

Title: Designing E-Learning for the Workplace:  
challenges for worker-learners, e-designers and  
academic staff

Authors: Murphy, A., Dixon, N., Lacey, K., O'Rourke,  
K. and Rooney, P.

**This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.**

Title: Designing E-Learning for the Workplace: challenges for worker-learners, e-designers and academic staff

Authors: Murphy, A., Dixon, N., Lacey, K., O'Rourke, K. and Rooney, P.

## Introduction

[Learn@Work](#) is an EU Socrates Minerva Education Research Project 2005-2007 shared by a consortium of five European partners from Scotland (Glasgow-Caledonian University), Denmark (Aalborg University), Belgium (AliT), Austria (Institute for Future Studies, University of Innsbruck) and Ireland (The Dublin Institute of Technology (DIT)). The DIT team is drawn from the Learning Technology Team, Staff Training and Development, and the Learning and Teaching Centre.

The aim of [Learn@Work](#) is to develop induction and support materials and resources – based on ICTs - to assist learners in the workplace to develop the capacities to engage successfully either in their work roles or on structured training/education programmes. In underpinning design, the project explores the synthesis between theories, conceptual frameworks and practices of distance learning, e-learning, work-based learning and work-placed learning.

The products of the project are to include the following:

- Ø An international Expert Group, an on-line community and a circle of Critical Friends in relation to induction and support for workers-learners using ICTs;
- Ø A State-of-the-Art Report on induction and support for learning in the workplace in the partner countries;
- Ø ICT materials tested with Pilot Groups in each of the partner countries;
- Ø Case Studies arising from the Pilots;
- Ø Resources for Induction/Scaffolding and a Support Framework for worker-learners, including:
  1. A Developers' Guide
  2. A Tutors' Guide

3. A Worker-Learners' Guide which will include paper-based materials, CD materials and a WebCT-based resource
4. ICTs-based resources informed by design principles, practice principles and policy principles which emerge from the project.

The particular focus of Learn@Work (DIT) is the development of a locally-informed induction and support package for worker-learners with whom we currently work, including apprentices, adult learners in their community, workers engaged in continuing professional development, and part-time students generally, which would introduce them to the use of computers, to basic ICT skills, to eLearning, to the use of WebCT and similar platforms, and to the academic study skills required for sustainable participation in formal work-related training and education.

The first iteration of the package of induction and support materials developed by the DIT was pre-piloted informally by members of the team with in-house groups of part-time mature students in a range of contexts. Critical Friends included IT trainers, staff of the student support services and student retention office, and staff involved in designing programmes for the workplace. Feedback from the pre-pilots and from critical friends informed the second iteration of the package which is currently being piloted with five external user-groups as follows:

1. Enable Ireland
2. The Trainers' Network
3. Skillnets
4. Fine Art lecturers in NCAD
5. Workers in Dublin city parks participating in a CDVEC programme.

Each Pilot Group is allocated an E-Accompanier from the [Learn@Work](#) team and in two cases the Pilot leaders were experts in ICTs.

The pilot induction and support package starts with key-board familiarisation and moves through a series of tasks of increasing complexity. Users are free

to start at whatever stage suits them personally, and to move on at whatever pace suits their needs best. Users can also revisit any materials or skills and develop them further. Pilot participants needed the following:

- Access to a PC
- Access to the internet
- Access to broadband (if possible)
- Time to participate in the Pilots
- A supportive working environment
- A future, or current, programme of learning where e-learning is required.

