervention of an instructor or facilitator. They are, however, considerably more engaging than the basic levels and require a higher degree of cognitive skills and active involvement from the learner.

At the top of the range of assessments are those which are truly integrated into the course material. One example could be a video of an activity where the actors make deliberate mistakes. The assessment would require the learner to identify, list and explain what mistakes were made, why they were mistakes and what would have been the correct action. These assessments have been demonstrated to be the closest online learning can get to dealing with "real-world" situations and testing the comprehension and higher thinking skills of the learner.

Variety in learner actions

Why include variety in learning material?

Unlike advertisements that promise "one size fits all", instructional design must cater to a variety of learners, each with an individual set of personal preferences and learning styles.

Variety is a good way to create interest and attract the attention and concentration of the learner. In addition, the main purpose of providing online learning to professionals at work is to go beyond just the transfer

of knowledge to develop critical, analytical and systems thinking and encourage creativity.

Simulations and game-based content

As stated above, the success of the computer games industry has already been reflected in the design of many courses, and online learning enables multi-player simulations and "games" to be included within courses. These have generally been very successful.

Interaction

Online learning is of little value if the course participants have no opportunity to interact with their lecturers, facilitators, course authors and other experts associated with the course and, more particularly, among themselves.

The tools available for interaction among the various players are many, starting with e-mail and increasing in sophistication to include various forms of groupware and workflow, intranet based web services, whiteboards and other forms of shared online workspaces. These will be discussed in more detail in Section 8 – Online learning architectures.

Virtual debate

In this form of interaction, the course author/facilitator selects a controversial topic, ideally with input from the course participants. The participants are then divided into two groups: the Critics and the Defenders. Both groups are instructed to prepare personal positions and, for those areas where agreement is forthcoming, common positions, and post them in the electronic forum where the debate takes place. The course facilitator monitors the debate and replies to the positions taken by individuals and the two groups with comments and/or questions.

Role playing

In this form of interaction, each course participant is asked to play the role of a famous person and assume the voice and personality of that person. In addition, the facilitator may define the role this personality

will play in subsequent interactions, such as those advocated by Edward De Bono in his book Six Thinking Hats, published in many countries:

The facts and figures personality
The emotions and feelings personality
The critic or devil's advocate
The optimist
The creative thinker
The controller of the discussion

The course author, lecturer or facilitator then introduces a short (typically 500-word) topic for debate by the course participants who take up the various "personalities". The discussion is moderated by the facilitator who will subsequently comment on the outcome.

Small groups of course participants may be assigned to one of these personalities and encouraged to prepare and present their views in a co-ordinated manner. It is recommended that the roles assigned to participants be rotated on a regular basis during the course.

THE HUMAN TOUCH

Who are these people? This is the one question that course participants should never ask. The answers should be there for them when the course begins. To this effect, it is recommended that as part of the preparation for a blended course, appropriate online documentation be prepared. It should contain not just dry and formal biographical notes, but also personal insights and a recent photograph of all faculty members and, whenever possible, each course participant.

It is particularly helpful to have this information in place before any face-to-face events, such as lectures, workshops, and practice sessions, which ideally take place at the beginning of an online learning event.

Interaction and perspectives

*Behind every able man
there are many other able men.*

Chinese proverb

Interaction, in a variety of forms, has always played a key role in the learning process. While, as discussed earlier, learning about something can be done without human interaction, and many individuals in various disciplines are self-taught, acquiring the ability to use knowledge actively requires interaction.

This section will examine the main forms of interaction associated with online learning. It will also present a composite view of the perspectives gained by learners, instructors, course authors and learning centre managers through experience in online learning.

THE VARIOUS PLAYERS

A well developed and structured online learning centre involves the participation and collaboration of many parties. The following diagram presents a minimalist view of the major players.

Learner administration

Learner records
Learner registrations
Learner personal data
Skills history
Evaluation results
Finance and accounting

Learning organisation

Technology branch

Making it work

Infrastructure
Security
System operations
Integration

Maintenance

Modifications and upgrades
Software maintenance
Publish course material
Update course material

Course developers

Authoring tools
Instructional design
Change control process
Adult learning theories
Collaborative tools
Intellectual property

Learners and instructors

Course catalogue
Search features
Synchronous learning
Asynchronous learning
Test and course results
Collaborative tools
Skills history

Interactions

Chat sessions
Whiteboard
Presentations
Shared files

Support

Sign-on and logins
Help desk
User maintenance

Unless all parties have effective interaction and communication, the online learning process will fail to meet expectations.

Interaction and communication can take four different forms, each with its own characteristics and procedures:

One-to-one: This is the most familiar and simplest, and can take place face-to-face, by phone, by e-mail, over the Web using a webcam or through an online shared workspace.

One-to-many: This form has also become familiar and often makes use of mailing lists or list servers, video-conferencing (possibly using a webcam) or audio-conferencing to reach a defined community of individuals. Examples of this form include an online lecture or a purpose designed website.

Many-to-one: This is the form of interaction always experienced by the instructor. Here individual learners submit their assignments for review or request guidance, with e-mail being the most frequently used medium.

Many-to-many: The most advanced and hardest to manage, this form describes the way in which communities of practice operate. Threaded discussions are another form of many-to-many interactions.

Effective human interaction is not a universal skill. While interaction comes naturally to some people, others must learn it. When it comes to online learning, each participant needs to master interaction skills. Practice in the use of online environments helps enormously but there are human behavioural problems to overcome. The factors that define effective communication fall outside the scope of this booklet.

However, some of them are discussed in the booklet *Appropriate Use* in this series, particularly with regards to the use of electronic mail.

PERSPECTIVES

Each section that follows examines the benefits and problems experienced by various players in online learning. A three part structure is used, based on the title of the 1966 classic spaghetti western, *The Good, the Bad and the Ugly*. This seemed particularly appropriate given the wide range of experiences reported to the authors.

Online learning as seen by the learners

The Good

- ☺ Particularly flexible and convenient for individuals working full time.
- ☺ Perfect mechanism for strengthening personal skills and keeping up-to-date.
- ☺ Tailor made courses based on the "just in time" and "just for me" concepts are highly applicable to the work environment.
- ☺ Provides the opportunity for individuals to work at their own pace.
- ☺ Provides immediate feedback, particularly in self-assessment tests.
- ☺ Provides continuous access to online support and mentoring.
- ☺ Learners improve their online collaboration skills as they work through the course.
- ☺ Online sessions and chat sessions encourage thoughtful comments on one another's ideas and work.
- ☺ Unlike face-to-face learning, the online environment allows shy, timid people to participate in discussions on an equal footing with outspoken participants.
- ☺ Great opportunity for learners to improve their ability to manage time.
- ☺ Easy and continuous access to material after the completion of the course.

The Bad

- ☹ Large size of learning modules.
- ☹ Too much extraneous material not essential to learning.
- ☹ Meaningless self-assessment tests, with true/false questionnaires that fail to explain why the learners' choice was right or wrong.
- ☹ Conflict of priorities in the workplace prevent participation in online sessions.
- ☹ Poorly led chat sessions diverge in all directions.

The Ugly

- ☞ Unexplained grading of assignments by instructors.
- ☞ Unreliable technology that crashes or locks up the learner's environment.
- ☞ Complex technology with inadequate pre-course briefings is a nuisance not a help.
- ☞ The boss who believes that "anywhere, anytime" means that learning has to be done in the learner's own time and at home.
- ☞ The course design makes unreasonable demands on the learner's time.

Online learning as seen by the instructors

The Good

- ☺ No need to travel to teach the course or moderate a session.
- ☺ Total flexibility as to the number of concurrent learners.
- ☺ Greater outreach to learners at many different locations.
- ☺ Ample opportunity to provide feedback to individual learners.
- ☺ Cultural differences enrich the quality of lessons and foster the exchange of ideas.
- ☺ Instructor is challenged to structure lessons to stimulate reaction and critical thinking.
- ☺ Gives learners the opportunity access to the instructor at any time – this means personalised advice and guidance not available in other forms of instruction.
- ☺ Guidance can be given for problem solving, critical and creative thinking.

The Bad

- ☹ Absence of a face-to-face opportunity to meet the learners in person. Technology is a poor replacement for personal interaction, however brief.
- ☹ Online interaction, particularly without webcams, does not allow the instructor to observe learners' reactions and adjust the lesson plan accordingly.

☹ Chat sessions require the instructor to have good typing skills to avoid delaying the proceedings and making mistakes.

☹ The lack of opportunity to learn how to conduct and moderate online chat sessions. Experience may be the best teacher but it takes time and mistakes to acquire it.

☹ The time needed to interact with a substantial number of people throughout an online course is considerable and instructors with other commitments have to make time available outside their working hours and lecture time.

☹ Difficult to share experiences with other instructors as there are few opportunities to meet, especially if residency is in different parts of a country or abroad.

☹ The lack of time to revise individual assignments and provide constructive, well thought out comments.

The Ugly

☞ Potential high attrition rate if learners don't find enough time to do the course and carry out their full time work and other personal commitments.

☞ The amount of self-discipline needed to properly conduct the courses.

☞ Problems facing learners working and living in turbulent surroundings, not uncommon for practicing diplomats. Unpredictable situations often arise that have a major impact on the learner's capacity to focus and devote time to learning.

