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Designing an interactive e-learning course, which focuses on the autonomous learner and the multimodal learner within art and design.

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‘ A warm welcome to

**Designing an interactive  
e-learning course, which  
focuses on the autonomous  
learner and the multimodal  
learner within art and design.’**

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Marcia de Freitas MA research student

The School of Art and Design

Nottingham Trent University 2005

## Introduction

This project aimed to establish a range of principles and synthesised theories that investigate the effective use of interactive e-learning within art and design.

It manifested itself in the design and prototype production of a 'generic' interactive web-based e-course.

The specific subject of this e-course was 'an introduction to interactive media.'

This resource can be utilised by any student or staff wishing to work in this area. However, it was initially designed for art and design students.

## What, why, how, and so what?

We wanted to create something that places itself independently from the respective module curricula.

The project acknowledges that within an art and design environment students predominantly learn through the activity of 'doing and play', kinaesthetic learning. We also wanted to encourage the autonomous learner.

It also acknowledges that when designing appropriate e-learning material we need to research into how students learn and also how this aids the development of the student as the autonomous learner. The work will be piloted internationally in collaboration with three art and design institutes Malaysia, South Africa and South Korea.

## What, why, how, and so what?

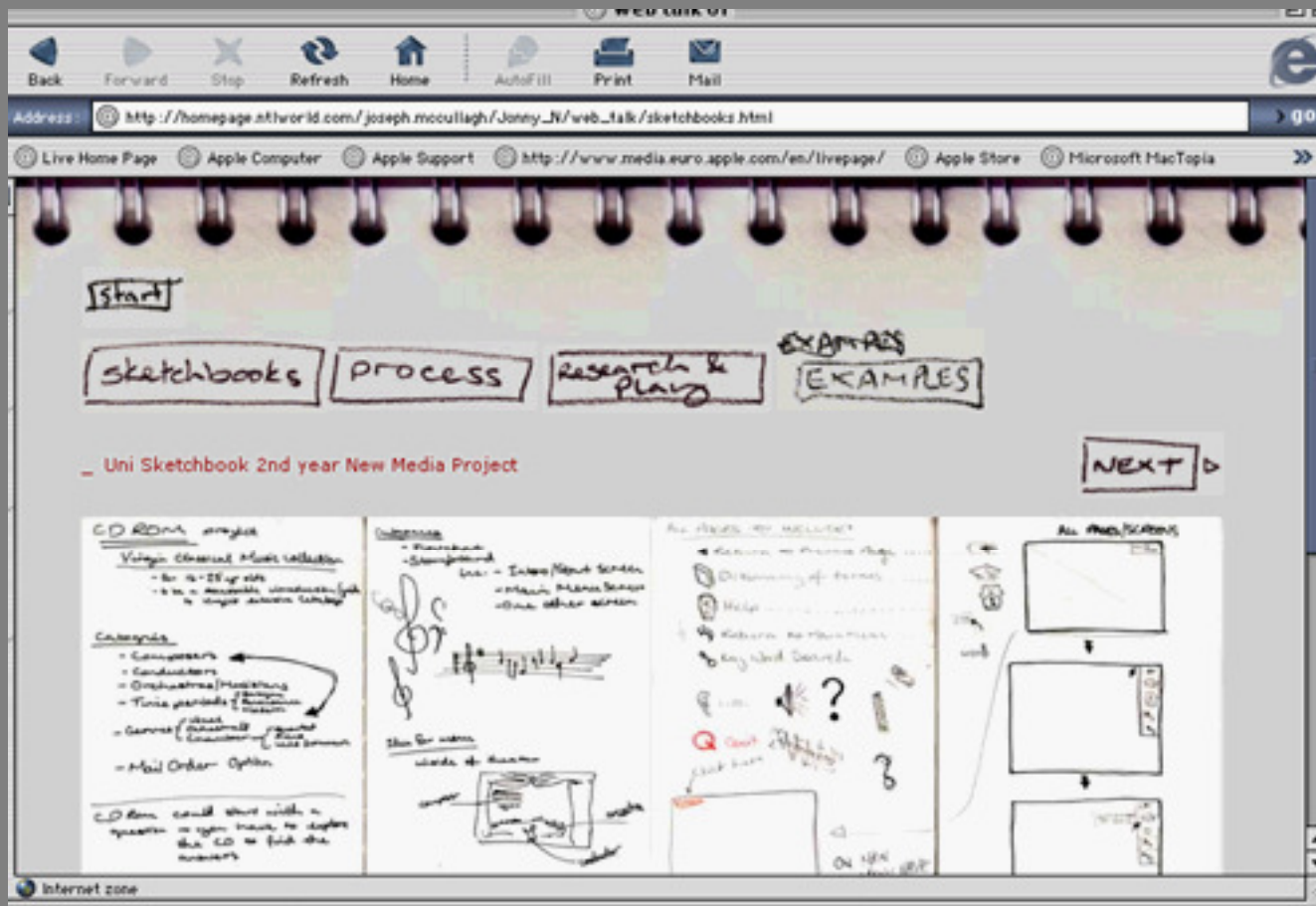
This project originated in a new initiative in the School of Art and Design at Nottingham Trent University whereby an MA research student developed the project in collaboration with an academic staff member. We built on the experiences of e-learning established by these two key members. It acknowledges the experiences of pedagogic art and design research already developed in the school, which explored methodologies for learning, teaching and assessment and learning to learn.