### **L@W (DIT) Policy Context: E-Learning Roadmap**

The DIT package was deliberately open-ended, flexible, without pre-determined learning outcomes, without assessment, without framework levels, without credits and without certification. The designers of the Learn@Work (Dublin) package were acutely aware of the shifting, and often competing, discourses surrounding the role and remit of academia in fostering a knowledge economy. In this regard, the *E-learning Roadmap for Ireland* (2004: 45) identified three specific types of research vehicles, or project approaches, under three broad themes, as follows:

*Type 1: Empowerment for the knowledge economy*

*Type 2: Enriching the learning process*

*Type 3: Blue sky*

The report suggests that these research vehicles should share the following common features:

*“Design of environment and tools should be participative and learner orientated. Successful learning environments aim at today’s as well as the future needs of learners.*

*e-Learning products should be easy to use and enhance the learning experience. Successful learning environments must implement learning and teaching strategies, and at the same time incorporate high usability.*

*Projects should have a global dimension and include international partners. Successful learning environments take into account the differences and*

*commonalities of cultures and attitudes across the world. They recognize the potential and benefits of global learning.*

*Products should have a social good and have benefits for developing countries, migrant populations and disenfranchised communities.*

*All projects should be evaluated thoroughly in practical ways with real students and interested educators”*

Type 2 seemed to chime well with the Learn@Work project and to reflect its underpinning principles which were outlined in the Roadmap report as follows::

*“The depth of learning is related to the depth of engagement with the content, the learning environment, and the community of learners. The challenge is to provide technology that enriches and deepens the learning process with [open ended, experiential learning environments \(our emphasis\)](#). Research vehicles of this type will have the following attributes:*

- *A target audience of individual, family, and community*
  - *Creative and innovative interaction styles*
  - *Unstructured, creative, just-in-time learning*
  - *No predefined learning outcomes, the learner will be responsible for their own learning and define their own personal learning goals”.*
- (ibid.: 46)

The DIT Learn@Work package, therefore, took particular cognizance of these indigenous principles in its design and research approach.

### **Initial Design and Philosophical Challenges**

The type of pedagogical design described above is familiar in adult and community-based education contexts but now quite rare in a higher education landscape dominated by technologies of modularisation, learning outcomes, levels and frameworks of qualifications. The proposed [Learn@Work](#) model, therefore, generated a number of initial challenges for the team, particularly with regard to the following:

- Assumptions about the identity of the worker-learner as ‘student’ in the traditional sense;
- Practices of designing for the ‘generic’ learner - other than in the adult education tradition;
- Preferences for a design model which is based on academic levels, learning outcomes, assessment and certification;

- Preference not to engage with learner support beyond initial induction.

Philosophical challenges also emerged, including questions as follows:

- What is the remit of HE as a public knowledge institution in building the capacity of the workforce by means other than providing programmes?
- Can a generic package be designed without the designers knowing the affordances of each workplace?
- Are workers themselves responsible for acquiring working knowledge?

### **Challenges for IT Trainers and E-Developers**

One of the initial challenges for the Learn@Work IT and e-learning team was arriving at an agreed working definition of the concepts of 'induction' and 'support' for work-based learning and how ICTs fitted into the range of definitions. In its narrow sense, induction is defined as the formal admittance of a new member /employee to a club/organisation (Concise Oxford English Dictionary 2002). In this sense, induction is viewed as training provided to new employees to acquaint them with company structures, specific job requirements, practical/organisational issues etc. For the purposes of this project, the team agreed to enlarge this definition, to encompass the concepts of:

- being an elearner
- using ICTs as part of informal/formal learning processes
- learning how to learn through the development of ICT-based and academic competences.

In this sense, 'induction' embraces the dual concepts of lifelong learning and capacity building.

With regard to support, it has long been recognised that learners who study off-campus are more susceptible to feelings of isolation and alienation, both from their providing institution/college, from their tutors and from other learners (Galusha 1997). The perceived lack of support, and the dwindling motivation which can ensue, can have an extremely detrimental effect on the worker-learners' experience of the learning process. For workers studying

online at a distance, ongoing support, both technical and pedagogical is essential (O'Donnell et al 2006). The design of the Learn@Work package was based on the principle that it should be both flexible and sufficiently detailed in order to meet the induction needs and the ongoing support needs of worker learners who do not have the supports of the traditional campus as outlined earlier.