Online learning as seen by course designers [content provider(s) and electronic designer(s)]

The Good

☺ Use of multimedia, animation, cognitive mapping and other techniques to create memorable course material by matching didactics to content.

☺ The focus on well defined Learning Objectives allows the most important aspects to be expressed concisely and practice and assessment components to be built in support of the objective.

- ☺ Online material can be changed more easily than the printed equivalent, allowing improvements to the course to be incorporated as and when required.
- ☺ Online learning material can be used in different learning scenarios including, web-support for traditional learning, blended learning and online learning.
- ☺ Hypertext techniques allow lecturers to create updated versions of their material with minimal effort.

The Bad

- ☹ The number of specialised skills needed to create material for online learning demands effective communication and collaboration between a substantial team of people with different backgrounds. This creates the risk of miscommunication.

The Ugly

- ☞ Technical wizardry displaces content resulting in course material that looks terrific but has no or little learning characteristics.
- ☞ Course designers who place shovelware in the course – excessive, often irrelevant material.

Online learning as seen by the learning centre provider

The Good

- ☺ Possibility to offer learning opportunities to a wider audience, with a wider geographic spread and different backgrounds.
- ☺ Automation or learner control of some processes (logging attendance and participation, assignment completion, etc.).
- ☺ Possibility of integrating online learning, online collaboration and knowledge management within the organisation pursuing these objectives.

> *When ideas fail, words come in very handy.*
> Goethe

> *He can compress the most words into the smallest idea of any man I met.*
> Abraham Lincoln

The Bad

☹ Higher requirements on teaching staff due to: 1) more intensive interaction; and 2) the need for higher quality feedback to learners' questions/comments, which are usually more precise and better substantiated than in a traditional classroom setting (requirement of the written format).

☹ Learners feel free to demand attention or complain through electronic means to a greater degree than they would face-to-face.

The Ugly

☞ The administrative workload of online learning may take considerably more time because of the number of queries and requests carried out on a one-to-one basis. Each learner has their own special needs and situations, much more so than in classroom learning which tends to be one-to-many and therefore more homogenous.

Beyond online learning: collaboration and negotiation

*We could achieve so much more if we were to stand
on each other's shoulders and not on each other's toes.*

Anonymous

WHAT LIES BEYOND ONLINE LEARNING?

The answer is: much more than appears at first sight. One must remember that we are still in the early days of exploring cyberspace and the extent of its *terra incognita* is beyond our wildest imagination.

Nevertheless, we have acquired a general idea of this largely unexplored terrain through the work of visionaries, experimenters and other such risk takers. Through their views and the history of other innovations, it follows that the technology in use today will seem awkward and difficult to use in the very near future.

The total time between the discovery of writing to the global use of electronic mail is a mere five thousand years. In addition, the advent of electronic messaging started with the electric telegraph in 1844, and the Internet (including its e-mail services) captured the attention of the general public after 1993, when the first browsers made it reasonably easy to use.

This section will not speculate beyond the near future and will exclude the long awaited developments in speech recognition and real time translation, artificial intelligence and other esoteric developments taking place at research institutions around the world. It will concentrate solely on those technologies that have been successfully tested on a viable scale, but that have not yet reached the critical point at which they dramatically change our social systems.

The diagram on the next page shows the three things that "smart online individuals" do with various degrees of success: communicate, conference and collaborate.

COMMUNICATION

Electronic mail has become indispensable for many individuals. Although it has been around for many years, it is still seldom used to its full potential. However, as a mechanism of communicating within groups above a certain size, it has many limitations that cannot be overcome.
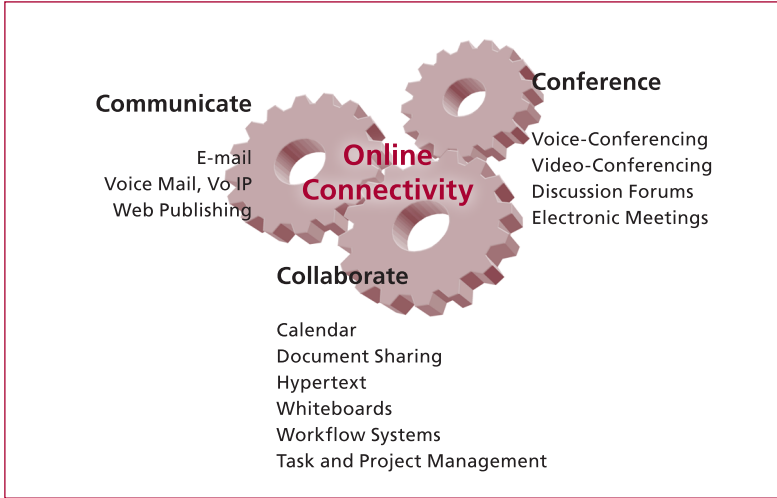
Voice mail is well established in many large organisations, but is considerably less effective than e-mail. The promise of Integrated Messaging, where all incoming messages (voice mail, e-mail, fax, etc.) are forwarded to a cell phone or personal digital assistant, has not yet materialised, although the necessary technology has been around for some time. Perhaps we should be grateful for this as it postpones the inevitable information overload that will result if these tools are misused (can you imagine receiving all your spam e-mail on your cell phone…?).

Voice of the Internet Protocol (VoIP) is a virtually mature technology. When more widely implemented, it will allow parties connected to the Internet with adequate bandwidth to communicate and collaborate verbally, as well as through the use of keyboard strokes and mouse clicks.

Web publishing is very popular and websites for common interest groups are successfully used to disseminate information and provide a forum for exchange.

Conferencing

Conferencing can take several forms, from the well established but relatively expensive video-conferencing, to the cheaper audio-conferencing. Both allow groups of people at different locations to hold meetings without having to physically travel.

Both of these technologies become cumbersome when the number of users and/or locations increases to three or four. Furthermore, an effective conference should last no more than 45 minutes at the risk of losing its impact and effectiveness.

Discussion forums and electronic meetings are the equivalent to video- or audio-conferencing, but without the use of video or voice. They can either be synchronous, for example, in a private chat room, or asynchronous, in which case the meeting may need several days to collect the views of all the conference participants.

The difference between conferencing and online collaboration is essentially the nature of the agenda for discussion and the length of time over which these discussions take place: short in the case of a conference and long in collaborative work.

COLLABORATION

There are many commercially available collaboration tools, some of which have been on the market for over ten years. These include:

- Calendars
- Document sharing
- Annotations and hypertext
- Whiteboards
- Workflow systems
- Project management

COMMUNITIES OF PRACTICE

While the term "community of practice" is increasingly used in many organisations and professions, it is hard to define exactly what it means.

A professional community of practice is no more than a group of people spontaneously created as a result of a need or crisis. They need not work for the same organisation or be at the same location, as contact is achieved through online means.

Communities of practice have three main characteristics: purpose, code of behaviour and technologies.

Purpose: every community of practice has a distinct:

- sense of identity, membership and expertise;
- shared mission or goal;
- sense of autonomy: work team meetings are driven by a shared interest and often a shared history in a given field.

Code of behaviour: these communities, like professional associations, create a sense of belonging and partnership.

Communities of practice are characterised by their informality while maintaining a strong level of trust and respect. Information is shared freely and willingly among the members and everyone is allowed and encouraged to actively participate through comments, surveys and polls. It is also common to publish the achievements of individual members as a measure of recognition and belonging.

Technologies: a wide range of tools are used to support the (online) work of communities of practice. Many of these tools are the same as those used in online learning:

- online case studies and simulations;
- shared workspaces and tools for the free exchange of ideas: annotations, brainstorming, webcam and video-conferencing, whiteboards and work galleries;
- member collaboration and team products: annotations, application sharing, collaborative writing, virtual workspaces;
- shared calendars, schedules, archives and announcements;
- chat rooms, discussion forums, Instant Messaging, newsgroups, portals, list servers and email;
- breakout rooms, intelligent agents, profiles, surveys, mentoring exchanges and sharing links.

KNOWLEDGE MANAGEMENT AND LEARNING

Although knowledge management (KM) has become a much misused and abused term, the discipline has a strong relationship to learning, particularly for professionals.

Diplomacy and other activities in international affairs constitute a good example of the use and production of knowledge on a constant basis as

a fundamental part of work and activities, and can be described as a "knowledge *perpetuum mobile*".

Online learning can be placed at the centre of this *perpetuum mobile* if the training approach is built around diplomatic activities in order to provide on-demand training that is fully integrated into the work environment.

Knowledge management and online learning are linked through "just in time" learning, in which courses are organised to cover specific issues as they materialise. In diplomacy, this may be preparation for an international conference or a briefing on a particularly topical issue in international relations.