## What, why, how, and so what?

It takes a proactive collaborative approach whereby we worked with relevant staff technical; administrative; academic. Both specialist and non-specialist to realise the project.

This project also comes out of the pie foundation. An initiative that sets out to *provide interactive experiences and education for students and staff*. The foundation was established to develop autonomous learners within teaching and learning.

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[return to the top](#)

**Initial identity origination**  
please click link to view

INTERACTIVE CASE STUDY  
(a website for a small garden design)

## What, why, how, and so what?

### Simple question:

How could we use elearning and what would be appropriate to foster the autonomous learner and learning by doing?

Guiding theories included:

***Most important things cannot be taught but must be discovered and appropriate for oneself.***

Schon, D. 1987. Educating the reflective practitioner. San Francisco: London: Jossey-Bass, p92.



# What, why, how, and so what?

*To do is to be*

Rousseau

(some say Voltaire)

Fletcher, A. 2001. The art of looking sideways. London: Phaidon Press, p34.

*To be is to do*

Sartre

Fletcher, A. 2001. The art of looking sideways. London: Phaidon Press, p34.

# What, why, how, and so what?

*Do be do be do!*

Frank Sinatra

Fletcher, A. 2001. The art of looking sideways. London: Phaidon Press, p34.

## **What, why, how, and so what?**

***Procedural knowledge (knowledge how) is impossible to write down and difficult to teach. It is best taught by demonstration and best learned through practice. Even the best teachers cannot usually describe what they are doing. This kind of knowledge is largely subconscious.***

Norman, D.1998. The design of everyday things. New York: Doubleday, p58.

***The main characteristic of autonomy as an approach to learning is that students take some significant responsibility for their own learning over and above responding to instruction.***

Boud, D. 1981. Developing student autonomy. Kogan Page, p23.

## **What, why, how, and so what?**

With this in mind the emphasis on this project is on how it is possible to create a 'designed' environment that can provide means to develop these characteristics in students.

and that

students should take significant responsibility for their own learning.

## What, why, how, and so what?

You may think that I have forgotten the 'so what' bit.

*fish are the last ones to recognise water.*

Fletcher, A. 2001. The art of looking sideways. London: Phaidon Press, p104.

## **What, why, how, and so what?**

As a recent colleague commented, 'elearning is here to stay!'

We need to start to recognise its potential now.

As he pointed out 'it was not that long ago that we used memo's for institutional communication.'

## Meaningful relationships

So, what is the relation between technology and learning; can technology enhance meaningful learning?

We wanted to develop our theories so we constructed/integrated pedagogic and design frameworks and in doing so developed the learning strategy. Bearing in mind:

***‘Learners need confidence in assessing their own performance and thus in becoming more self-directed in their learning.’***

Lewis, R. 1990. How to write flexible learning materials. NCET, p17.