### **Delivery platform and mediums**

The Learn@Work package was designed for online delivery as well as for self-directed and self-paced learning using the paper-based manuals and a CD Rom for workers with limited access to the internet and who may be dependent on dial-up connections for which they would have to pay. It was also recognised that many workers prefer to read from paper than from the screen (Dillon 1992). So, to improve accessibility of materials, a handbook was provided for all participants. While this handbook could not replicate the interactivity of the online materials, it contained all text and image-based content.

### **Package content and design**

The Learn@Work induction package, drawn up through collaborative project meetings, had parts as follows:

Part A: The computer, keyboard, screen, mouse and gadgets

Part B: eMail activities

Part C: Introduction to WebCT

Part D: Study skills, academic writing and using the library

Part E: Reflecting on your learning

As the titles suggest, Parts A to C part are more technology-orientated, aiming to develop users ICT competences and skills. The remaining parts switch focus from ICTs used during the learning process to the learning process itself. As such they aim to develop users' capacity to 'learn how to learn'. It

was envisaged that this framework would provide sufficient flexibility so as to cater for learners from various backgrounds and skills levels.

## Design approaches

Two primary factors which permeated all decisions relating to the package design were usability and accessibility. As the package was intended for use by learners with varying levels of expertise in the fields of ICTs, it was imperative that the package was easy to use and to navigate. In addition, accessibility was of paramount importance, particularly considering the underlying democratic agenda - information-for-all - of the project.

In order to maintain consistency and coherency across the induction package, each of the parts outlined above adopts a similar instructional design approach. This approach is based on a number of key principles in effective instructional design practice. Research has shown that learners have multiple learning styles, and indeed multiple intelligences. In order to cater for multiple learning styles and intelligences (Gardner 2000, Anderson and Adams 1992), each section uses a variety of media, ranging from text-based content to audio-visual materials. This diversity in media also aims to ensure that the content is accessible to all participants, including those with physical and/or learning difficulties.

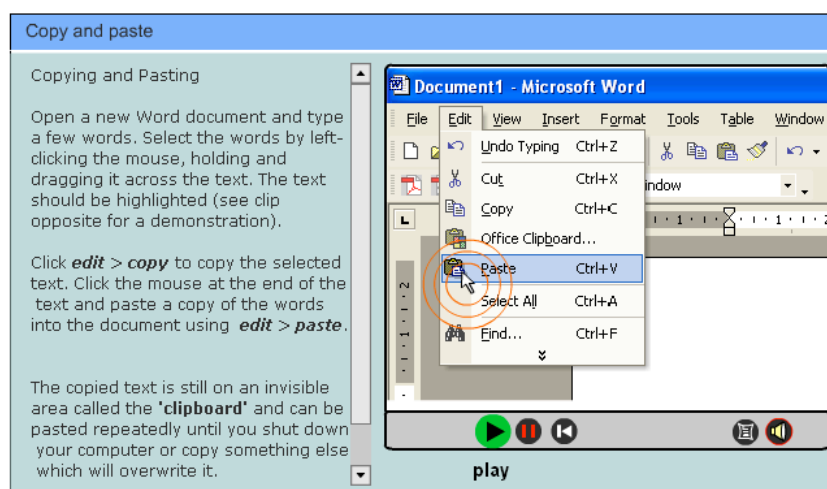



Fig 1. This screen shot from Part A illustrates how text, video and audio are integrated to create a multi-sensory learning experience.

In accordance with active, constructivist pedagogical strategies, contemporary instructional design strategies aim to make content interactive, encouraging participants/learners to put into practice key ideas presented in the content through “learning-by-doing” (Laurillard 2002). Thus sample activities are interspersed throughout the package, allowing participants to link theory to practice, and to reinforce concepts learned throughout each activity. In the final part of the package, it was envisaged that these activities would be adaptable to the authentic context of the worker-learner.


**Part D: Study skills and academic writing**

**3. Using the internet for your studies**

In any study programme you are likely to look for information on the internet. You might use a search engine such as Google for a general search. You might use Library catalogues for more scholarly research.

**Activity** 

Use Google to check the cheapest flight costs from Dublin to Cork on a Sunday morning

**Activity** 

Find the DIT site at <http://www.dit.ie>

On the DIT site go to the Library site and become familiar with its layout.