Serving as an example, the picture below illustrates a course on terrorism developed after 09/11 to address additional training needs on issues related to terrorism. The methodology of cognitive mapping was chosen to address the most important objective of the course – a holistic view of the field incorporating diverse theories, sources and perspectives.
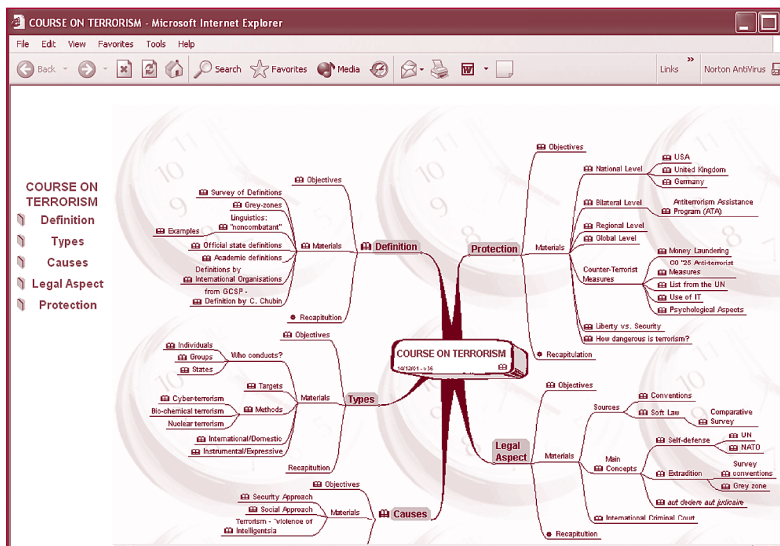
Some examples of the use of hypertext for linking online learning and knowledge management are provided in the case study of Diplo's Methodology in Section 10.

Online learning
architectures

The trouble with life is not that there is no answer.
It is that there are too many answers.

Ruth Benedict (anthropologist)

In the world of computer science and technology, the word *architecture* is used to describe how the various hardware and software components of a complex system are structured and linked together to perform the specific functions for which they were intended.

The purpose of this section is to offer a brief description of the many components that need to come together to enable online learning.

At a non-technical level, architecture such as that shown in the picture below represents the major components without which online learning cannot be provided:
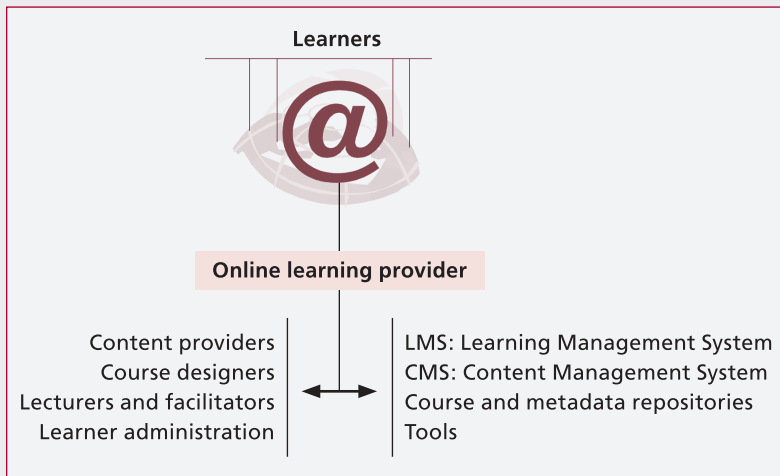
Earlier sections of this booklet have discussed learners and the critical success factors needed for online learning to be successful.

The online learning provider normally relies on the Internet, instead of a private network(s), as the mechanism for the flow of information between the provider and the learners, among the learners themselves as well as among the many other parties involved in creating and running the courses.

The online learning process has three major components:
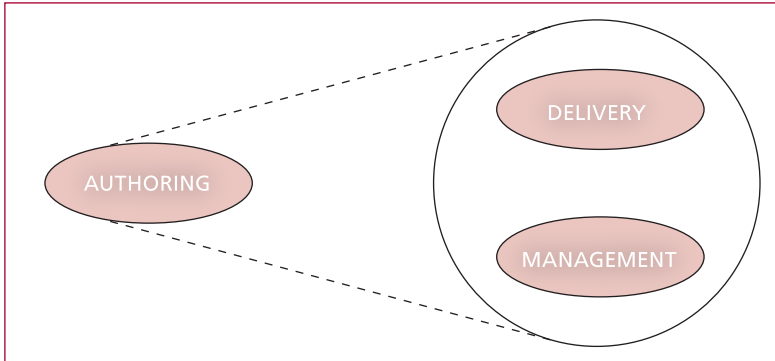
Authoring is the process of creating the content. Course material that may have been written for traditional media (for example textbooks), or created specifically for online learning, is converted into a format suitable for online delivery. Ideally, it will be enriched with functional (not excessive, as is sometimes the case) multimedia elements. The "courseware" should include texts, assessment material and additional resources (often in the form of references to other material that can be found on the Web). While today some course material is created in fully portable, standards-compatible format, most is still packaged in proprietary format, or optimised for a specific delivery platform or learning management system. One very important characteristic of courseware is its reusability.

Delivery is the process through which learners access the course material. For online learning this is mainly achieved through a Web-based environment, with learners using a browser to access a Web application that provides content in a controlled way. While parts of the material may be supplied on a CD-ROM or available for download for asynchronous access, most online learning depends on synchronous presentations, because that is the only way that the delivery systems can track users' activities. Delivery systems may vary in their focus on presentation, collaboration and interactivity. The majority of delivery systems today form an integral part of an LMS (see the picture above).

The management component deals with various segments of dynamic information: course metadata, learner and tutor profiles, progress tracking, assessment results and scheduling. The main functions are

administration and reporting. Management is a key component of an integrated LMS.

Usually the delivery and management components of online learning are integrated into a single product – a learning management system (LMS), while authoring is often performed using an independent toolset.

This section will concentrate on the major technology components of online learning: course and metadata repositories, learning management systems (LMSs), and finally the tools needed by course designers and by learners.

There are several emerging sets of standards in this area, one of which is known as the Sharable Courseware Object Reference Model (SCORM). This is a collection of technical standards that enable Web-based learning systems to find, import, share, reuse and export learning content. This standard is intended for vendors of learning management systems and learning content authoring tools.

SCORM assumes that a learning management system will be used. The set of standards consists of three parts: 1) an overview of the model; 2) a section on how to package learning content so that it can be moved and reused; and 3) a Runtime Environment, dealing with how content is used by learners and how the learners' progress is monitored and reported upon.

Work towards a complete set of SCORM standards is in progress. The current version (v 1.3) still does not address a number of issues, in particular:

- competency and skills management;
- instructor-led programmes;
- group activities;
- collaborative learning;
- discovery learning.

THE LEARNING MANAGEMENT SYSTEM (LMS)

Regardless of whether a Learning Management System is standards-based, the functions it performs are well mapped out and described in the SCORM model. The main functions of a Learning Management System are presented in the figure below:
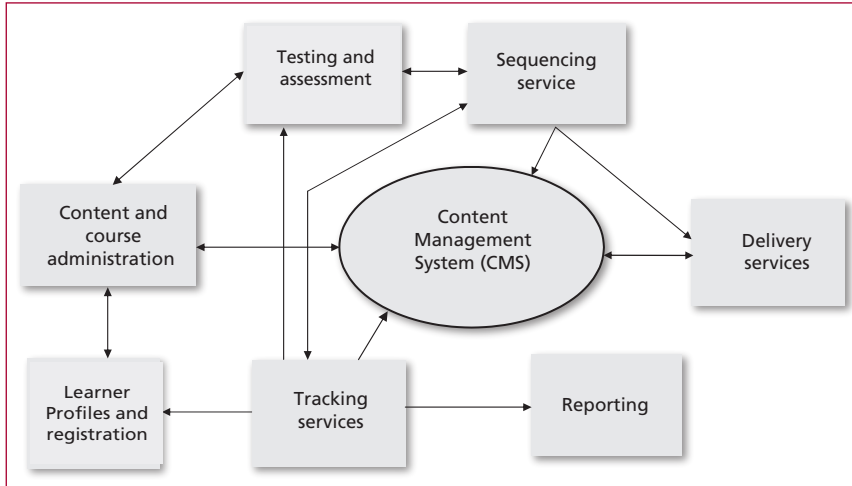
The purpose of a Learning Management System is much more than just providing course delivery. Organisations engaged in any kind of learning should not only be interested in a list of courses completed. They also need a skills management component that monitors, catalogues and improves the skills of their employees.

This puts considerable emphasis on testing and assessment, and how this is reflected in the design of course material. As stated above, standards are still developing, reflecting the relative infancy of the online learning industry. These architectures are expected to continue to evolve and provide additional functionality, in particular the ability to link to the systems used by the Human Resources departments of learning organisations.

At the application level, a Learning Management System normally supports five families of applications:

- learning management;
- course authoring;
- delivery of online activities and virtual classrooms;
- skills and competencies management;
- assessment.

Starting with the principle that a well designed Learning Management System should act like a portal, i.e. provide a single point of entry to all

functions that support online learning, the typical functions supported by a Learning Management System include:

- adding or removing lessons and courses;
- course catalogue browsing and searching;
- course registration;
- scheduling of facilities, instructors and facilitators as well as on-line sessions;
- launching and tracking Web-delivered content;
- e-commerce facilities for course payment;
- establishing training paths and completion deadlines;
- tracking learner progress for module completion and test results;
- tracking all activities and interactions between learners and content;
- personalising the experience of individual learners by recording preferences, learner profiles and creating individual course plans;
- generating reports for learners to track their progress;
- viewing test results;
- assigning grades to learners and their work;
- creating groups based on various criteria;
- assigning lessons/courses to learners or groups of learners;
- recording learner assessments of course material, instructors and facilitators;
- correspondance with learners;
- maintaining metadata about learning objectives, lessons and courses.

A *skills and competencies management* module of a Learning Management System (it could also be a separate system or, for smaller organisations, a manual process) is used to identify the learning needs in one or more organisations. The module performs this function by determining current skill levels and comparing them with those of the job requirements, revealing any 'skill gaps' within the organisation. Such a system can also provide information to employers on the best qualified employees for particular projects.