## Meaningful relationships

By combining pedagogic and design frameworks utilising appropriate electronic 'polymedia' approaches we can attempt to construct the 'interspace'<sup>©</sup> of learning. The learning interspace in this context sets up a hidden conceptual learning environment, encouraging the student to develop initiative and learning independence. The interspace is self-directive, metacognitive, self-taught, it relies on the student to develop their own self-assessment skills and confidence by becoming responsible judges for their own learning. Digital technology can aid this process. We synthesised this into the formula:

**pedagogic+design+polymedia=interspace.**



## Meaningful relationships

The research highlights that effective elearning design needs to recognise that pedagogic and design frameworks should be intrinsically linked and integrated. In this context, if appropriately developed the media can be the message. The structure and design specification of the e-course is designed to test and develop pedagogic approaches within the elearning environment together with accommodating multimodal learning styles specifically for the kinaesthetic learner.

## Meaningful relationships

The research also addressed the need to reference other theories. We are concerned with the mixing, remixing, interweaving of theory and practice in e-learning.

the autonomous learner (Boud/Schon)

learning styles (Fleming)

multimodal learning (kinaesthetic)

metacognition (Flavell)

mnemonics

motivation factors for learning (Maslow)

a 'constructivist' approach was taken

cognitive processes for learning before technology

processes

Bloom's Taxonomy of learning applied to a technological taxonomy (more on that one later)

## Meaningful relationships

We developed a 'polymedia' approach. Our formula being:

Pedagogic+design+polymedia=interspace

## PEDAGOGIC

Autonomous learner  
Learning styles—Kinaesthetic  
Multimodal learners  
Meta-cognition (Flavell, Brown)  
Motivation factors  
Mnemonics

## DESIGN

Creation of an e-journal to be shared by others  
Learning paths/sequences to define your own learning journey  
Find out your learning style  
Learn at own pace

Responding to audio  
Viewing quicktime of case studies such as an interview with new media designers  
Multiple choice: text, image and audio choices

Image driven design  
Utilising gaming approaches for interaction  
Animated interactive illustrations  
An online practical project to put ideas into practice  
Task based  
Show and tell techniques  
Comparing and contrasting

Linking into real life blended learning  
Illustrated simulations of the interactive design process  
Comments/opinions by online tutor

Resource guide: A-Z names of people working in this area for reference  
A-Z Glossary of terms

The site to be left to have a life  
Progress return to where you left off; find where you are what have been completed in the site  
No time limit own pace and time

e-activities:  
Interactive games  
Quizzes/Questions  
Role play  
Simulations  
Link into discussion forum, questions inbuilt on course set by tutor  
Mail to a friend

Connected to vlp  
Guided discovery/Help/Schedule for learning  
Word search  
Download and print

## POLYMEDIA

A polymedia approach (combining more than one media where ideas and concepts are interwoven within educational approaches). This nurtures the interspace.

## INTERSPACE

PEDAGOGIC + DESIGN + POLYMEDIA = INTERSPACE  
By developing pedagogic and design frameworks together alongside appropriate electronic 'polymedia' media we can create the interspace. The interspace sets up a 'hidden curriculum', an environment that will encourage you to develop initiative and learning independence. We are concerned with the mixing/remixing, interweaving of theory and practice in learning.

## THE PEDAGOGIC AND DESIGN FRAMEWORKS

PEDAGOGIC + DESIGN + POLYMEDIA = INTERSPACE

# Synthesising the design and learning specifications

## Design/Production process

research

specification (instructional design)

design (interactivity design/usability/graphic design issues)

editing

production

# Synthesising the design and learning specifications

## Learning specifications

definition of need

target population

benchmarks

aims of the course

indicative content

description of performance and evaluation criteria

description of assessment methods and criteria

description of constraints and requirements

learning objectives

support structure and learning methods

# Synthesising the design and learning specifications

Developing the prototype.

# Splash screen



ecourse introduction to  
**INTERACTIVE MEDIA**

**Why** should I do this ecourse?

LOGIN

PASSWORD  OK

Please **register** to enter the ecourse.

To do this course your browser will need to have **Flash Player** installed. If you can see the moving images above your browser already has Flash Player installed. Mac users will also need **Quicktime Player** installed.

