

# Handling diversity of learners in Elearning

Eqibelt

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# Different Environments

Active professionals

Culture

Learning styles

Age

Ongoing development

# Different Environments (cont.)

**CEE as WBL** (project Leonardo)

**Intercultural Education** (Inter – project  
Comenius)

**Facilitated Learning** (Facile – project  
Erasmus)

**LLL for Tertiary Sector**

**Simulations** (Second Life)

# Continuous Professional Development The Work-Based Learning Toolkit

Presentation by Margaret Davis  
Scottish Centre for Work-Based Learning  
Glasgow Caledonian University

# CPD by WBL Toolkit

- Designed to provide new and novel CPD for Engineers
- Realisation of CPD through tacit and explicit knowledge and knowledge based skills
- Designed for use in organisations by Universities who have trained staff
- Organisational competencies enhanced and developed
- University staff deliver explicit discipline knowledge as appropriate which will enhance creativity and innovation of participants.

# The Tools

- **Learning Needs Analysis Tool**  
Assess strengths and weaknesses of the organisation and its staff
- **Development of Reflective Practice Tool**  
Support individual in understanding the value of reflective practice
- **Learning Set and Working Styles Tool**  
Create group of trusting individuals and examine different working styles.
- **Barriers to Learning Development Tool**  
Encourage positive problem solving by identifying real & imagined barriers

# The Tools

- **Tacit Knowledge Tool**  
Value of tacit knowledge and its integration with explicit knowledge.
- **Action Development Tool**  
Logical development of activity plans
- **Learning Development Agreement Tool**  
To prepare the learning agreement based on tacit, explicit and knowledge based skills for the organisation
- **Professional Development Tool**  
To allow individuals to agree individual-based competencies in parallel to above

# Tacit Knowledge Tool

- Tacit knowledge is knowledge that is inside peoples heads; not written down; instinctive; not easy to verbalise or transfer to others
- This tool facilitates in-depth understanding of the value of tacit knowledge to organisations and how it can be identified, converted, and integrated with explicit knowledge to assist the organisation and indeed individuals to achieve objectives and potential.
- In this tool the Set will identify tacit knowledge required for the particular project chosen to investigate, discuss how it can be converted and implemented with the explicit knowledge required



# The Tacit Knowledge Tool

- Begin by examining all aspects of the study project and identify all persons who have an input.
- Record the participants on the grid with an explanation of their part
- Each member of the grid has to be involved in a learning dialogue to identify inputs which are not written down within the organisation
- The learning Set needs to have a good understanding of the area being studied to be able to consider appropriately the identified unwritten input.
- They should identify the explicit knowledge required at the same time both from an internal and external perspective..

# The Tacit Knowledge Tool

- The set needs to decide how to get the explicit knowledge required and also how to gather the tacit knowledge involved in the project.
- Where possible the tacit knowledge should be converted to explicit knowledge i.e. taking what is inside peoples' heads and writing it down.
- Some tacit knowledge will not be able to be codified but groups should record why it cannot.
- The codified tacit input is then evaluated for the specific impact/contribution it may have on the project and the business and financial impact for the organisation
- Lastly the tacit input is considered in relation to its interrelationship with explicit knowledge and knowledge skills deriving from emotional intelligence

# The Tacit Knowledge Tool

- A detailed learning log should be written up which combines all of the analysis completed via the grids with a final grid to show the total evaluation of each tacit knowledge input.
- This will become explicit knowledge within the company.
- The Set then contemplates how the tacit knowledge has modified the approach to the overall activities of the project and how the action plan can be improved.
- Each Set member should be allowed to challenge the Set on the conclusions being made and consider whether a further search for explicit knowledge is required
- The non codified tacit input should also be considered at this point for its value to the project

# HE Staff Guidelines

- Must invest in staff training
- Collaborate if necessary with other experts
- Draw together an expert team
- Conduct sessions in organisation with staff and management to explain
- Perhaps workshops to provide overview of the tools
- Agreement to proceed