Content Management

Most LMSs today include an integrated content management module. A simplified model for a content management module is shown in the diagram below.
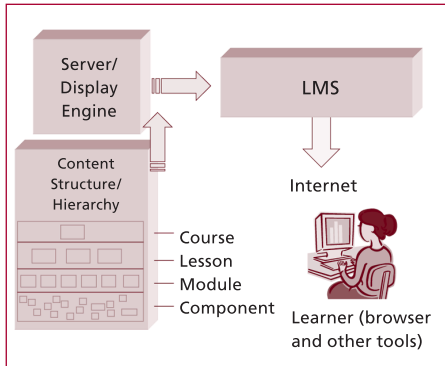
The content management module stores all the components used to create a course, as discussed in Section 4 on course design, regardless of whether these are compliant with the reusable object model, and of the source for the material, i.e. designed specifically for the training organisation, obtained from a commercial provider or from another training organisation.

The module focuses on content by:

- tracking the interaction between learner and content, which provides information about how learners are using the material and, in particular, if any content is not being used or is no longer appropriate;
- storing course content in a (virtual) library;
- delivering course content based on the personalised needs of individual learners or groups of learners.

Metadata standards should also be considered. These describe the "who, what, when, where and why" of any digital document or data set. This metadata is particularly important because it is used by search engines to locate the document or data of particular interest for an application.

Four sources of standards are recommended to those interested in more details:

- the IMS Global Learning Consortium (http://www.imsglobal.org) for the SCORM standard;
- the Advanced Distributed Learning initiative organisation (http://www.adlnet.org) for the SCORM standard;

- the IEEE Learning Technology Standards Committee (LTSC), and specifically the Learning Object Metadata standard IEEE 1484.12.1-2002 (http://www.ltsc.ieee.org);
- the Dublin Core Metadata Initiative (http://www.dublincore.org). This initiative is working towards "making it easier to find information", and their activities include defining metadata related to educational activities.

Today, many organisations are actively researching the issue of managing intellectual property in a networked environment, an issue associated with working with content in digital format. An open standard is emerging, known as the Digital Object Identifier or DOI, which identifies and permits the exchange of intellectual property on networks. More details can be found at http://www.doi.org, the website of the International DOI Foundation.

TOOLS

Authoring tools

Authoring tools are used to integrate multiple media formats and file types to create content suitable for supporting online learning. In most cases, these are commercial products ranging in sophistication from fairly basic packages such as Microsoft's Powerpoint™, to complex software collections such as Macromedia's eLearning Suite.

The selection and use of these tools will be driven by the time and expertise available to design course material.

Learner tools

A detailed description of the main learner tools including hypertext and annotations is available in Section 10 – Case study: The Diplo experience.

Operational aspects

The day-to-day delivery of online learning can be implemented through options ranging from a totally outsourced solution where the services are purchased from a university, academy or other organisation special-

ising in the field, to a fully owned, custom made family of systems for the exclusive use of one organisation.

The decision as to how much of the required architecture and capacity should be in-house and how much should be outsourced is based on similar criteria as for other technology- and skill-intensive projects. It depends on the strategic direction of an organisation, its size and available capacity.

For many organisations, a good option is gradual progression from a completely outsourced solution to the development of adequate in-house capacity. Once this latter stage is reached, more flexible, long-term learning solutions are available through greater content control, design and coordination.
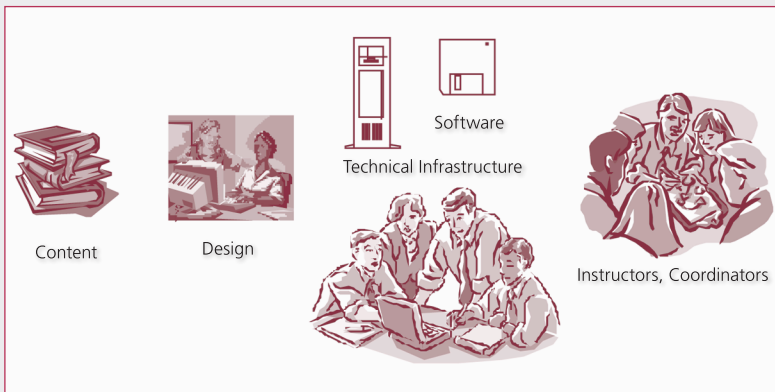
The elements that most strongly influence the choice between building a solution for in-house use and outsourcing are:

Component	Building best when	Outsourcing best when
Course Content and Course Design	- specialised field involved, lack of good readily available content elsewhere.	- large choice of professionally built courses is available on the market.
Technical Infrastructure	- complete control over resources is desired. (Requires technical support capacity.)	- wish to avoid initial investment and steep learning curve (reduce risk).
Software Platform	- organisation already has a large in-house software development capacity and belongs to a narrow vertical market that is not well served by existing products.	- large choice of different well-tested and supported software packages are available.
Course Coordination	- greater flexibility is required in delivering the learning material.	- dealing with commodity courses.

Evaluating online learning

If it makes a difference, it can be observed.
If it can be observed, it can be measured.

Giga Group (*http://www.gigaweb.com*)

Why evaluate? We already know that online learning is a major area of growth and widely popular around the world. Therefore, it must be a good thing, right?

Maybe. It is true that online learning is a popular activity and that many universities, academies and organisations are providing online courses.

However, it is also true, as discussed in earlier sections of this booklet, that online learning does not suit every topic and every learner. In addition, a number of critical factors must come together for online learning to be successful.

Aha! So if it is true that successful online learning requires several factors to come together, then the purpose of an evaluation is to determine to what degree a particular course offering or set of online learning arrangements meets the requirements of these factors.

DETERMINING TRAINING REQUIREMENTS

The table that follows, provided by Propulsion 21 (http://www.pro-pulsion21.com), is well suited to online learning and serves as a good practical example of the questions to ask before considering a new training programme.

TRAINING PLAN	GUIDING QUESTIONS
PROBLEM/NEED REQUIREMENT	Why do we need the training? Which performance gaps have we identified? What improvement or benefit would added training bring to the company?
OBJECTIVES	What are the objectives of the training? What is the participant expected to learn? What is the expected result in his/her performance?
TARGET AUDIENCE	Who is most affected by this training? Will it involve only a few or a number of individuals or departments? Are there any particular aspects to considerregarding the target audience?
DURATION AND PLACE	How long is the training? How is it planned, how many parts over how many days? What is the ideal location to hold the training?
DATES	What are the possible dates for the training? Is the training to be recurrent or one-off?
COST	What is the budget for the training? Which training-related costs will be incurred? What do the costs cover?
TRAINERS	Who are the possible trainers?
CONTENT	Which subjects are covered during the training? What will the participant be expected to master?
METHODOLOGIES	Which teaching methodology will be used? What is the expected level of interactivity? Is the methodology the most appropriate for the participant to acquire the necessary competence? Which reference material will be provided to the participant?
MATERIAL AND EQUIPMENT	Which equipment and accessories are necessary to administer the training?
TYPE OF EVALUATION AND CERTIFICATION	How will the training be evaluated? Is an evaluation of the participants' level of competence necessary before the training? Is any formal or informal certification included or necessary?

Table © Propulsion 21, courtesy of Brigitte Shidrawi

VOCABULARY AND MENTAL MODELS

The world of education, and in particular its online learning component, has developed a great deal of terminology and several perspectives on what online learning is and how it works.

The two most important terms for this section are *Assessment* and *Evaluation*. Although these words may be considered synonymous in everyday communication, this is not the case in the sphere of online learning.

Assessment refers to the processes used to measure learning. An Assessment comes in two distinct flavours: Formative and Summative.

Before applying any kind of assessment, it is critical to define what exactly is being assessed. Possibilities include knowledge, skills, thinking and problem solving abilities. Each one requires a different approach.

A *Formative Assessment* is based on measurements and its purpose is to help someone learn. It is used to decide when the learner is ready to progress to a more advanced level of instruction or when the learner should fail the module/lesson/course altogether.

Many of the tools used to conduct formative assessments are simple, even simplistic, such as true or false, or multiple choice questionnaires. These only address the lower cognitive levels. While they give indications of the degree to which the course material has been understood, they do not reflect the real world of complex problems and multiple solutions.

A *Summative Assessment* is normally conducted after the completion of a course with the purpose of determining changes in the competencies of the learner. These changes are not easy to measure, and the assessment is based on judgemental criteria. Nonetheless, a Summative Assessment does address higher cognitive levels of classification, interpretation, abstraction and judgement.

As this section deals with evaluation and not assessment, the discussion ends here. However, Summative Assessment will appear again in the Evaluation segment under the title "Results-based evaluation".

Evaluation refers to the processes used to determine the effectiveness and value of tools, methods and offerings.

Here again, it is important to define exactly what is being targeted for evaluation, as there are many possibilities. How evaluations are approached is also defined by the mental model or perspective of the evaluators and/or sponsors of the evaluation.