Fig 2. illustrates the integration of activities at key junctures throughout each tutorial.

In order to enable participants make the link between theory, as presented in the content, and real-life practice, worked examples of key concepts are presented throughout. Again this conforms to recommended instructional design strategies for effective learning (Chu 2005).

## Part D: Study skills and academic writing

### 11. Supporting your ideas with references from literature

As both a reader and a writer you will get used to different referencing styles. The style of referencing you use will depend on your field of study or academic discipline. History writers use a different style to medics or scientists. The 2 styles selected for this workbook are: the Harvard Referencing System and the Referencing System of the American Psychological Association (APA). There are worked examples of these 2 referencing systems below.

Source	Harvard System	APA System
Book title, single author	Tennant, M (1988) <i>Psychology and Adult Learning</i> , Routledge, London	Tennant, M. (1988). <i>Psychology and adult learning</i> , London : Routledge.
Book title, several authors	Cohen, L, Manion, L and Morrison, K (2000) <i>Research Methods in Education</i> , 5 th ed, RoutledgeFalmer, London .	Cohen, L., Manion, L., & Morrison, K. (2000). <i>Research methods in education</i> , (5 th ed.). London : RoutledgeFalmer.
Book title, edition	Tennant, M (1997) <i>Psychology and Adult Learning</i> , 2 nd ed, Routledge, London .	Tennant, M. (1997). <i>Psychology and adult learning</i> , (2 nd ed.). London : Routledge.

Fig 3. The example above shows how theory is linked to real-life practice through worked examples.

A common practice in the design of eLearning materials is the streamlining of content into “core” and “supplementary” materials. This strategy aims to allow all students to digest key content, while providing opportunities for those interested to pursue more advanced investigation or research. In order to provide the same flexibility for Learn@Work participants, the induction package adopts a similar strategy by providing supplementary material at various junctures. The provision of references and resources throughout each part of the package, also allows participants to pursue further independent learning in areas of interest to them.

The image shows a 'Sample tables and borders popup window' with a 'Tables and Borders' toolbar. The toolbar includes icons for inserting tables, deleting tables, merging cells, splitting cells, and sorting. A blue box highlights the 'Split/merge cells' icon with the text: 'Split/merge cells: Use this icon to split or merge cells in the table (click in table first)'. Below this, it says: 'Click on the icons highlighted in orange above to view their function'. A 'Close' button is at the bottom. The background shows a table with a blue arrow pointing to 'Column 3'.

Text in tables

Text in tables

To insert text into the relevant table text.

To change the text the 'align' icon on toolbar.

You can also sort or descending order the 'sort ascend' 'descending' icons.

For further details icons, click 'Tips'

© Dublin Institute of Technology 2007

Figure 4. Supplementary materials provide extra information and flexibility for those with more advanced skill levels.

### **Initial feedback**

While the pilots are still ongoing at the time of writing, initial feedback has yielded some useful insights into the effectiveness of the current package and into areas in which induction and support through the package could be improved. With all five pilots groups, an initial face-to-face meeting was arranged at which the content of the package was discussed, a starting-point skills analysis conducted and expectations from both sides outlined. Afterwards an initial online session was held. Each group was asked to meet online on a weekly basis to discuss progress and to bring back any issues encountered. In the case of one group, where ICT skills of users ranged from totally unfamiliar to an 80wpm typist, this task was immediately problematic. Although, during the initial meeting, it was clear that all had a basic competence in the use of computers, they insisted that a tutor be physically present with them during the online sessions. In this case, the issue is one of building confidence among the user groups. As one person put it “A lot of people in 40s, 50s and 60s who do not work in the IT area are afraid to touch a computer in case they make a fool of themselves or think they would break the computer. It sounds silly to users of computers, but it is real fear with people who do not know much”.