  
**The P.I.E. Foundation**  
Providing Interactive Education



# Introduction screen

The screenshot shows an ecourse introduction screen. At the top, it says "ecourse introduction to INTERACTIVE MEDIA" with a navigation bar containing numbers 1 through 9. Below this, it states "The ecourse consists of:" followed by four items in dashed boxes: "a schedule", "6 classes", "a project", and "an ejournal". A paragraph of text describes a project called "Rereading the city". At the bottom, there is a red navigation bar with "INTRODUCTION" and "[ show menu ]", and a grey bar with "CLASS" and numbers 1 through 6, along with left and right arrow buttons.

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9

The ecourse consists of:

- \* a schedule
- \* 6 classes
- \* a project
- \* an ejournal

A project has been devised for you to work on which directly engages your learning to your our own lives: **'Rereading the city'**. This project can be used to test out your learning and enable you to interact on and off the screen. Please make sure that you read the project brief before you start the classes. It is available on the main menu.

**INTRODUCTION** [ show menu ]

CLASS 1 2 3 4 5 6 < >

# Help screen

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9

## HELP

The navigation bar is located in the bottom of the screen. It consists of a class menu, which takes you straight into the class you select; and a main menu, which has the links to introduction, the project brief, the schedule, the ejournal, help, PIE and logout. To see the main menu click on "show menu".

**\* "I don't know what to do!"**

If you need any technical help on how to use this ecourse, there is further information in the help page. You can get there by simply clicking on "help" in the main menu.

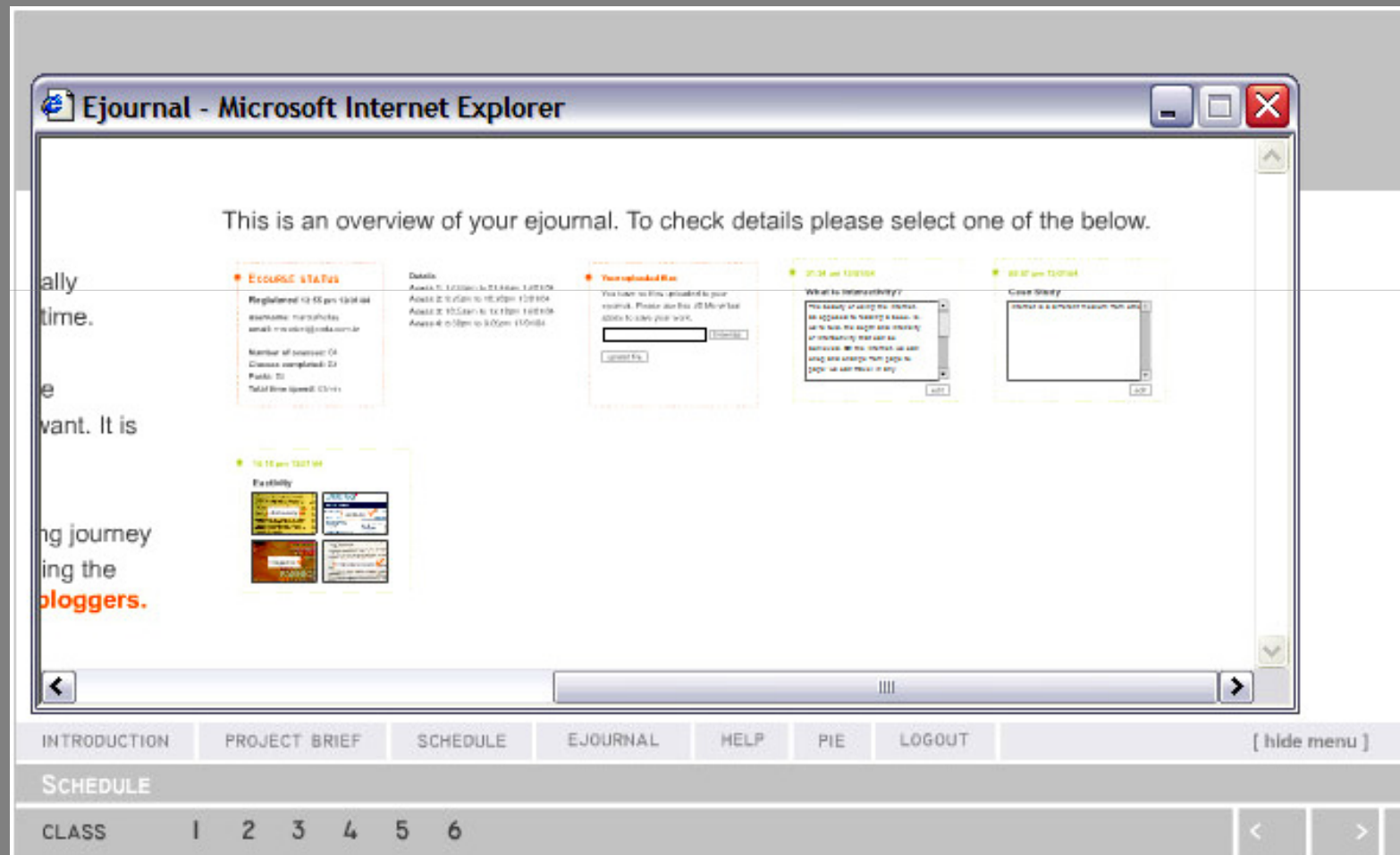
If you wish to see the help page now, you can do so by clicking [here](#).