The following diagram illustrates the four most common mental models in online learning:
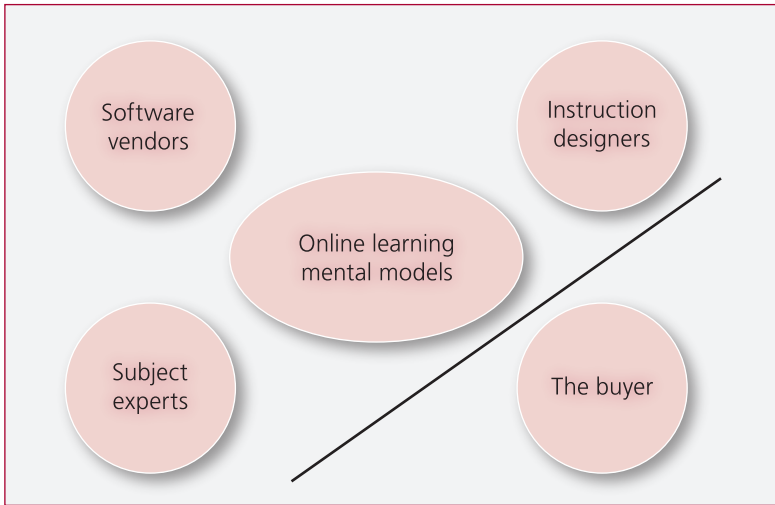
Software vendors offering Learning Management Systems, Content Management Systems, authoring and other tools approach the framework for evaluation from a totally technical perspective – covering standards, languages, databases, media events, market share, etc.

An evaluation concentring only on technical aspects, for example interoperability and standards, may not improve the quality of learning.

Instruction designers approach evaluation with different factors in mind: size, style and organisation of the content of Learning Objects, lessons and courses. The evaluation framework includes navigation, practice exercises and tests.

Subject experts, including the authors of the material, approach evaluation in terms of peer review, richness of content, references and links and database access.

The buyer, or the organisation adopting online learning as a means of strengthening the competencies of their personnel, often working in conjunction with the learners, has yet other objectives for evaluation: what has actually been learned and what differences were made to the organisation as a result.

Evaluation as a process

Several specific subjects can be evaluated, with a number of different approaches to the evaluation and numerous theoretical models supporting the various approaches. Depending on the perspective of the evaluator and the particular area of focus, any of the following could be the subject of formal evaluations:

Learner outcome: essentially the same as a Summative Assessment, the purpose of such an evaluation is to determine the degree to which a number of targets have been met. Such targets can be grouped into two categories:

- those that become *attributes of an individual learner*, such as collaboration skills, critical thinking skills, problem solving abilities and skills in debating complex topics and challenging the views of others; and
- those which are important from a *corporate or employer's perspective*, such as the degree to which the organisation's performance has improved as a result of providing online learning to the employees.

Learner outcome can, of course, only be ascertained after completion of a course. The first category, dealing with personal attributes, is largely subjective and its evaluation requires input from the individual, the individual's immediate supervisor and the individual's peers.

The corporate perspective of learner outcome can only be determined when sufficient time has elapsed after the completion of studies. Performance improvements at the individual level need time to affect corporate results. A corporate evaluation would have little worth if carried out within a year of completion of the course.

The tools used to conduct learner outcome evaluations are essentially questionnaires and interviews looking for personal attributes, together with analysis of the organisation's performance (financial, operational, etc.) for the corporate perspective.

The evaluation of learner outcome is essential to determine whether the cost of training represents money well spent.

Instructors and facilitators: This level of evaluation is carried out by the organisation that provides the online training courses and is aimed at identifying those individuals not performing well in their roles.

This type of evaluation involves metrics, such as positive reports from learners (obtained through formatted questionnaires, interviews and informal comments by e-mail), a zero or very low rate of course abandonment before completion and a determination of the quantity and quality of online feedback and interaction with the learners throughout the course (obtained from online forums, chat records and e-mail exchanges).

Tools and delivery systems: The evaluation of delivery systems can take several forms:

- an evaluation from the learners' point of view in terms of relevance, usefulness and usability;
- an evaluation of technical matters, such as compliance with standards and technical platforms (operating system, proprietary software, functionality) as well as technical robustness in terms of performance in the delivery of the course material;
- a comparative evaluation of different tools or systems available, in order to support a particular choice.

The first two categories require carefully constructed evaluation tables and questionnaires, and always benefit from the inclusion of parameters for which quantitative data can be obtained to support the evaluation. The numbers of calls to the help desk or requests for assistance in the use of a particular feature serve as good indicators in the case of usefulness and usability.

The technique of Weighted Ranking by Level (WRBL), described later in this section, is well suited to technical and comparative evaluations.

Course material: "Content is king." This statement was made by Bill Gates (of Microsoft) on January 3, 1996. Thus far, it has proven to be true for the World Wide Web, particularly in terms of online learning.

The parameters discussed in the section on course design are all relevant to the evaluation of material, and in particular the degree to which the material meets Robert Gagne's nine instructional events, repeated here for the reader's convenience:

1. Gain the attention of the learner.
2. Inform the learner of the objectives.
3. Stimulate the learner's recall of prior learning.
4. Present stimulating material.
5. Provide the learner with guidance.
6. Elicit performance from the learner with the material.
7. Provide feedback to the learner.
8. Assess the performance of the learner.
9. Enhance the learner's ability to retain their learning and transfer it to other situations.

Evaluation of course material could include asking learners to reply to a questionnaire. While providing some insight, relying on the learners' memory of past events will undoubtedly give many incorrect answers. However some questions, for example "what was the worst feature of the course material", are likely to provide useful answers.

Direct observation of indicators such as course abandonment and the number of attempts needed to complete a module's tests, will provide more solid information for the evaluation. The evaluator can also follow the course and examine it in the context of Gagne's events, grading the course material accordingly.

Another part of the evaluation should examine the suitability of the various assessment tests for the course learners. For example, an online course on negotiation will not be supported particularly well by tests based on true/false choices.

A further aspect of the evaluation of course material is its "usability". This is jargon used to denote the degree to which a computer system or facility (such as a website) is intuitive and can be used without guidance.

Hundreds of sources are available on what constitutes usability (formerly known as the "man-machine interface") and how to build it into computer systems. Some features known to make a difference in terms of usability are:

Writing for an online reader: This is very different from writing for a book or magazine. What is known to work well includes:

- highlighting key words, either by making them into hypertext links or simply through differences in typeface and colour;
- using bulleted lists and limiting paragraphs to one idea each;
- keeping the word count low and avoiding bureaucratic or pseudo-legal expressions. It is more effective to provide links to additional material for the learner to follow.

Material for courses with multilingual and multicultural learners: Attention must be paid to vocabulary, syntax and the learners' sensitivities. They should not have to decode "clever" text with linguistic puns or a foreign culture's humour.

Navigation of the course material: If the course is regarded as a landscape with many features, navigation should provide the means for the learner to reach the desired features in a trouble free and direct manner.

Designing appropriate navigation requires knowledge about the purpose of the website and how it is structured, as well as how these factors meet the visitors' expectations. For the purpose of making a site usable, navigation and content are inseparable.

Graphic and multimedia design: The brain is primarily a visual tool and the use of multimedia complements content and enriches the learners' experience.

Readability and layout: However good the content, its value will be reduced unless it can be seen clearly on the screen. Background design, colour, typeface style, size and density of writing must be consistent with good readability.

Training organisation: Online learning can be obtained from many organisations. Some are in-house training centres, some are commercial course and training companies and many are recognised institutions of higher learning such as academies and universities.

Making a choice and evaluating the training organisation's performance represents yet another facet of evaluation.

Factors to consider when evaluating a training organisation – before entering into a contract and also when reviewing performance on a regular, perhaps annual, basis – include:

- cost of the training provided (per module, per learner);

- accreditation and transferability of credits gained by learners (if any);
- comparative benchmarks between training organisations;
- vision and policies of the training organisation.

In defining the cost of the training, particularly for benchmarking purposes, it is important to have a clear definition of what these costs include. A minimum list would have two components:

- *Direct costs:* course material, instructors and facilitators, help desk, telecommunications, server and service hosting, software licences, technical costs of operations and the backup and administrative support dedicated to online learning;
- *Indirect costs:* technical training for support personnel, faculty training for the roles of online instructor or facilitator, office space, library and other subscription resources.

Return on investment: This is difficult to determine, other than through comparing online learning to other forms of training, because the costs of a training programme are easily identified, but the benefits are not immediate and are somewhat intangible.

PARAMETERS AFFECTING ANY EVALUATION OF ONLINE LEARNING

No evaluation will be trustworthy unless it takes into account the main parameters influencing its outcome. These include:

The learner as a person: age, gender, language skills, learning history, attitude and technical skills.

While this booklet addresses online learning for adult professionals, these parameters are still important, particularly attitude: a self-motivated and enthusiastic learner will get more out of a course than a person who has been instructed to follow it.

Many online learning courses are intended for a multinational and multicultural audience, but are only available in one language. When the learners are forced to work in a language other than their mother tongue, success will only be achieved if their knowledge of the language is at a level comparable to the style and vocabulary used in the course.

The need for technical skills must not be underestimated. Individuals who have had limited exposure to the more "advanced" features of working online, such as whiteboards, hypertext and navigation, may become frustrated with the entire experience and as a result derive limited value from the course.

The learner's environment: For online learning to work well in the workplace, it is vital that the learner have a suitable working environment. Noisy, open-plan offices are unsuitable because of the many distractions present, in particular if the course includes audio material. Headphones are a possibility, but also a nuisance.

