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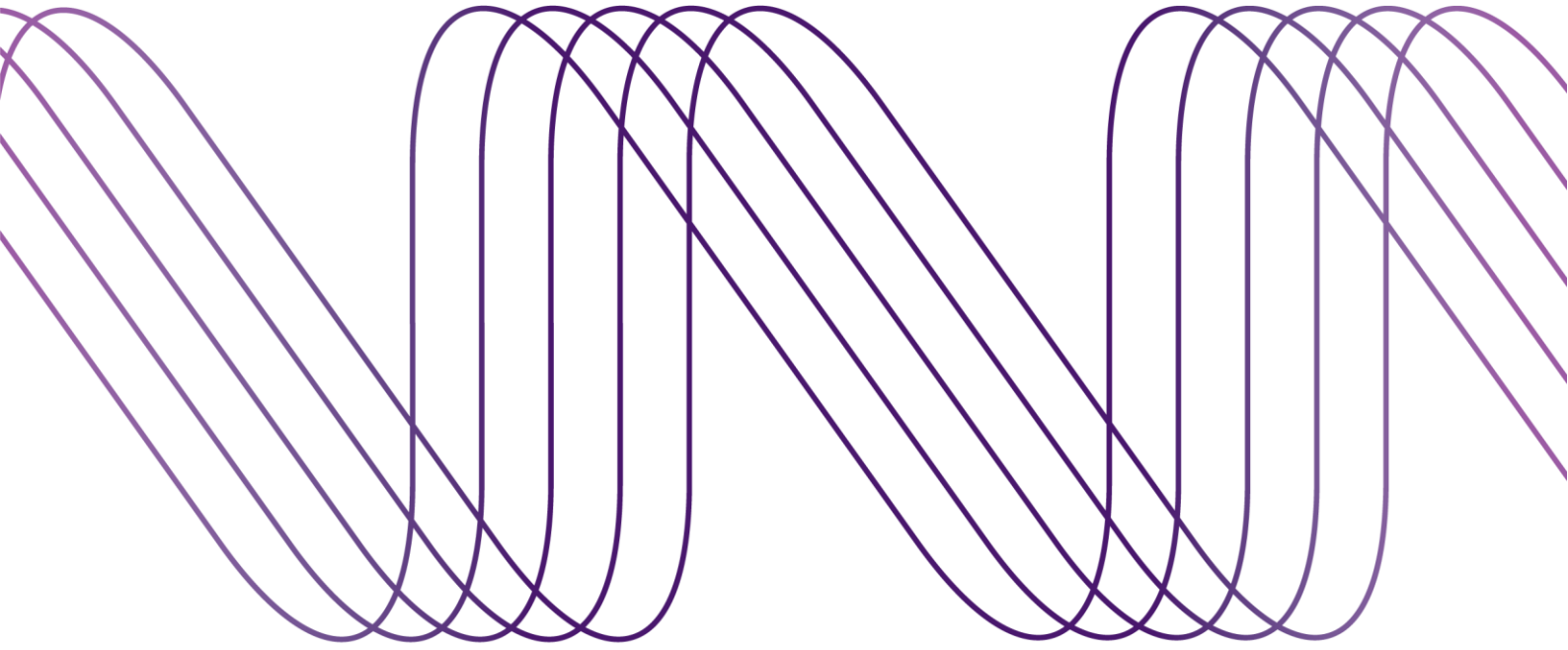
JISC netskills

An Introduction to Instructional Design for eLearning

Pre-workshop information



Introduction

This course has been developed in response to requests for a workshop on practical but educationally sound approaches to instructional design (ID) for elearning. This booklet is the first part of the workshop and aims to provide useful background material to the workshop and ensuring that the face-to-face activities follow on from these resources and meet your needs.

You should receive this booklet a week before the workshop – please read through and make any useful notes in the spaces provided.

Pre-Workshop Online Discussion

All workshop attendees are invited to join a webinar discussion, using Elluminate.

The online discussion will address your questions, ensure you are comfortable with the agenda and I will respond to any requests for specific workshop content.

System requirements for online discussion:

Java

- Elluminate requires Java, check you have the correct settings installed on your PC/laptop here:

  http://www.elluminate.com/support/index.jsp
- If you don't have the necessary Java requirements this page will assist you in installing them.