INTRODUCTION PROJECT BRIEF SCHEDULE EJOURNAL HELP PIE LOGOUT [hide menu]

**INTRODUCTION**

CLASS 1 2 3 4 5 6 < >

# E-journal screen



# 'Class 1' screen

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

## CLASS 1

**Internet history overview and interactive structures**



- \* **Main topics**
  - **eactivity**: what is interactivity?,
  - **comment**,
  - **a brief history of the internet**,
  - **case study**: internet as a different medium from other forms of media,
  - **eactivity**: structures on the web,
  - **check your learning**.

*To start this class please click in the advance button on the menu below.*

**Internet history overview and interactive structures** [ show menu ]

CLASS 1 2 3 4 5 6 < >

# Class screen example

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

What are your initial responses to this short film clip? If we consider 'interactivity' how does interactivity manifest itself in the film clip?

*Click on 'save' to send this to your ejournal.  
You will be able to access it any time from the main menu ejournal link.*

Color Chart

Pr Yellow 100 101  
Pr Magenta 102  
Pr Cyan

# 'E-activity' screen example from class 1

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

## EACTIVITY

Drag and drop the words to match the media with the respective image.

dictionary     magazine

website     literature book

Click on check! to get the answers.



# 'Schedule' example

ecourse introduction to  
**INTERACTIVE MEDIA**

## SCHEDULE

CLASSES

1	2	3	4	5	6
■	■	■	■	■	■

Select one of the classes to find out more.

STATUS

		■ class not taken
		■ class in progress
		■ class finished

Please use this online 'smart' schedule to organise your learning. **It tracks your progress** highlighting which parts of the ecourse you have accomplished.

It will automatically save your current status before you logout so that the next time you login you will be able to catch up from where you left.

INTRODUCTION PROJECT BRIEF SCHEDULE EJOURNAL HELP PIE LOGOUT [ hide menu ]

SCHEDULE


CLASS	1	2	3	4	5	6	<	>
-------	---	---	---	---	---	---	---	---

# ‘Comment’ screen example from class 1

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

Interactive media is the combination of a whole host of everyday communication elements:

*Sound, text and image.*



Media such as books, radio and television, has previously delivered all of these.

**Now, you are in a powerful position to combine these elements in a single source.**

The exciting aspect is how you combine and communicate with this media to deliver new ways of communicating.

Internet history overview and interactive structures [ show menu ]

CLASS 1 2 3 4 5 6 < >



# ‘Comment’ screen example from class 1

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13


## BRIEF HISTORY OF THE WEB

1930's 1940's 1950's \*1960's 1970's 1980's 1990's 2000's

**1960's** 1 2 3 4 5 6

Throughout the 1960s and 1970s Douglas Englebart developed an elaborate hypermedia groupware system called NLS (oNLine System) to facilitate digital libraries and storage and retrieval of electronic documents

using hypertext. This was the first successful implementation of hypertext. NLS used a new device to facilitate computer interaction...the mouse.