Another important feature of the learner's environment is the degree to which management and colleagues support the initiative. Interruptions, conflicting priorities and "why can't you do this at home?" are definitely not conducive to learning.

Context of the learning: Organisations that do not place a high cultural value on learning, or use online learning because it is perceived to be cheaper than other forms of training or because "everyone else is doing it", are likely to be wasting their time and money.

When a learner has management's consent to engage in online learning partly during working hours, and partly during his or her own time at his or her own expense, the motivational aspects will be substantially different from those when the course is fully supported by the employer.

WEIGHTED RANKING BY LEVEL

A frequently used evaluation technique is Weighted Ranking by Level (WRBL). This is particularly suitable when:

- an option should be selected from among several alternatives;
- this decision should be made objectively;
- the decision should be agreed upon by a group.

In using WRBL, the first step consists of identifying what the evaluators consider to be the most important qualities (decision criteria). The second step is that of agreeing their relative importance (weight). Normal practice is to assign weights in such a way that they total 100.

A table listing the decision criteria and the weight assigned to each is then produced, and each feature is examined and rated on a scale of, e.g. 0 = low to 10 = high.

The table is completed by multiplying the weight of each decision criterion by the rating given. The sum of these results becomes the overall rating.

Sample Evaluation Table for a Learning Management System

Component	Weight	Rating	W*R
Compliance with known requirements			
Multilingual support	20	8	160
Low-bandwidth tolerance	10	5	50
Customisation flexibility			
Graphical customisation (look and feel)	5	10	50
Functional extensions (java applets or web services)	10	8	80
Standards compliance			
SCORM 1.1	2	10	20
SCORM 1.2	5	10	50
AICC	3	10	30
Other customer references/reference sites			
Concerning functionality	10	6	60
Concerning support and training	5	7	35
About the vendor			
Vendor's market share and experience	5	8	40
Vendor's financial stability	10	9	90
Training provided by vendor	5	6	30
Vendor technical support and warranties	5	8	40
Existence of user group	5	10	50
TOTALS	**100**		**(Max 1000)**

There is no unique formula or format that applies to all situations. All evaluations must take into account the reason for evaluation and the context in which they are being conducted.

Case study:
The Diplo experience

*The illiterate of the future will not be the person
who cannot read. It will be the person who does
not know how to learn, unlearn and relearn.*

Alvin Toffler

DIPLO'S ONLINE LEARNING METHODOLOGY

This case study presents the methodology used by Diplo in online courses for diplomats and others involved in international affairs. Several hundred professionals from more than 70 countries have participated in these online courses. In the process of developing and refining distance learning methodology, Diplo, like other course developers and providers, has faced several difficulties:

- the need to have courses ready for delivery faster than ever before;
- pressure to limit the time employees are absent from work for training;
- the need to combine knowledge transfer and skill acquisition (course participants want to learn ABOUT and HOW simultaneously);
- the need to address increasingly diverse communities of participants.

Diplo's approach to course design and delivery makes a distinction between explicit knowledge (found in textbooks) and tacit knowledge (gained through years of experience). The latter is particularly relevant for the training of diplomats and others working in international relations. These individuals operate in highly unpredictable environments and often deal with situations for which advance preparation is not possible, as there are no precedents or standard instructions. This makes tacit knowledge essential for successful diplomacy. Tacit knowledge can only be gained in stages and through exposure to various situations, experiences and interactions. The Diplo online learning methodology aims to provide this experience, in addition to the explicit knowledge usually conveyed through traditional teaching methods.

ONLINE COURSE ON INTERNET GOVERNANCE

Diplo's methodology for the design and running of online courses will be illustrated using the example of the online course on Internet Governance, designed to prepare decision makers to participate in international *fora* dealing with the subject. This course is based on a simulation exercise.

Course objectives:
- to enhance participants' understanding of Internet-related concepts and terminology;
- to introduce participants to the controversial issues of the international aspect of the Internet;
- to increase participants' understanding of the negotiation process;
- to introduce participants to computer-based negotiation techniques.

Course duration: 12 weeks
Week 1: Introduction and methodology
Weeks 2 to 11: Negotiations (two weeks for each basket)
Week 12: Final examination

Course organisation
The course is divided into five segments, called baskets. These are:

- infrastructure and standardisation basket;
- legal basket;
- commercial basket;
- development basket;
- socio-cultural basket.

During the two-week period assigned for each basket there are two online sessions and a further five to six hours of personal working time for each course participant.

The day-to-day process of learning is illustrated through the following detailed breakdown of activities over the two-week period dedicated to the legal basket.

WEEK 1 – GAINING KNOWLEDGE ABOUT INTERNET GOVERNANCE

Monday-Tuesday: Study and discussion

Course participants are provided with material created to achieve specific learning objectives, such as acquiring information and making connections between similar concepts. The material is presented in a variety of ways (hypertext, cognitive mapping and multimedia) to accommodate different learning styles.

During these first two days, course participants are involved in intensive interaction through making and responding to annotations on the text, both with other course participants (peer-to-peer) and with the lecturers. The intensity of interaction tends to be higher than in traditional lectures as timid participants who might abstain from contributing verbally usually feel comfortable to contribute online. Course participants are evaluated on the quantity and quality of the annotations they make.

The lecturer's role in this phase is to monitor the annotations made and to gather them into clusters representing different issues/problems. By Wednesday, the participants are ready for their first test.

Hypertext:

Annotations made by course participants allow them to engage in discussion with the author of the document by asking questions and providing comments, examples and counter-arguments.

Each generation of participants leaves a layer of annotations on the basic text. This text, annotated by multiple groups, remains accessible in the future, providing an element of continuous learning and knowledge-management.
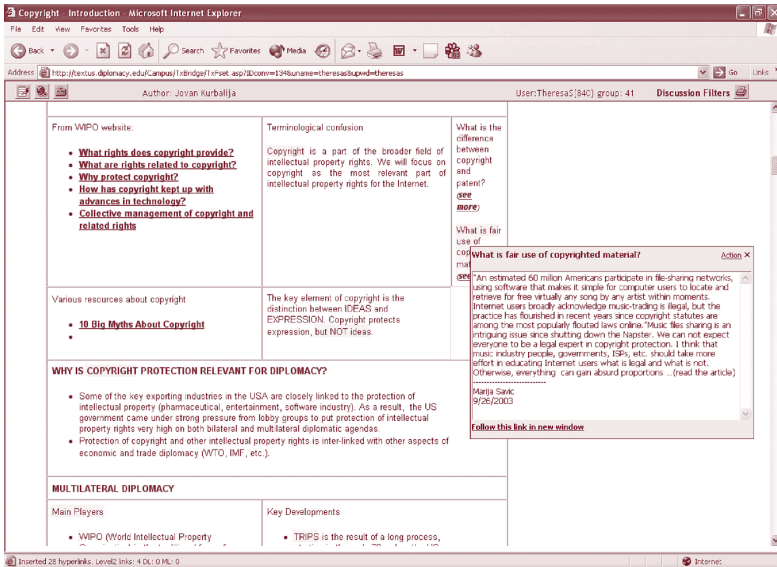
Cognitive Mapping:

Cognitive mapping provides a structural representation of a complete subject area. The maps allow participants to develop individual and/or group mental representations of the subject matter, a technique which has proven to be very effective in dealing with complex issues.
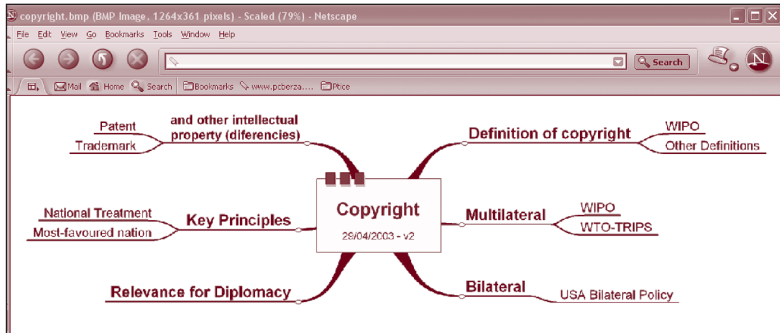
Wednesday: First test

The purpose of this first test is to ensure that course participants have understood the main elements of the subject matter. Testing is performed in a variety of ways, including multiple-choice questions, short text questions, and crossword puzzles. Participants receive individual feedback with marks and comments. A group evaluation is also provided, showing typical mistakes and trends.

Q&A:

This example shows a test combining multiple-choice and short text questions.
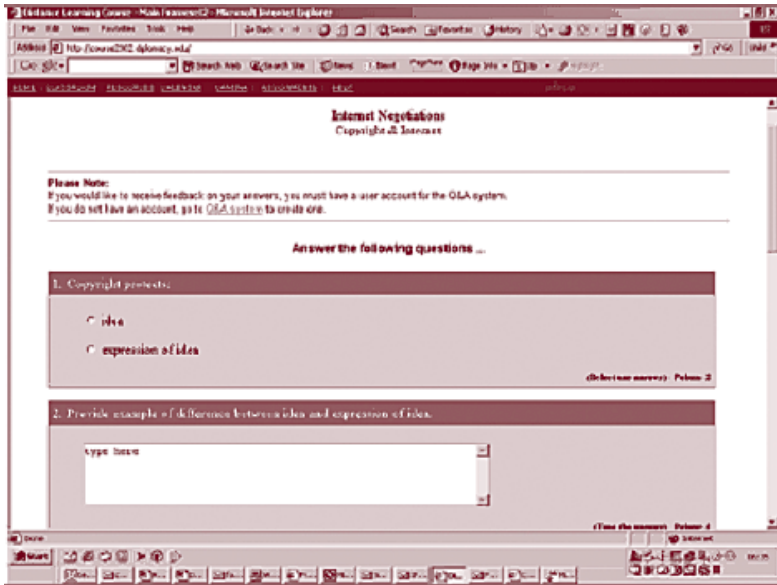
Crosswords:

Crossword puzzles are used to check the level of understanding of basic terminology (including acronyms).