From those who did meet online during the pilot, the feedback was especially useful, while the actual experience of using the online collaborative environment provided an opportunity to put into practice what was being learned from the online activities. Many of the issues that arose at this stage were practical in nature e.g. how to activate sound or to actually use the chat room tools in WebCT, but it became clear that the package was being viewed primarily as an IT primer and that the varying levels of IT competency meant that the package would benefit from assuming no relevant knowledge at all on the part of the user: “I was expecting a basic introduction to computers, particularly when it is called an induction package and therefore I think the start of the package needs to address the needs of those people who may

know nothing or very little, otherwise it may discourage them using the package". In this context, an integrated glossary of terms was suggested ("not understanding the terminology and buzz words" was a problem for some). Participants initially used the handbook in conjunction with the online elements, but indicated that they quickly moved almost exclusively to online use, where the integrated multimedia elements were regarded as extremely useful and there were frequent requests that more of these should be included in the package. The CD generally remained unused: "[I] don't see any use really for the CD. Thinking on line, the handbook and chat room support the way to go".

However, a feature of the pilots in action is that participants, although intending to participate fully, were not always as active as they might be. Mid-way through the pilots, almost half of those who agreed to participate did not utilise the online elements of the programme after the initial induction although they may well have used the print and CD versions. As the pilots were run on a voluntary basis, it was not always easy to follow-up with such participants, although clearly they will provide valuable information for the project should their inability to complete be a result of the quality of the materials or support available to them in the package. However, many of the initial indicators suggest that those who participated fully found the experience to be rewarding, and indicated a further desire to improve their computer skills in the manner provided by the Learn@Work package. On the downside, the fact that the package was not used as part of an induction to a fully online course meant that the sections relating to study skills, academic writing, reflecting on your learning and so on were under-utilised. The section entitled "Reflecting critically on your learning at work" was accessed by just one person in the online version, though the handbook and CD may have been used for this section. However, those who did access more advanced sections tended to remain longer - generally spending up to ten minutes on the page entitled "Common knowledge, plagiarism, copyright and ethics". This indicates something which had been indicated in the Roadmap document cited earlier, and which became clear in the course of the pilots, both through the formal feedback process and through the informal observation of the pilots: that the

best induction package will allow for an open-ended, just-in-time training approach, so that support can be accessed by individuals when they require it. The task of those providing the induction, therefore, will be to raise awareness of the support in advance, so that participants know where to go when they need support as their online programme advances. This principle now poses considerable challenges for IT trainers and e-developers who generally have only one, brief opportunity to conduct induction with learners and who generally have no direct contact with them afterwards.

## **Conclusion**

As this paper is being written while many of the pilots are still ongoing a full evaluation will not be possible for several weeks. However, it is clear to date that worker-learners who have participated are seeking an induction that primarily builds confidence in the use of computers rather than an induction for work-based learning *per se*; again to quote one participant “users who hardly know how to turn on a computer are now hearing everyone talking about booking their tickets and sending emails and searching the web etc”. Once that hurdle has been passed, the world of online learning becomes closer to them. The general adult education principle that readiness to learn is a key element in success was borne out in all the pilots. The central importance of self-efficacy was clear for persistence, as was the availability of personal support at the introductory stage. While these are not in any way original principles, and not exclusive to ICTs-assisted learning, they are often underestimated in the rush towards more sophisticated and elaborate technologies in higher education.

## **END PIECE**

To date the [Learn@Work](#) project has focused the team’s attention on the complexity of designing for worker-learners using a generic approach and on the risks attendant on neglect of basic principles of adult learning. It would be reasonable to suggest at this stage of the project that a number of design principles are now emerging which are offered below without ranking.

However, these principles have yet to be interrogated and agreed by the Pilot Partners and Critical Friends.