Internet history overview and interactive structures [ show menu ]

CLASS 1 2 3 4 5 6 < >

# ‘Case study’ screen example from class 1

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

## CASE STUDY

Check the issues you consider relevant.

Ask yourself the question **why is the internet different from other forms of media?** Surf on the internet and select two sites that you feel exemplify this difference. Save print screens of both and list down your findings.

Click on 'upload' to send the files to the ejournal.

- Narration
- Interactivity
- Empowerment
- Presentation of information
- Readability
- Mappings
- Hypertext
- Structure
- Visual experience

Click on 'save' to send this to your ejournal.

Internet history overview and interactive structures [ show menu ]

CLASS 1 2 3 4 5 6 < >

# ‘Check your learning’ screen example

The screenshot shows a web page for a course titled "ecourse introduction to INTERACTIVE MEDIA". The page is divided into sections for navigation, a main heading, instructional text, a list of reflection questions, and a footer with a progress indicator and navigation buttons.

ecourse introduction to  
**INTERACTIVE MEDIA** 1 2 3 4 5 6 7 8 9 10 11 12 13

## CHECK YOUR LEARNING

Go back to the project brief.

**Now take some time to reflect on what you have learned and think about how you can apply it in your project.**

It might be a good idea to get a sketch book and start making notes. You can also save your findings/responses in the ejournal.

Here are some thoughts...

- \* How interactive do you want your project to be?
- \* What kinds of interaction can you use?
- \* Start collecting text, sound and images related to your theme and upload them into your ejournal.
- \* How can you combine these elements?

*After you have done that, you will be ready to start the next class!*

Internet history overview and interactive structures [ show menu ]

CLASS 1 2 3 4 5 6 < >

## **Breaking evaluations/theories**

A qualitative research methodology approach was taken combined utilising focus groups, questionnaire and user-testing methods to fully evaluate the processes. The project is currently being disseminated at conferences and workshops.

## Breaking evaluations/theories

In the latter stages of the project breaking theories emerged. The work of Jonassen (see <http://education.ed.pacificu.edu/aacu/workshop/reconcept2B.html>) refers to Bloom's (1956) cognitive taxonomy, however, in this instance incorporating it into a 'technological' taxonomy. He relates Bloom's cognitive processing with technological processes. On reflection we were also attempting to map these principles into the e-course in establishing a 'technological' learning taxonomy.

## **Breaking evaluations/theories**

The work of Jonassen reflects that a technological taxonomy should: allow for the storage or display of information; foster exploration of materials and ideas; enable the application of understanding; organize materials or ideas to foster analysis; support evaluation and problem-solving and facilitate constructing or designing projects.

For the e-course to be effective we felt that it must incorporate this taxonomy into its design and content.

## Breaking evaluations/theories

Through evaluative focus groups it became apparent that users also require various levels of information to sustain their interest and motivation in the e-course. The user wanted the capability to exercise their own ego ensuring their ownership of learning.

By mapping this onto Maslow's (1970) 'hierarchy for motivation' we encounter a further necessary addition to an elearn taxonomy.

## Breaking evaluations/theories

Ranging from 'coping information' to the 'level of transcendence' Norwood

(<http://www.deepermind.com/20maslow.htm>) proposes that Maslow's hierarchy can be used to describe the kinds of information that individual's seek at different levels.

Therefore, our research highlights the need for the e-course to also develop a taxonomy of information levels into its design and content.



## Evaluations

In answering the question at an evaluative focus group. How about elearning generally in the future. What kind of form do you think it will take?

***Massive! I think it definitely is an investment for the student's future.***

***I think because of space/pace and time a lot of classes in the future will become 'elearn' based.***

***I hope it will take a more playful form. It has to be more interesting than a lecture or a book for a student to choose it.***

***I think it will be very popular in the future.***

## Conclusions

When designing e-learning environments and experiences we must be careful to collate relevant theories to aid interactive stimulating active learning experiences. The research for this project developed and established a range of possible working principles and synthesized theories that investigate the effective use of interactive e-learning within an art and design context. The next stage will be to establish an 'e-learn theoretical working taxonomy' and to practically realise this within learning environments. The research also stresses that technology should be at the service of learning and the role of technology is to support our cognitive and meta cognitive processes.

**many thanks**

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