Thursday: Online session

The online session is structured by the lecturer to deal with any weaknesses or gaps in the participants' understanding, as revealed by their activities in the first three days. The online session is an important component of creating positive group dynamics within a community that may have only met online. One challenge for online lecturers is that the discussion may move in several directions at once; the lecturer needs to keep the discussion focused.

Online Classroom:

An example of the transcripts of an online session, posted into the online classroom for future reference and hypertext annotations.
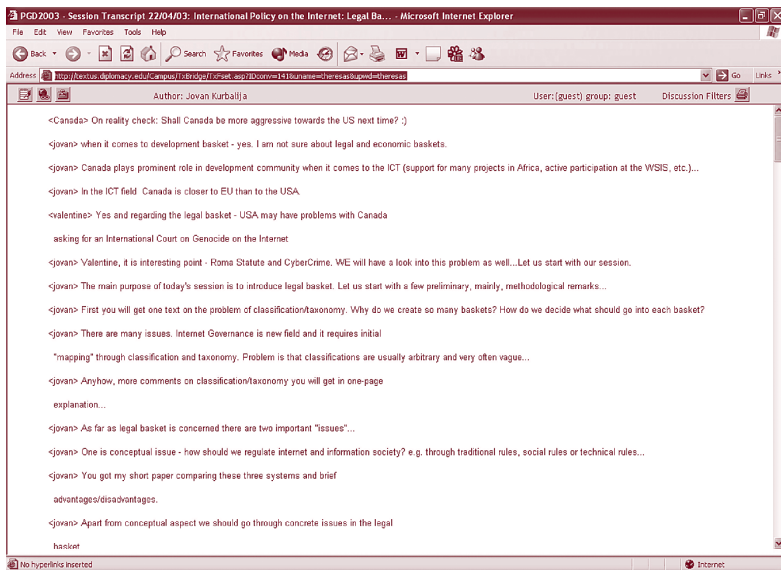
Friday: Wrapping up

On Friday the lecturer prepares a summary of reflections on the week's activities, including significant annotations and questions. All interactive parts of the material provided remain open for comments via hypertext so that participants can continue to provide their input and comments if they wish.

By the end of the first week, through study, discussion (both via hypertext and the online session) and testing, participants have acquired a basic theoretical background and are ready to move from theory to practice.

WEEK 2 - FROM THEORY TO PRACTICE

The simulation exercise aims at drafting (learning HOW) an International Declaration on the Internet covering all five baskets. Participants are assigned the roles of major players (the USA, the EU, Japan, China, India), countries with specific interests in ICT-related issues (Canada, Singapore, Brazil), international organisations in the field (WIPO, ITU, WTO), or other players (NGOs, business associations, etc.). Supervisors and lecturers play the role of the Secretariat. Participants are provided with frequent feedback on their performance, in terms of content, procedures and technology.

Monday: Information gathering

Participants are briefed on the countries or organisations they represent, including their basic positions on the main issues under discussion. Finding additional information is the responsibility of the participants. Participants are also briefed on the correct procedures for multilateral negotiations.

At this point, negotiations begin. A draft text is prepared by a committee for each topic. If the participants are not ready to prepare the draft text this task is performed by the Secretariat (lecturers/supervisors). The first step involves asynchronous negotiations. Participants suggest amendments to the draft by making annotations on the draft text. Emphasis is on document drafting as an aid for transforming previously acquired tacit knowledge into explicit knowledge.

Initial Briefing:

Presentation of the position of a country or organisation.
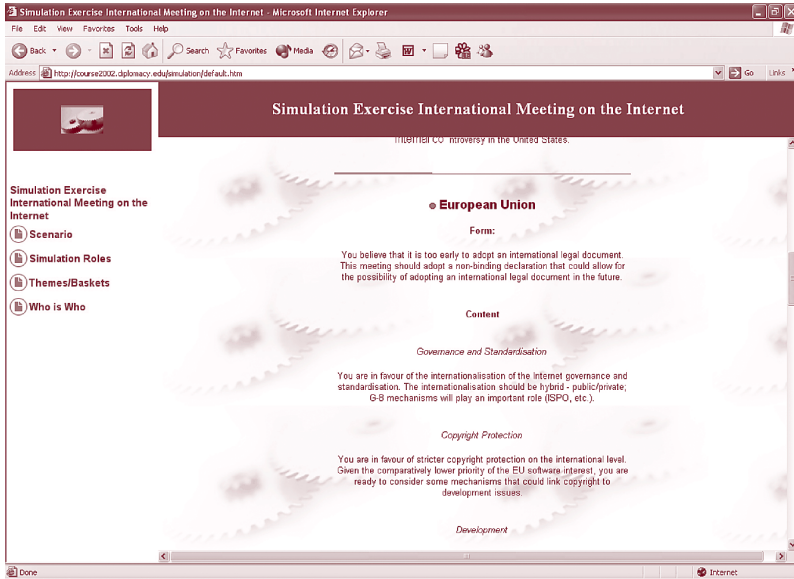
"Swiss Knife" for Multilateral Diplomacy:

This guide to multilateral diplomatic procedures assists participants with mastering the processes of negotiation.
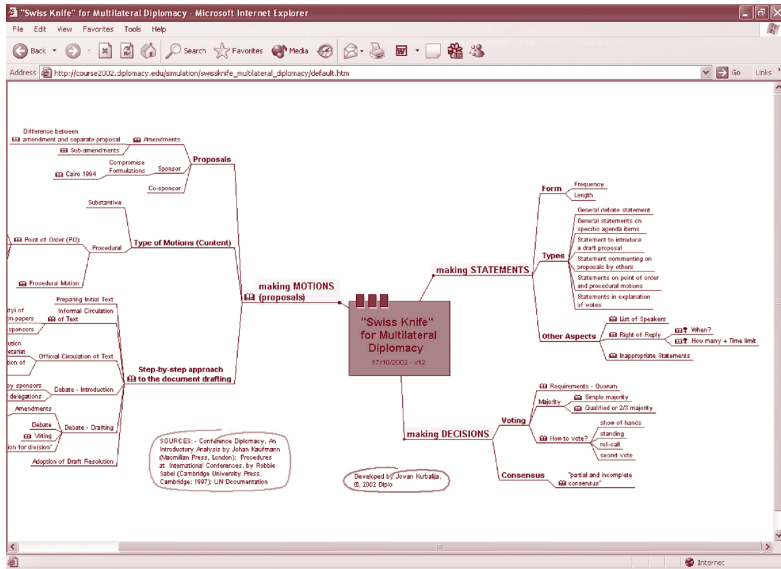
The first layer of the map presents the main multilateral techniques in three groups: making motions, decisions and statements (see the image). The second layer explains each technique in more detail (references to UN procedure, comments, case studies, etc.).

Draft Text:

This is an example of a draft text for the legal basket. Each delegate proposes amendments through hypertext annotations, while other delegates can suggest modifications, or express agreement or disagreement with the amendments.
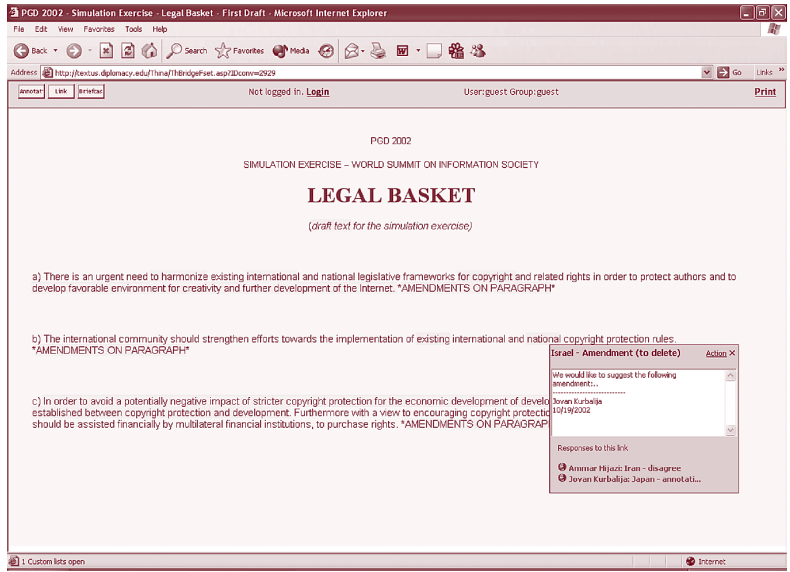
Tuesday: Online negotiations

The activities for the remainder of the week are attuned according to the group dynamics. Typically, after the first set of hypertext amendments the Secretariat prepares a consolidated version of the text and invites participants to the first online negotiation session.

At the end of the online session, the Secretariat prepares a new consolidated version of the text and makes it available for the next round of hypertext negotiations (performed by submitting hypertext annotations and amendments).