# HE Staff Guidelines

- Learning Needs analysis tool - essential
- Assess strengths of organisation and of the individuals taking part
- Will allow staff to see the current state of organisation
- Accuracy in analysis is vital
- HE staff will decide how best to use the toolkit for that particular organisation in conjunction with management
- HE staff may need to 'convince' the organisation of the value of the essential tools to create the correct combination of tools and positive learning environment

# HE Staff Guidelines

- HE staff will have to coach/mentor the employees through the reflective practice tool
- Participants must be encouraged to work together – in pairs
- Must encourage reflection of learning rather than descriptive accounts of what was done.
- Participants can repeat the cycle until they become comfortable and competent
- HE staff should encourage development of the Learning Set in parallel

# HE Staff Guidelines

- HEI should assist in the establishment of the Set based on member participants
- Staff should coach and mentor but must allow participants to work together to examine different learning styles and how to work together effectively
- Not designed to alter individual style but to recognise variations in styles and how modification may be required in team situations to be an effective and successful team

# HE Staff Guidelines

- HEI staff need to work with participants to assist them to differentiate between real and imagined barriers.
- Should focus the Learning Set in examining potential barriers for themselves
- This tool can be used at outset but also as barriers arise
- Participants must be encouraged to complete the grid sequentially and debrief the inhibitors
- HEI team must, as facilitator/coaches, keep set moving forward and ensure focus is maintained



# HE Staff Guidelines

- HEI team will need a team member who is expert in tacit knowledge and its conversion to, and integration with, explicit knowledge
- The set will need considerable assistance since this will not be familiar
- Designed to isolate tacit knowledge input to the project
- Should alert the Set to using their reflective practice competency to identify tacit knowledge
- Direct them to look at the whole organisation and facilitate the Set by setting up learning dialogues with members of the Set and others who have potential input

# HE Staff Guidelines

- Staff also need to facilitate the Set identify gaps in organisational explicit knowledge.
- HEI, in conjunction with organisation, will decide where this expert explicit knowledge can be found internally or externally)
- HEI team should also assist Set to recognise why certain tacit inputs cannot be converted to explicit knowledge
- Staff should anticipate and give much time to this tool as it is vital to achieve the main outcome of the CPD by WBL project.
- This tool should not be used until the previous tools have been completed competently

# HE Staff Guidelines

- Mentor/facilitate Set to define a clear path for Activity Plan & Learning Development Agreement
- Mutual agreement in the Set must be achieved on the learning goals based on the work role roles of the participant employees.
- Might reuse the Barriers & Working Styles tools.
- The Learning Development Agreement Tool must be introduced at start to make staff aware of the whole project and understand the initial problem to be solved.
- Full agreement now required between University, participants and the organisation for delivery of outcomes specified.
- Project related to work area where development change or problem of significant magnitude is taken forward.

# HE Staff Guidelines

- Need to agree whether formal assessment is required and whether the learning should lead to award by HEI.
- The HEI will decide what awards are possible but will need to benchmark learning to award levels
- A much more formal relationship will be required for award work & HEI will need to formally supervise the learning
- Participants will require own learning agreement.
- The Professional Development Tool should be used with individuals for personal learning of professional competencies – must include some aspect of tacit knowledge understanding

# HE Staff Guidelines

- HE staff must recognise that they have a flexible tool which can be tailored to each organisation whether formally assessed or used for CPD
- Throughout, good communication and trained HE staff who act as mentors/facilitators/coaches are essential to ensure the organisational objectives are kept in focus and staff complete the competency requirements
- Excellent opportunity for CPD for Engineers but HE staff have important role in convincing organisations of its value.

# The Results of Company Participation in Wales

- Initial discussions with 2 companies resulted in two different pilots of the toolkit
- Contracts have been signed and meetings progressing weekly
- Will report on the results of these projects at the September meeting
- David providing expert knowledge from Wales
- The Needs Analysis in both cases will elucidate the requirements for the other goals.