Additional Equipment:

- Headphones with a built-in microphone.
- Please do not use built-in PC/Laptop speakers or microphones.

Date of online discussion: Thursday 10th March
Time of online discussion: 1.30pm-2pm (access the session from 1pm)
Click this link to join the online discussion: **http://tinyurl.com/6xqu9e3**
Please sign in with your first name & surname

Workshop Aims and Objectives

The aim of this workshop is to provide attendees with a sound, practical structure for producing high quality elearning material; the workshop will be based on robust educational thinking but will feature hands-on activities which will enable attendees to discuss, experiment with, and present their elearning materials.

The specific objectives of the workshop include:

- Develop skills to develop and implement effective elearning processes
- Provide attendees with tools and approaches to design effective elearning materials
- Develop strategic approaches to meeting learner needs with appropriately designed and engaging elearning
- Share experiences of instructional design with peers

Notes

So what is Instructional Design?

According to Wikipedia, it:

"…..consists broadly of determining the current state and needs of the learner, defining the end goal of instruction, and creating some "intervention" to assist in the transition….There are many instructional design models but many are based on the ADDIE model with the phases analysis, design, development, implementation, and evaluation."

Sounds fairly obvious doesn't it? We find out where learners are, find out where they want to be and come up with a plan that helps them on their way.

Most Instructional Design (or ISD) is based on training methods developed by the US military in WW2 when faced with issues of training huge numbers of people in fairly complex tasks – training was broken down into separate tasks with specific learning goals – repetition and feedback was essential. After the war this model found its way into business and industrial training – this approach encapsulates the 'behaviourist' approach to learning.

After the war, a team lead by the educational psychologist, Benjamin Bloom came up with taxonomies of learning which he grouped into 'domains', these suggested a different approach to learning and include:

- The cognitive domain - what we know
- The psychomotor domain – what we do
- The affective domain - what we feel

These domains are still highly influential in the design of instruction – we will return to them later on, but over the years as numerous educational theories have emerged, Bloom's Taxonomy is still regarded as one of the most stable and reliable structures to build learning processes upon.

Recent developments in ISD have been focused on digital approaches – there are a number of theories that have emerged that suggest that elearning offers fresh opportunities for ISD – these include information- processing approaches and cognitive load theories. Many of these are centred around the presentation of media rather than learning – for example, there has been much debate around the amount of text that should be presented in-screen, or how text should be broken up into useful 'chunks'.

Notes

Some Current Trends in ISD

Rapid Prototyping

The most significant recent development in ISD has been the emergence of 'rapid prototyping'. Rapid prototyping has become very popular because it suggests that although a needs analysis should be carried out, the ID can then proceed directly to build through selecting an appropriate template – i.e. without storyboarding or structuring the learning 'journey'. The temptation is often to carry out a fairly cursory analysis and proceed to course building: the phenomenon of attractive 'clever' courses with low quality learning derives from many 'rapid' courses. No amount of graphic design can overcome instructional inadequacy.

Supporters of the rapid prototyping approach suggest that through this process, the verification of the various design documents saves time and money by catching issues and problem while they are still easy to correct. This is not a new approach to the instructional design and appears in many other design-type fields including software design, transport planning, product development, message design, user experience design, etc. etc.

Action-based Approaches

Interestingly, whilst the education sector in the UK has been re-visiting approaches to training needs, similar trends have been identified in the commercial sector and Cathy Moore has become one of the main proponents of action-based approaches to designing e-learning.

Her main criticism of most elearning is that it tends to be content-driven – although a learning objective might seem reasonable, most course designers then surround this objective with content – Cathy's suggestion is to re-focus the original question into more of a process.

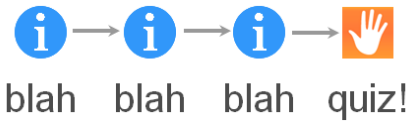
So, rather than:

- What is the goal?
- What content do we need the learner to know to achieve the goal?

She suggests that our questions should be:

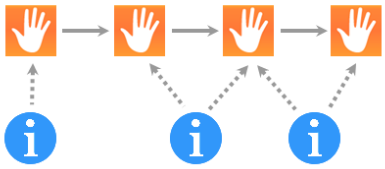
- What is the measurable goal?
- What do our learners need to do to achieve that goal?
- Which practice activities will help the learner?
- What information is needed to support the activity

So:



= disaster

Whilst:



= success!