Conference Room:

Discussion in the conference room can be more or less structured, or even moderated, depending on the needs. Although online chat tends to be an informal medium, the negotiation exercise follows strict diplomatic procedures (adoption of the agenda, delegates ask the chairman for the floor, use of points-of-order, etc.).

Feedback from Diplo participants on the use of this method for learning the negotiation procedure has been very positive.

Wednesday to Friday: Continuing negotiations

Depending on the dynamics of the negotiations, various negotiating and didactic techniques are used. Here are a few possible scenarios:

- After the online negotiations on Tuesday, the new version of the text is presented for hypertext annotation. If the hypertext annotations lead towards consensus and adoption of the final text, the negotiation will be concluded in this manner. However, this is not usually the case, so…
- A second online negotiation session is scheduled for Thursday.

- Sometimes the Secretariat establishes drafting committees for particular issues.
- Delegations or the Secretariat may call for voting.

Online Voting:

Here is an example of an online voting procedure.
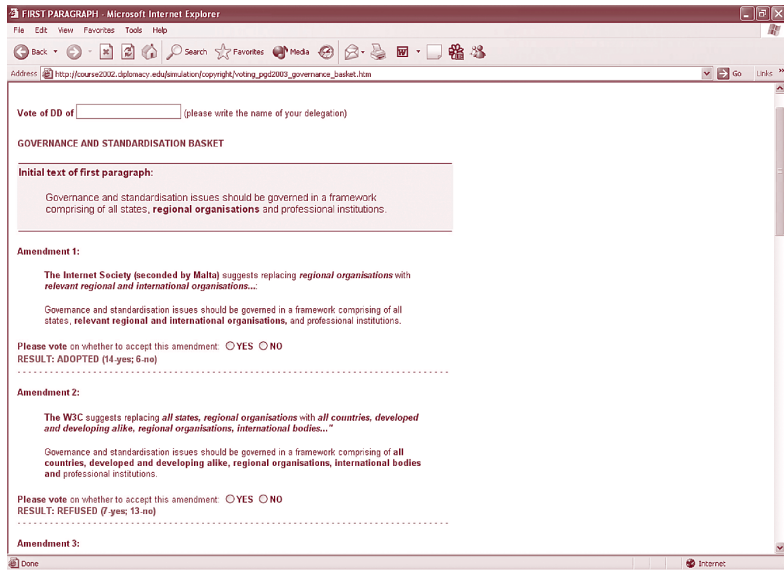
Feedback

Throughout the exercise, participants are provided with frequent feedback. This is essential to ensure the acquisition of tacit knowledge. Feedback is provided in three areas:

1. Theoretical aspect (during negotiations participants revisit the knowledge they acquired through a practical perspective).
2. Diplomatic aspect (feedback on diplomatic procedures, drafting, amendments, etc.).
3. Technical aspect (proficiency in the use of technology).

Feedback:

Feedback is provided for theoretical, diplomatic and technical aspects of the negotiations.

Reality Check:

For each basket, a "reality check" evaluates the closeness of the partici-
pant's contributions to the role that particular country or organisation
would be expected to take. This reality check keeps the negotiations
close to "real life", and is an essential tool for transferring tacit knowl-
edge from mentors to participants.

SIMULATION EXERCISE 2003
LEGAL BASKET

REALITY CHECK

Blue colour – contributions through hypertext annotations.
Brown colour – contributions during the online conference session.

PARTICIPANT	COUNTRY	REALITY CHECK	
		ORIGINAL INPUT	COMMENT
	USA	in order to protect all copyright owners in all fields	(in accordance with the USA interest – main focus on rights holders, not necessarily on authors)
		The urgent need to create international legal system and body to close a loophole in international law in which there was no explicit agreement covering the duplication of sound recordings off the air or from computer networks which must be considered as a copyright violation crime.	- stressing USA need to harmonise international law in this field; - stressing USA policy of making copyright violation an internationally recognised crime; - not adopted – need for clearer formulation.
		in a line with the international standards and obligations	Adding "standards" – generally in interest of the USA to introduce standards in the field of copyright laws.
Ayo, Ndetaulwa	Malaysia	Active participation in negotiations; we could not identify amendment submitted in the forum.	
	Tunisia	we believe that the national implementation should be efficiently secured first, then we might be in a position to start considering the creation of further international bodies ...however the UN bodies should always have the upper hand in any new frameworks created ... amendment supported as is, without further amendments being proposed	Initially it was not clear whether it was an amendment or statement. It was confirmed that it was a statement.
	Singapore	1.The word "existing" should be replaced with "adapted". Taking into consideration the fact that at times the existing rules are not corresponding properly to the changed environment.	Not adopted
		2 Before full stop the following text should be added "as well as the development of effective enforcement mechanisms". Amended text should read: "The international community should strength efforts towards the implementation of adapted international and national copyright rules as well as the development of effective enforcement mechanisms".	Given Sinapore's prominence in the ICT business it is a very realistic amendment. Proper form of presenting amendments
		Singapore supports the W3C proposal to add "righholders, their authorized works"	
		We propose to keep the initial word "rules" instead of agreements" which are not so strong. 2. instead the word "existed" should be added "adopted" to current situation international	Counter proposal to Iran's proposal – in accordance with Singapore's policy of strengthening copyright protection.
	Russia	Copyrights protection should be an international protection framework able to protect artist work worldwide. Although most countries are members of the Berne Convention and the Universal Copyright Convention, is not enough to defend artist work. Developing countries	A typical "multilateral diplomacy" statement - on the edge of reality (it is not very likely that Russia would push for additional protection)

As this example has shown, through this two-week process, partici-
pants simultaneously acquire both explicit knowledge (ABOUT the
topic): theoretical knowledge, main concepts, basic terminology, pro-
cedures, and tacit knowledge (HOW TO): skills and experience.

The future of online learning

The art of prophesy is very difficult,
especially with respect to the future.

Mark Twain

THE FUTURE OF ONLINE LEARNING

Information technologies are characterised by a rapid rate of innovation. A substantial number of products fail to make it in the marketplace. Therefore, it is hard to predict what technologies will look like five years from now. Similarly, we can only speculate on the social and economic impact of such technologies, including their effect on the digital divide.

Mobile and wireless computing appear to be firmly established. It would not be unrealistic to assume that at least some of the many technical developments which have not yet captured the popular imagination, but are known to work today, will eventually be adopted on a large scale because of the value they will add to the Information Society.

One specific example of such a development is the Semantic Web, which will use XML and smart agents to define the context in which information is presented on a website. This will provide vastly improved mechanisms for making sense of the information that is now available on the World Wide Web as well as on intranets.

We will likely also see agents and developments in hypermedia – a concept that extends the notion of hyperlinks as we know them today, to include links to any form of media objects, such as sound, video and virtual reality. By implication, hypermedia will lead to a higher level of interactivity with the person using it. These techniques are already used by academic researchers.

CONTEXT FOR THE FUTURE OF LEARNING

The Information Society already exists, its progress relentless and accelerating. However, it is not widespread on a global level as a result of the digital divide. As this series of booklets shows, the Information Society brings with it many new issues which society must address and learn how to manage.

Two aspects of the Information Society are of direct relevance to the future of online learning: the need for continuous learning and the in-

creased participation of individuals in multi-disciplinary and international work and projects, taking such forms as communities of practice, virtual teams and virtual diplomacy.

The Information Society also brings with it a wide dispersion of knowledge and increased complexity of knowledge, with the need to validate and integrate data and information from multiple sources. This in turn raises new issues of intellectual property, digital rights management and surveillance of information use.

Information has become prodigiously abundant and, particularly in the case of online learning, it is necessary to be highly selective in providing information to the participant in order to avoid a counterproductive information overload.

Online learning provides an environment where highly specific courses targeting a specific group of participants can be created and disseminated.

WHAT IS THE FUTURE OF WORK FOR THE KNOWLEDGE PROFESSIONAL?

This is a simple question for which there are many possible answers. One common element in these answers is that as a result of accelerating change and the growth in the availability of data and information, knowledge professionals will have to continue to develop and adapt their skills. Online learning is particularly well-suited to provide the necessary support and tools to achieve this.

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In addition to his collaboration with the United Nations, he is a conference speaker and university lecturer reflecting his 40 years experience in the management of information technologies.

He has worked in Argentina, the Netherlands, the UK, Australia and after joining the United Nations in 1993, in Geneva (Switzerland) and New York (USA). He graduated as an electronics engineer from the University of Buenos Aires, Argentina in 1963 and holds a Master's degree from the Netherlands and a PhD from the UK.

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Jovan Kurbalija

Jovan Kurbalija is the founding director of DiploFoundation. He is a former diplomat with a professional and academic background in international law, diplomacy and information technology. Since the late 1980s he has been involved in research on ICT and law. In 1992 he was in charge of establishing the first Unit for IT and Diplomacy at the Mediterranean Academy of Diplomatic Studies in Malta. After more than ten years of successful work in the field of training, research and publishing, in 2003 the Unit evolved into DiploFoundation.

Jovan Kurbalija directs online learning courses on ICT and diplomacy and lectures in academic and training institutions in Switzerland, the United States, Austria, the United Kingdom, the Netherlands, and Malta.

The main areas of his research are: diplomacy and development of the international regime on the Internet, the use of hypertext in diplomacy, online negotiations, and diplomatic law.

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NOTES