# Company A

- a) presentation of Leonardo project plus specific case study, and details of partner to Chief Executive and Senior Managers
- b) told that the toolkit was:
  - to assess whether organisation was a learning organisation and identify its strengths and weaknesses appertaining to a learning organisation, and to provide new and novel CPD by WBL for all types of Engineers, Technicians and craftsmen within organisations to lead to a set of enhanced competencies, underpinned by experts, to benefit both the company and the individuals

# Company A

## Feedback from this group

- a) Resulted in agreement that Company A would participate in project
- b) Further discussion to be done with Lead person in the company on implementation and the results from the Analysis tool
- c) Learning Needs Analysis scoring system to be altered to 0-5 (from 0-10)
- d) A number of questions in analysis questionnaire to be reworded for clarity.
- e) a number of further meetings with Lead person to agree implementation



# Company A

- Implementation for Company A to be:
  - a) Presentation to Engineers and Technicians (whole project and case study)
  - b) Completion of Learning Needs Analysis Tool and analysis conducted
  - c) Discussions with lead person on outcome of analysis
- Outcome (21 participants) indicated that organisation had no major problems but should undertake some tools to improve position as learning company
- Tools to be used: reflective practice and tacit knowledge (prime mover was that a senior member of technical staff due to retire!)
- Lead person will establish the learning set to address learning styles of all members .

# Company A

- Reflective practice tool to be used in the following way:
  - Select work related topic areas for each member
  - Each member to keep a reflective journal
  - Critical reflection in Set of each learning journal
  - Make recommendations for change from reflection.
- Learning Set to be facilitated by employee and HE staff.
- Facilitator from HE to develop a CPD package for facilitator from organisation if appropriate.
- Each stage of reflective practice in Learning Set to be documented and a final report submitted.
- Only when competency established in reflective practice will Set move to tacit knowledge.
- Priority to explore tacit knowledge of retiring employee and identify generally the gaps in explicit knowledge

# Company B

- Presentation to engineering manager on whole project plus specific case study
- Initial feedback from engineering manager
- Further discussions undertaken resulted in:
  - Learning needs analysis questionnaire being given to
  - all engineering staff and feedback gained:
    - a) they would like to be involved in the project
    - b) Learning Needs Analysis scoring system to be altered and clarification of questions required (same as Company A)

# Company B

- The questionnaire reworded and redistributed to engineering staff
- Questionnaire completed and analysis done
- Discussions of outcomes of questionnaire
- The outcomes suggested that the company was a good learning organisation
- Further discussion with Engineering manager resulted in him personally undergoing the reflective practice toolkit to establish the changing skills profile of the company and deficiency in explicit knowledge
- Organisational skills profile done 5 years earlier
- The next stage will depend on the outcomes of the critical reflection toolkit.

# CEE WBL – Elearning

- **Materials – CD Rom, platform and Ebook plus portal**
- **Evaluation:** A – Students  
B – Workers  
C – External Expert
- **Context – A: Master course curriculum  
B: Contract with five workers  
C: European project Minerva**

# WP3 – Elearning

- **Materials – CD Rom, platform and Ebook plus portal**
- **Evaluation:** A – Students  
B – Workers  
C – External Expert
- **Context – A: Master course curriculum  
B: Contract with five workers  
C: European project Minerva**

# WP3 - Elearning

- Learning Objects evaluated externally by experts in project E3 – Enhanced Engineering Education
- #1 - Interactive tool for Foremen (B and C)
- #2 – Webct and Ebook with portal (Luvit) for Engineers (A and B)
- CDRom - #1
- CDRom and portal with access for updates - #2

# WP3 – Elearning 1

## Evaluation Expert

- ‘This Learning Object addresses the issue of safety on construction sites. It illustrates the **risks and hazards** present on construction sites; it also includes safety precautions measures, safety checks and First Aid procedures.’
- ‘recognize hazardous procedures
- understand the importance of **precautionary** measures
- identify **protective** equipment
- **correctly** apply precautionary measures’



# WP3 – Elearning 1

## Evaluation Expert (cont.)

- Each of these modules comprise a series of pages containing animated pictures, text and spoken commentary. Within the modules, the pages can be followed in sequence. There is a facility on each page to **progress** to the next page, to go back to the previous page or to go to the main menu.
- Where graphics are used they are well designed and catch the **attention** of the learner.