Where  = content/information..and  = activity

Recent Surveys of E-learning

A recent (2010) survey of 2200 SMES in the UK, France, Germany and Spain came up with the following:

More than half of employees in Spain and the UK undertake self-study e-learning, with Spain leading the way (56%) and France some way behind (24%).

The UK leads the way in the use of tutored online learning (44%), with France not really interested (22%).

Of those employees who receive self-study e-learning, most of this is likely to be 'standard' tutorial modules, with a sizeable proportion also using video and a small minority using either serious games or mobile learning.

In the UK, on-the-job training is highly desired by 90% of employees, classroom by 89%, mentoring 86%, blended 83%, e-learning 81%, collaborative tools (blogs, forums and wikis) 67%, games 56%, multimedia resources (podcasts or mobile learning) 63%.

Traditional Instructional Design Models

ADDIE

The most popular approach to ISD and creating educational material is the ADDIE approach – the process describes:

Analysis:

- Discover any existing materials
- Define measurable organisational goals
- Conduct an instructional analysis:
    - Covers information/steps that learners need to know
    - Excludes information that learners already know
    - Exclude information that learners don't need to know
- Analyse learners and contexts
- Write learning objectives

Design:

- Plan the instructional strategy
    - How will course material be grouped and sequenced?
    - What instructional methods and tactics will be used to present material?
    - How will assessments measure a learner's success?
- Select the course format
    - Engage the participants
    - Explain the training goals
    - Present the material clearly
    - Allow the chance to practice skills
- Write the instructional design document
    - Describe the overall learning approach
    - Identify instructional media choices
    - Cluster and sequence objectives
    - Describe course exercises, activities, and assessments

Development:

- Create a prototype – inc. storyboarding
- Develop the course materials
- Conduct a peer review
- Quality assure
- Editorial sign-off

Implementation:

- Negotiate with sponsor/client pilot sites, roll-out
- Establish timetable
- Set-up delivery system – e.g. LMS
- Schedule courses, enrol learners
- Notify learners and their supervisors about the course
- Select trainers and prepare them with a custom train-the-trainer
- Infra-structure: ensure all sites will have internet-ready computers

Evaluation:

- Do learners like the course?
- Do learners achieve the learning objectives at the end of the course?
- Do the learners change their behaviours in the workplace?
- Does the course help the organisation achieve its goals?

Most of the current instructional design models are variations of the ADDIE model and examples include:

Dick and Carey

The Systems Approach Model championed a systems view of instruction as opposed to viewing instruction as a sum of isolated parts. The model addresses instruction as an entire system, focusing on the interrelationship between context, content, learning and instruction. The components of their Systems Approach Model include:

- Identify Instructional Goal(s)
- Conduct Instructional Analysis
- Analyze Learners and Contexts
- Write Performance Objectives
- Develop Assessment Instruments
- Develop Instructional Strategy
- Develop and Select Instructional Materials
- Design and Conduct Formative Evaluation of Instruction
- Revise Instruction
- Design and Conduct Summative Evaluation

Instructional Development Learning System (IDLS)

The components of the IDLS Model are:

- Design a Task Analysis
- Develop Criterion Tests and Performance Measures
- Develop Interactive Instructional Materials
- Validate the Interactive Instructional Materials

ASSURE

Linked to Gagne/behaviourism....originates in old-style training/teaching programmes but still valid for some elearning approaches.

- Analyze learners: before you can begin, you must know your target audience (your students).
- State objectives: once you know your students, you can begin writing the objectives of your lesson. Objectives are the learning outcomes, that is, what will the student get out of the lesson.
- Select instructional methods, media, and materials. Once you know your students and have a clear idea of what they should get out of the lesson, then you are ready to select the Instructional method media and materials.
- Utilize media and materials
- Require learner participation - students learn best when they are actively involved in the learning
- Evaluate and revise: this last stage is often neglected but it is the most important one.

UVID

Understand; visualise; idealise; deliver (UVID).