#### Design Principles Developed

*Principle 1:* the design of an induction and support package for worker-learners should be informed by an understanding of both traditional college-based learning, of adult learning, and of emerging paradigms of learning through work;

*Principle 2:* the pedagogical approach in delivery of the package should take account of motivation, self-efficacy, affordances and supports in relation to the specific contexts of worker-learners;

*Principle 3:* the design and delivery approach should be open-ended, loosely structured, adaptive, responsive, experiential and authentic;

*Principle 4:* the design should be un-inhibited by technologies of modularisation, credit systems, assessment or certification;

*Principle 5:* the package should be free from pre-determined learning outcomes pitched at particular levels;

*Principles 6:* the language, style, images and general formatting of the package should take account of best practice in literacy practice;

*Principle 7:* the package should include paper-based materials, CD material, computer-based and internet-based materials so as to minimise inequities of personal resources and work-place affordances;

*Principle 8:* induction support should include face-to-face contact at a level appropriate to the needs of the particular worker-learners;

*Principle 9:* activities within the package should be adaptable to the authentic context of the worker-learner;

*Principle 10:* the overall thrust of the package should be towards development of worker-learner capabilities to direct their own sustainable and independent learning and to decide their future learning careers.

### **Persistent Challenges for the Project to date**

Notwithstanding the emergence of the tentative common principles above a number of challenges persist for the team which are broadly around the following:

- Competing worldviews and values about the role of HE in its interface with the world of work;
- Competing paradigms of learning assumed in design of learning for the workplace;
- Differing understandings of nomenclatures: *induction, support, student*;
- Competing views of the identity of the worker-learner: *student, worker, adult, etc.*
- Competing views of the levels of support due to learners in the workplace: *who is responsible?*
- Competing paradigms of teaching: *instructional design, adult education, open learning, programmed learning, etc* ;
- Competing traditions of materials design.

### **Next Steps**

The next steps for the project until their completion in October 2007 are:

- Completion and evaluation of the Pilots;
- Writing of Case Studies from the Pilots;
- Round Table analysis by all users at the DIT E-Learning Summer School in June 2007;
- Linkages with wide community of worker-learner support;
- Revision of materials;
- Scholarly analysis;
- Dissemination of materials;

- Identification of implications for policy and practice for WBL and e-learning strategies;
  - Analytical publications;
  - Production of final materials and synthesis with products from partners.
- 

## References

Admiral W, de Laat M, Rubens W, Lally V (2003) 'ICT support for workplace learning: eLearning in Small and Medium Enterprises (SMEs)' Proceedings of ECER 2003 learning with 'e'resources: issues for research. Hamburg 19<sup>th</sup> September 2003 [http://www.te-learning.nl/ICT\\_support\\_for\\_workplace\\_learning.pdf](http://www.te-learning.nl/ICT_support_for_workplace_learning.pdf)

Anderson J, Adams, M (1992) 'Acknowledging the Learning Styles of Diverse Student Populations: Implications for Instructional Design' *New Directions for Teaching and Learning*, 49, 19-33.

Chu STL (2005) 'Bridging the gap between research and practice: Educational psychology based instructional design for developing online content' Proceedings of AERA conference. Montreal QC, 11-15 April 2005.

Concise Oxford English Dictionary (2002) Oxford: Oxford University Press

Dillon A (1992) 'Reading from paper versus screens: a critical review of the empirical literature' *Ergonomics*, 35(10), 1297-1326.

Galusha JM (1997) 'Barriers to learning in distance education' *Interpersonal Computing and Technology Journal* 5 (3-4) 6– 4.

Gardner H (2000) *Intelligence reframed: multiple intelligences for the 21<sup>st</sup> century*. New York, Plymouth; Basic Books, Plymbridge.

Laurillard D (2002) *Rethinking university teaching: a conversational framework for the effective use of learning technologies* 2<sup>nd</sup> edition. London; RoutledgeFalmer.

O'Donnell CM, Sloan DJ, Mulholland CW (2006) 'Evaluation of an online student induction and support package for online learners' *European Journal of Open, Distance and eLearning*  
[http://www.eurodl.org/materials/contrib/2006/Catherine\\_M\\_O\\_Donnell.htm](http://www.eurodl.org/materials/contrib/2006/Catherine_M_O_Donnell.htm)

SFI and NCI (2004) *e-Learning research and development roadmap for Ireland*, Dublin: Science Foundation Ireland and National College of Ireland