# WP3 – Elearning 1

## Evaluation Expert (cont.)

- Navigation around the modules is **intuitive and easy**. There is no indication as to any sequence that should be followed and the student is free to move to any one of the nine modules at any time.
- There is also a variation in the approach adopted in the different modules. Whereas some contain **interactivity** and **graphical** illustrations, others contain only minimal graphics and a text that is replicated in **audio**.

# WP3 – Elearning 1

## Evaluation Expert (cont.)

- The development of this learning object is a good first step to the production of a commercially viable **blended** learning programme for induction of new employees into the construction industry and points a way for **similar** developments in other situations – for example manufacturing, catering, tourism and many others.

# WP3 – Elearning 1

## Evaluation Workers

- **Schedule** of access in accordance with sitework plan
- For use by all **relevant** workers
- **Replace** interactive drawings by **real scenes**
- Encouragement of **analysis** and comments by users
- Facilitate the **direct** application on site

# WP3 – Elearning 2

## Evaluation Engineers

- Decision Theory applied to Safety in Construction, importance of ICT applied to Safety in Construction and process of accidents investigation in Construction
- Formative action
- Use more legislation
- More details about legal responsibilities
- Interactive tool with useful interest

## WP3 – Elearning 2

### Evaluation Engineers (cont.)

- Useful to handle on site
- Little use of the portal for site managers
- Difficult to find how to get more information about highlighted subjects
- Important for designers, safety coordinators and site managers
- Allowed quick and exact answers to practical questions

# WP3 – Elearning 2

## Evaluation Students

- Pre-test, learning and pos-test

	Efficiency	Effectiveness
Educational	22/46	21/46
Structural	12/32	4/12
Technical	16/34	7/10
Logistical	10/22	--

# WP3 – Elearning 2

## Evaluation Students (cont.)

- Concentration of information
- Easy access
- Better organization
- Comfortable
- Use of portal and contact with teacher
- Additional information
- Simulations and animations





# WP3 – Elearning 2

## Evaluation Students (cont.)



- **Slow access**
- Unattractive design
- **Mandatory use of computer**
- Not very dynamic
- **Reduced subjects**
- Difficult to navigate

# WP3 – Elearning Conclusions

- **Modify design**
- Develop interface
- **Include real cases**
- Improve navigation
- **Concentrate on access**
- Negotiate contents
- Improve portal

# FACILE

## Learning Styles

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# What is learning design?

Shift of focus from  
content to activity

LD is a means of describing learning activities

Formally representing  
(and thus reusing)  
learning sequences

Provides a way of representing learning activities  
so that they can be shared between tutors  
and designers and a scaffold to the process of  
creating new learning activities

# The best approach?

There isn't one! Everyone is different!

Learning outcomes:  
What do you want the students to achieve?

Tasks:  
What do you want the students to do?

Tools:  
What tools do you want to use?

Problem:  
What specific problem do you want to address?

Pedagogy:  
What pedagogical principles do you want to emphasize?

Assessment:  
What do you want to assess and how?

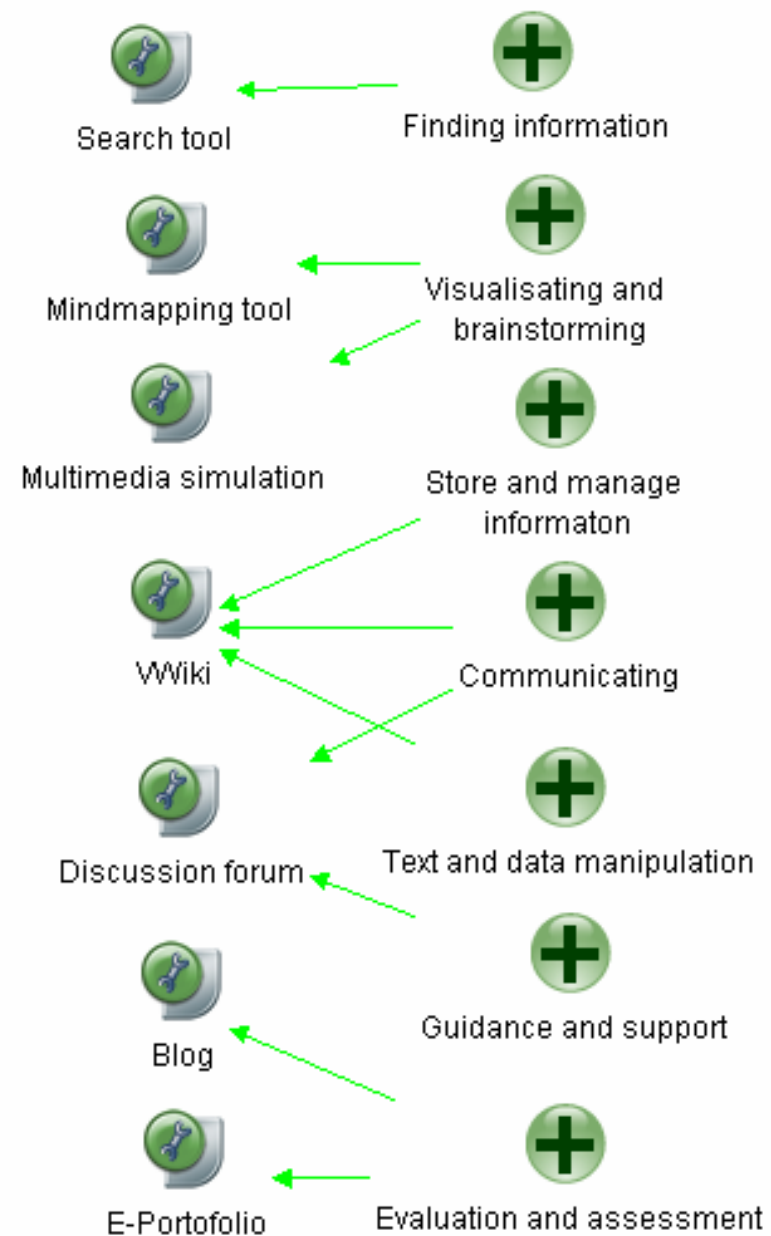
Resources:  
What resources do you want to use?

# Types of tools

*What are the main functions of different tools?*

*What are their pros and cons?*

Graine Conole – FEUP – Mar07



# Resources

- **Media Advisor** -  
[http://www.londonmet.ac.uk/ltri/demos/media\\_adviser\\_files/media\\_adviser.htm](http://www.londonmet.ac.uk/ltri/demos/media_adviser_files/media_adviser.htm)
- **E3AN project – e-assessment for Engineering** -  
<http://www.e3an.ac.uk/>
- **LTSN Subject Centre for Engineering** -  
<http://www.engsc.ac.uk/>
- **JISC effective practice guides (all as free pdfs)**
  - Effective practice with e-learning  
<http://www.elearning.ac.uk/effprac/>
  - Case studies of innovation <http://www.elearning.ac.uk/innoprac/>
- **Evaluation** <http://www-jime.open.ac.uk/2002/8>
- <http://www.nosignificantdifference.org/>

# Tertiary Education

Gerontagogy – it is for older people what pedagogy is for children

<http://www.uni-ulm.de/LiLL/Neues/E/index.htm>

<http://www.lifelonglearning.co.uk/older/index.htm>

<http://www.uni-ulm.de/uni/fak/zawiw/seminare/en>



# Simulation

Second Life

Synchronous

Real Time

All Scenarios

Unexplored

Repetitive

Thank You

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