Notes

ISD – An Alternative Approach

The approaches outlined above are very popular in the commercial environment, although as Cathy Moore points out, once the analysis is completed, there are still plenty of possible variations when it comes to the design phase. In Netskills e-learning courses Danny McAtominey has developed a similar approach to interpreting ADDIE:

Analysis:

- Key question: What kind of learning do we wish to foster?
- Key factors will include:
    - Learner autonomy: the need for direction
    - Learning approach: depth of engagement with learning
    - Delivery method: Foster desired learning approach
- Aligning learning
- Levels of learning

Design:

- Learning framework

ISD: A Case Study

The majority of instructional design models suggest planning processes based around:

- Needs analysis
- Objective setting
- Development of approaches to meet these objectives, mainly through content delivery
- Measurement of success

Although there are variations in these methods, the principles are fairly sound; however, a great deal of e-learning 'product' remains very content-driven and dependent on large amounts of text, with images and video used as page enhancers.

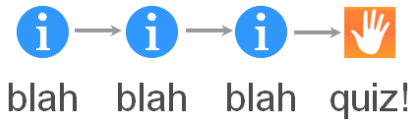
There are numerous examples of e-learning packages that suggest that they promote 'deep' levels of understanding – they may often be very attractive to look at but are in actual fact, poorly thought out.

A recent example that illustrates this point more clearly, featured online materials for post-graduate doctors in the field of cancer care in the UK. Considerable funds were directed at producing large numbers of elearning 'sessions' that aimed to support the learning of doctors in the 'specialty' training – i.e. they are three/four years into their career, have settled on a specific area of expertise and are building up experience. They are much in demand, hence training time is difficult to find and is more often than not carried out informally, 'on the job' under the supervision of a more experienced colleague. Assessment is by formal examination. The sponsor therefore suggested that small e-learning sessions (with formative assessment) that could be studied independently would help to fill in the 'gaps'.

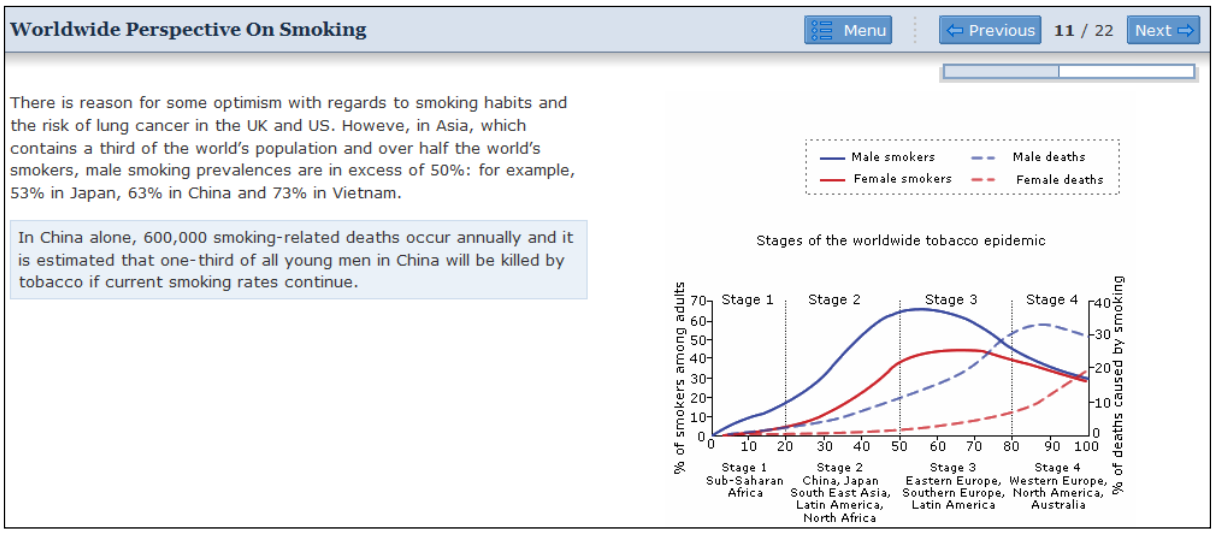
The existing syllabus covered a vast range of topics – highly specific 'background' subjects like the science of radiation or the statistical analysis of drug trials, to the more obvious areas such as diagnosing various cancers and deciding on treatment regimes. The curriculum was also very specific on its guiding principles – trainee cancer doctors should be expert on:

- Knowledge
- Skills
- Attitudes

The project team therefore conducted a needs analysis based on how current training occurred and developed an 'Educational Design' – it was never clear how cancer doctors actually learnt as not enough time was spent analysing the trainees, their work patterns, their innate experience, their skills and needs etc.. and how they treated the assessment – the sponsor had already decided on large numbers of short 'knowledge-based' sessions. The Learning Design (i.e. the instructional strategy) was therefore based on extracting content from the specialist subject matter experts (SMEs) and creating 'knowledge-based session with formative assessment, i.e.:



A typical example:



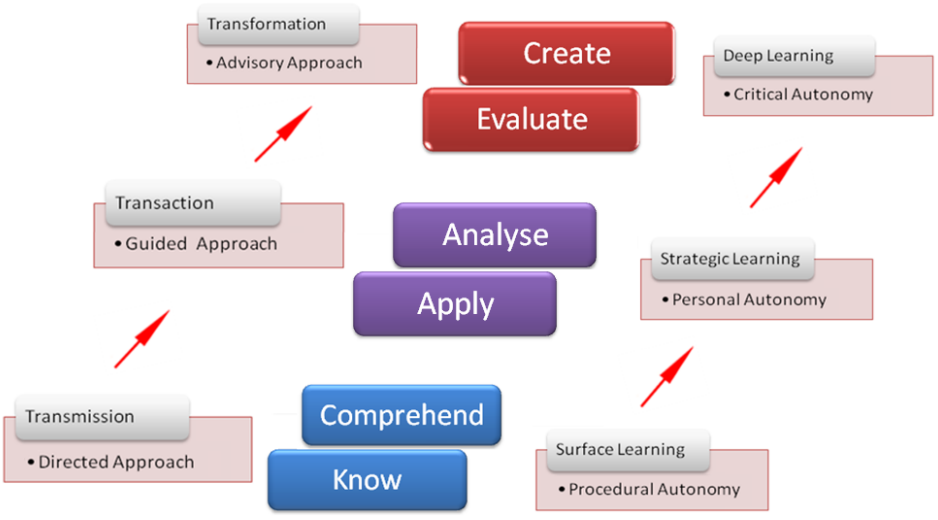
Considerable effort was put into using a variety of media including animation and video, but these often added very little to the text – the project therefore ended up creating an online resource bank. This was not inherently a problem if the needs analysis had indicated that 'flat' resources would meet the needs of the learners – to a certain extent it would assist them in passing the exam, but a major part of the material is in the public domain anyway – Wikipedia is an essential part of any doctor's armoury.....

The second phase of the project was driven more by the editorial feedback to this problem and aimed to address this issue by devising more problem-based 'real-world' approaches, for example, creating learning 'scenarios' where the learners is given clues about a patient and is asked to offer possible diagnoses. These proved far more successful, were actually easier to design and develop, although much more demanding in terms of media.

However, although the project was able to develop a better solution, discussion between IDs, authors and editors slowly revealed that the root issues of doctor training in the cancer field, is more complex. We can assume that the resource/knowledge required is available - although needs careful filtering and may be behind security – i.e. academic journals etc. Feedback also suggest that learners became far more engaged when confronted with problems that they recognise – they should not be idealised and should feature recognisable problems and issues ; learners are also far more engaged with on-screen problems that need solving and that may require additional research and discussion – for example, a patient may present with a problem but the content requires the learner to research recent findings on the problem and consult with peers to come up with the next step in the process.

All these issues are relatively simple to deliver – there are technical issues to consider but a process-driven approach is far more likely to less reliant on dense amounts of content and does not always need a sophisticated authoring tool to deliver.

The eventual resolution in this project was the discovery that the major issue that had escaped us (...in our defence the IDs are not experts in the subject matter, or the training methods of the medical community....) was the fact that junior doctors are not trained or encouraged to think and make decisions – too much training is around knowledge and not enough around the tougher parts of the job that make a real difference. Had we considered our taxonomy more fully we would have seen that the problem lay partly in promoting the use of independent 'knowledge acquisition' to high-level, highly autonomous learners:



Conclusions

We will explore many of the issue outlined above in the workshop – this booklet aims to cover the background to instructional design and ensure that attendees have thought about the preparation needed to produce exciting, engaging and relevant elearning materials.

Our face-to-face session will focus on the 'How?', but if we don't understand the 'Why?' then we are struggling – overall, we need a sound Educational Design to inform our Learning Design.

We'll leave the last word for now, to Cathy Moore: