Usability and e-learning
An epic white paper

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The need for usability in e-learning

‘Well designed objects are easy to interpret and understand. They contain visible clues to their operation. Poorly designed objects can be difficult and frustrating.’


What is usability?

This definition of usability given here by well-known usability expert, Donald Norman, can just as well be applied to e-learning as to any other designed object. In fact, it is highly relevant to the business of learning, as the essence of his point is that badly-designed objects make it harder for us to learn how to use them.

An object that enables us to interact easily with the functions it is designed to perform - whether it be a coffee pot, a mobile phone, or an online interface - makes itself invisible. We use it effortlessly. However, things that are difficult to use impose an extra ‘cognitive load’ that moves us away from the task we originally intended to accomplish - in this case, to learn.

Learners faced with a frustrating interface, or a counter-intuitive menu structure, are distracted from their learning experience. They shouldn’t have to waste time learning how to use the e-learning, when what they really want to do is learn how to fix a gas boiler, or put out a fire on an aeroplane. Viswanath Shankar (2007) believes that where e-learning programmes have a high drop out rate, a major contributor is poor usability.

The aim of the interface designer is to get the learner to focus entirely on the learning content and not be side-tracked into noticing or even thinking about the interface through which the learning content is
being delivered.

In this paper we argue for a learner-centric approach to be taken by e-learning content developers, which we believe will help accomplish this aim; significantly increasing the likelihood of their producing successful and highly usable programs.

**The cost of poor usability**

The cost of poor usability is high. It includes unsatisfied, ineffective learners and ineffective e-learning initiatives, which have direct business costs.

Learners who find an e-learning program hard to use might:

- Carry out tasks reluctantly
- Be confused about the learning exercise
- Fail to engage with the e-learning
- Possibly abandon the e-learning completely
- Fail to learn or retain knowledge

As a result of the above they might:

- Maintain a performance gap
- Not achieve their full potential
- Require increased support
- Need to retake assessments
- Have to repeat their training

Unhappy project sponsors might, with some justification, insist on a rework of the failing program – costs for which will be higher the further it is along its development path – or a rework and re-release if the failure is identified after the program has been put out. Such costs can be extremely high post-release!

**Return on investment in usability**

Usability will not cost you much to implement, yet the return on investment is potentially large. In return for some process changes on the part of your design team that shouldn’t cost more than the design process you currently use, you will find you have:

- More satisfied learners
• More effective learners
• Repeat business from project sponsors, who have received maximum value from their investment
• Lower learner support costs
• Increased learner productivity
• Lower training costs
• Fewer learner errors
• Increased brand value and market share

Many believe that improving usability will automatically increase the cost of your project. This is a myth. As a rule of thumb, Jakob Nielsen estimates that spending 10% of a project’s budget on usability increases usability by 135%. And the cost does not increase exponentially with the size of project - usability activities tend to be fairly standard in terms of time taken and cost, regardless of project size. In addition, the larger the audience, the greater the return, as the value of ease-of-use is multiplied by the number of users.

So much information, so little time…

The founding principles of user-centred design are simple, yet usability has become a difficult subject for many in the e-learning industry to understand due to the vast amount of information available. It can be equally confusing to seasoned e-learning designers, who often have trouble determining which of the usability theories to apply, or which features to cherry-pick.

There is a reason for this confusion. The interface design community is vibrant, vocal and high profile, but contains many equally vibrant characters – authors and self-styled ‘gurus’ – who all, frustratingly, claim to be the expert on usability. With so many egos and characters clashing and jostling for space in our minds and on our shelves, many of the key messages of usability get lost in the confusion.

Separating the wheat from the chaff is an onerous task. Of course, the newcomer to the subject would soon determine that there are several key names in the usability world – Nielsen,
Norman and Tognazzini would quickly be identified as authorities on the subject. But for every one of these high profile and established authors, there are dozens of lesser-known names.

In this White Paper, our key aim is to make sense of the wealth of confusing and conflicting information, and package it up into a useful and practical framework so that our clients can understand how usability principles can be applied in practice, and how successful usability can be measured.

Making e-learning work

E-learning has to work much harder than traditional learning to engage and retain the learner. In the classroom, content is ‘hidden’ behind the teacher who mediates the learning, whereas e-learning content is fully visible and has nowhere to hide; all its flaws are exposed, making it an easy target for detractors.

Content developers must take a two-pronged approach to ensuring that their e-learning works effectively, by branching the design process into two distinct areas - learning design and user interface design.

Following best practice learning design principles will help ensure engaging and stimulating learning content, which is a critical success factor for all e-learning initiatives. But even the best e-learning content is rendered useless by poor interface usability. (See Epic White Paper: ‘Use of media in e-learning’.)

By creating a user interface that is easy to navigate, though not irritating or hard to interact with, you will be focusing the learner’s attention on the learning itself and not on the method by which it is delivered. Therefore, the user interface design process is arguably just as important a part of the e-learning development process as the learning design, and failure to implement an effective user interface will cost the learning initiative dear.
This section explores best practice techniques that can be used to create a learner-centric interface design process. It is recommended that the techniques advocated in this paper are used in combination with each other, rather than as sole methods for gaining an understanding of the learner, which could give a skewed bias to your model of users’ behaviour.

Reducing the gulf between intended and actual use

There is a potential gulf between what the interface designer intends the learner to do and what the learner actually does when using the program. Donald Norman explores this idea in more depth. He points to three aspects of interface design:

- **The design model** - what the designer intends to deliver
- **The system image** - how it actually works on screen
- **The user’s model** - the user’s mental model of the program

The designer expects the design model and the user’s model to be identical, yet the two only interact through the system image - so if the system image doesn’t map onto the design model adequately, the result can be a wide gulf between intended and actual use, leading to poor usability.

In order to avoid this gulf, the interface designer must make efforts to ensure that the design model and the system image are a perfect fit.

In the wider software development world, best-
practice approaches have developed around the concept of user-centred design. This approach has been adapted, for the purposes of e-learning development, to become learner-centric interface design.

**Nielsen’s 10 usability heuristics**

The use of heuristics was introduced by Nielsen as an evaluative process, but good design has increasingly been attributed to the consideration of these principles early on in the design process.

Heuristics can be used at any point in this process as a checklist to ensure that the e-learning is meeting usability requirements. Often, designers and developers get so engrossed in issues such as the implementation of the technology, the demands of the client - and their own entrenched views of how the learner will interact with the e-learning – that their focus is taken away from best practice learner-centric design principles. The result is a working but barely usable e-learning program. Nielsen’s heuristics are a useful tool for reminding the designers of how the e-learning will be perceived by the learner:

1. **Visibility of system status:** The program should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2. **Match between program and the real world:** The program should speak the user’s language; employing words, phrases and concepts familiar to the user rather than system-oriented terms. It should follow real-world conventions, making information appear in a natural and logical order.

3. **User control and freedom:** Users often choose program functions by mistake and will need a clearly marked ‘emergency exit’ so they can leave the unwanted state without having to go through an extended dialogue. Support ‘undo’ and ‘redo’.
4. **Consistency and standards:** Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5. **Error prevention:** Even better than good error messaging is a careful design that prevents problems occurring in the first place.

6. **Recognition rather than recall:** Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. **Flexibility and efficiency of use:** Accelerators - unseen by the novice user - may often speed up the interaction for the expert user, so that the program can cater for both inexperienced and experienced users. Allow users to tailor frequent actions.

8. **Aesthetic and minimalist design:** Dialogues should not contain information which is irrelevant or rarely needed. Every unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9. **Help users recognise, diagnose, and recover from errors:** Error messages should be expressed in plain language (no codes), should precisely indicate the problem, and constructively suggest a solution.

10. **Help and documentation:** Even though it is better if the system can be used without, it might be necessary to provide help and documentation. This should list concrete steps to be completed and be easy to search, focused on the user's task and not too long.

Implementation considerations for e-learning programs, when such heuristics are applied, could include:

- Not having more than
seven items per screen

- Paying attention to proximity of graphics to text
- Having sensible menu ordering and length
- Limiting the depth of navigation to three levels
- Carefully considering design and positioning of icons
- Paying attention to acceptable use of windows and scrolling
- Not using frames
- Avoiding long download times

**Learning design heuristics**

As already mentioned, carried out in tandem with the interface design process should be a separate learning design process. This will be underpinned by psychological theory and based on core instructional models such as Schank’s Goal-Based Scenarios, Gagné’s Nine Steps of Instruction (shown below) or Epic’s Skills Accumulator.

**Gagné’s Nine Steps of Instruction**

1. **Gain attention**: Stimuli activate receptors
2. **Inform learners of objectives**: Creates level of expectation for learning
3. **Stimulate recall of prior learning**: Retrieval and activation of short-term memory
4. **Present the content**: Selective perception of content
5. **Provide ‘learning guidance’**: Semantic encoding for storage in long-term memory
6. **Elicit performance (practice)**: Response to questions to enhance encoding and verification
7. **Provide feedback**: Reinforcement and assessment of correct performance
8. **Assess performance**: Retrieval and reinforcement of content as final evaluation
9. Enhance retention and transfer to the job:
Retrieval and generalisation of learned skill to new situation

While these heuristics are focused on learning design rather than interface design, there is a clear crossover, in that both focus on the psychological experience of the user (or learner). In fact, the end result of successfully applying Gagné’s nine steps will always be a highly usable piece of e-learning content. This will feed into the interface design process, so that a specialist interface designer can make the appropriate interface design decisions in order to maximise the success of the learning design.

(For a more detailed discussion of Gagné and other instructional models, see Epic White Papers: ‘Learning design for e-learning’ or ‘A new learning model: the skills accumulator.’)

Design patterns

Increasingly within user interface design, heuristics and best practice guidelines are being applied to ‘patterns’ of interaction. These patterns are sets of pages, layouts and flows that describe a generic scenario and are based on ‘model’ interactions, designed according to best practice. This approach has its roots in modular software design methods and enables designers to use patterns as templates to build their designs. Epic has been applying design patterns to e-learning design for some years now, to ensure consistent application of best-practice usability design.

Case study: Cable & Wireless, Stages and Gates

The Stages and Gates project is an excellent example of how best practice design patterns for e-learning can be applied to a rich variety of material. During the design and requirements phase of the project, Epic designers worked imaginatively with Cable & Wireless to identify
the best patterns that could be used to support the learning objectives of the training. Once appropriate patterns were identified, content was scripted and art direction added, the e-learning was assembled and core navigation applied. The resulting high-quality learning is testament to the good working relationship between Epic and Cable & Wireless. It shows the benefits of taking a learner-centric approach to design, and illustrates how imaginatively applied patterns can provide successful e-learning.

In the majority of Epic’s projects, including educational websites, the use of patterns has proved a cost-effective and rapid method for design and development. Identifying and reusing a variety of patterns has provided stimulating content for website users and learners, as well as reduced production costs - without compromising best practice.
Usability in the project life cycle

Putting your learners first

In the past, software design projects have tended to focus on system requirements and technical wizardry, and have placed the needs of users near the bottom of the requirements list for system design. Over the years this failure to meet the requirements of the user has become a central concern - as time, effort and money have been wasted in the production of unusable systems. At times, the e-learning community has been equally guilty of neglecting the end user of their electronic training programs.

Taking a learner-centric approach to design emphasises the importance of the designer understanding how a given type of learner might experience and interact with a program. It places the learner’s requirements, and the learner’s model of how the design works, at the centre of the design process. A learner-centric approach is iterative. It benefits from the application of evaluation techniques and testing by real users, often using prototypes.

Usability analysis and requirements

The interface design process is a structured discipline and requires detailed analysis and requirements definition. A clear learner-centric methodology will put emphasis on the analysis of learners’ needs. It is this learner-centric process that is required if the e-learning is to be highly usable, as opposed to design-centric processes. The latter, where the designer is more concerned with image and presentation than with what the learner actually needs, tend to result in poor usability.
Getting to know your learners

The first stage of any learner-centric design process is to get to know your learners. This is a straightforward and relatively quick task which can provide real insight into learner needs.

Most e-learning will have a variety of user types. For example, an e-learning course might be used by administrators, tutors and learners. Each user type will exhibit characteristic behaviours depending on:

- Their experience of learning
- Their experience of e-learning
- Their personality and preferences
- The frequency with which they use the program
- Volition, i.e. whether their learning is mandatory or discretionary
- Their level of computer skills
- Their motivation for using the e-learning
- Their goals in using the e-learning
- Disabilities they might have
- Language difficulties they might have

A simple table can break down your learners into their types, and a subsequent set of characteristics for each type. Each user type will be refined into a ‘persona’, a process which we cover below.

Establishing the needs of the learner

Learner profiling with personas

Project sponsors often have a clear view of their audience and excellent knowledge of it. However, from the designer’s point of view, it would be dangerous to rely 100% on this source as the last word on user needs. The sponsor’s view of the user group is liable to be influenced by their own interpretations, concerns and prejudices, whether they are conscious of these or not, making this slightly second-hand information. Though it is an
informed view, it is unlikely to be a wholly objective one.

To combat this problem - and to complement traditional requirements-gathering techniques such as task analysis, user interviews, questionnaires and focus groups - profiling techniques can be used which model the motives, intentions and abilities of the target group. These user profiles are often called 'personas'.

Typically, learner profiling involves designers building a persona for each representative member of a set of target users using information gained both from the client and from sample users themselves. Personas work well if they are detailed enough to enable the designer to think of them as real people - so adding a picture, personality traits and details of background helps build this understanding of the target audience for the product.

It is important to realise that personas do not just model a single user from your target group. The intention is to create a persona for each of the of user groups that may use your e-learning program. These could include lecturer, student with no prior e-learning experience, student with e-learning experience, students with different levels of subject expertise, student with poor IT skills or student with learning difficulties.

As well as providing the designers with a context for their design, personas provide a useful evaluation tool; a measure by which it can be tested. For example, a persona can be used to model the different tasks a particular type of learner might need to perform, and their understanding of a program, at different stages of a walkthrough of the system. Of course, you need to ensure that you have access to individual users from each of the user groups for which you have created personas. This should be straightforward to organise, as the whole premise of the best-practice approaches detailed in this paper is that the designer works closely with learners in order to determine their requirements and evaluate
the interface designs.

The use of personas can provide a cost-effective way of adopting a learner-centric approach. They provide a focus for the whole project team, including the client and stakeholders, rather than just the designer. The entire team can buy into this process and the e-learning program is then designed and developed for the users encapsulated in the personas.

**Working for the NHS**

In this project, the designers of the e-learning program relied heavily on the use of personas to illustrate and test the user experience. The project involved the design and development of a complex program with multiple objectives, views and requirements, for a broad audience of learners.

At the requirements-gathering stage of the project, a learner was created called 'Javier Luciano'. His profile contained a photo, a summary of his current job within the organisation, his background and family status, details of how and when he would be accessing the learning, his experience of training and computers, and his preferred learning style. Another persona used by the design team was 'Jane Hughes', created as an Induction Trainer: for her, the program would have to fulfil a different set of criteria, and enable different tasks. Her profile had a similar structure to Javier’s, although it contained different information.

These and other personas were used within the design process, both to test the design and to communicate it - through a series of imaginary walkthroughs - to client stakeholders, developers, graphics and testing teams.

Using personas in this way benefited the resulting
design and facilitated the communication of the objectives of the program to the whole project team.

**Workplace user studies**

As well as consulting learners and modelling their understanding and behaviour, a learner-centric approach to design encourages designers to think about the situations and the context in which users will be accessing the e-learning. Whether the learner will be accessing their e-learning resources from a community portal, desktop, intranet or dedicated training suite will affect the way the user interacts with the system.

Some designers argue that the best way to capture this information about how potential learners access their learning is to observe users in their workplace environment. A more rigorous approach would be to send the designers into the workplace to work alongside target users to gain contextual understanding of the learners, their daily tasks and the situation in which they will be accessing e-learning.

**Getting to know the actions of your learners**

The analysis of user types and personas, and how they will use the e-learning program, informs the designer about the types of tasks they will need to perform. These tasks, or scenarios, will exercise every piece of functionality in the e-learning program. They can be used to drive interface design and prototyping, and will go on to form the basis for evaluating usability in user trials.

There are various techniques for modelling scenarios. One technique gaining in popularity in web-based design is the concept of use cases. A use case describes the sequence of events that an ‘actor’ (for example, the learner or tutor) takes to complete a process. This results in a visual model of the behaviour of the e-learning program which stops short of specifying how that behaviour is implemented, so is simple enough to present to the project sponsor(s) to ensure they understand the e-learning...
design. In addition, use cases form an excellent mechanism by which the developers can get to understand the needs of the users, and can further be used as a basis for testing the e-learning once it has been developed.

**Defining usability requirements**

Analysis of your users and the environment in which they will be accessing the learning will drive the definition of your usability requirements, although other factors will also be brought into play here. Your user analysis may have determined the need for certain implied requirements such as ease of use for non-computer literate learners, or strong retention so that piecemeal learners don’t have to keep referring to the help guide. But you may also be confronted with more explicit requirements from the project sponsor. For example, ‘Guidelines for UK Government Websites’ (2007) stipulates that a site must be available in English and Welsh, an explicit usability requirement that often applies to public sector e-learning programs.

All usability requirements should be both objective and measurable, so that the success of your design can be determined at a later stage. For example, the time taken to learn how to use an e-learning program, and the speed of performance, can be measured using task scenarios at user trials – while subjective learner satisfaction can be measured using attitude surveys.

So now you have got to know your learners, and have determined the actions of your users and their requirements, you can go on to draft the design.
Prototyping the design

The cheapest way to achieve good usability is by building a prototype. This can be done using cheap methods such as providing simple layouts on paper or using screen mockups in Visio or PowerPoint, or by fully-functional development prototypes that can either be thrown away or built upon. Your development process and experience will help determine at which stage you prototype – the important thing is whether you do it, not when you do it.

A prototype will iron out most usability issues early on in the development process. The ROI of prototyping becomes clear when one considers the fact that the cost of reworking is higher the further development has progressed.

A study by IBM found that errors found at prototype stage cost just a few pounds to fix, but that if the same errors remain undetected until after coding, they could cost thousands of pounds. By the time these errors reach the client they are likely to cost tens of thousands to fix - and will start to cost the client money. If serious errors are released in the final program, the developer’s entire project budget or profit can burned up, and the client face extremely high costs - with possible long-term damage to reputation and brand equity. In this case, ‘errors’ refers not just to functional errors or bugs, but to design problems: the cost comes with the rework cycle.

The prototype is a candidate for usability testing and the same process should be applied to usability testing at this stage as at any other. The big advantage of conducting such tests this early in development is the limiting of risk, which as we have seen can add up to a potentially huge saving!
Case study – National Learning Network

Epic conducted user trials at prototype stage on learning materials being developed for National Learning Network. The prototype trial consisted of learning objects from a series of modules. It was important to use actual learners in the user trials, so the exercise was carried out with students and lecturers at Great Yarmouth FE College. Two members of the project team were present throughout.

A number of sessions were run with the following criteria:

- Students viewed the materials in pairs
- Students were asked to vocalise their thought processes as they went through the materials
- Any areas of concern or problems were queried by the observer once the screen had been completed
- Where possible, the users were allowed to complete the learning object prior to being asked questions by the observer

The end result was a set of conclusions and recommendations that could be clearly grouped into four key areas:

- **Content**: this covered considerations like whether the time taken to complete screens had been estimated correctly, and whether more detailed learner feedback needed to be provided. It also established that some activities should be moved from the online learning object to the lecturer’s course notes, and reinforced the need for greater use of case studies
- **Layout and screen design**: this covered art direction issues such as text size, use of colour, design and
positioning of buttons and controls, use of a consistent style for learner feedback and use of bold for key learning points

- **Interactivity:** this ensured that the level of interactivity was appropriate for the target user groups

- **Functionality:** this covered the general functionality of the learning objects. A few key points that arose included the need for a reset button in questions, and changing the size of target areas for drag and drop interactions

**Reusability in learner-centric design**

Reusability can make a significant impact on the cost and time spent on developing an e-learning program. Reusability is most often thought about in the context of code reuse - which is obviously a prime candidate for reuse among multiple e-learning projects from a single development organisation. However, there are many other aspects of project documentation and assets that can be reused to save time and money.

In e-learning programs, designers will come across the same learner types time and time again, so these are a strong candidate for re-use. A template directory of learner types can be created for reuse in future work. Usability requirements are also a candidate for reuse, as these tend to be quite generic. Use cases are also fairly standard in e-learning as there are only so many ways a user can interact with e-learning. And since we tend to see the same screen types and user interactions time and time again, both of these elements can be effectively reused.

As mentioned previously, the use of design patterns is increasingly popular within a user interface design context. This involves the development of set patterns of interaction between the user and a set of pages within a task scenario. These patterns can be reused on further projects, enabling designers to concentrate their
efforts on designing more difficult aspects of the program, or on incorporating exceptions to the patterns into their design.

Neither should reusability be confined to physical project assets. It can equally be applied to knowledge. Effective knowledge management within the e-learning developer’s organisation will mean that tried and tested ideas can be effectively captured and reused.

**Usability evaluations**

User testing should be conducted either as user observation in pairs, or as taped group discussions around agreed topics. Usability testing should always be managed by a user interface design expert.

The following steps should be followed:

- Define your goals (these will be based on usability requirements and user scenarios identified in the earlier design stages)
- Decide which sections of the e-learning will be tested
- Set up the environment
- Welcome and brief your users
- Conduct user observation tests
- Conduct group discussion
- Ask users to complete questionnaire

The deliverable for usability tests should be a written report with detailed recommendations for improving usability.

From experience we have found that the following three methods get the best results.

**Peer review**

One of the easiest to organise and most cost-effective methods of usability evaluation is conducting a peer review. Jakob Nielsen recommends the use of 3 to 5 experts to review your design as studies have shown that this number of evaluators can identify and list the majority of standard usability errors. Using more than this number can be difficult to co-ordinate and does not increase the number of usability problems identified.
Typically, reviews are conducted with each evaluator individually over an hour, with the project’s interface designer providing a general overview of the objectives of the design. Evaluators then use their knowledge of design, user behaviour and experience to move through the design, and note any usability issues. The project interface designer can then collate these comments and recommendations.

In addition to evaluating during the latter stages of a project, it is essential to include peer review during the design process. At Epic we address this concern by holding ‘Epiclabs’ focusing on design, content and technical evaluation of a project with colleagues not directly involved in the project. These ‘critical friends’ review the development at these key stages and their comments and recommendations are noted, often debated, and incorporated into the project.

**User observation**

The usability design expert will use an audio recorder and cover a pre-prepared list of tasks that he or she will ask the user to perform on the product. The test is designed to see how well the users carry out these tasks without any help beyond what is contained within the program. The investigator will not take part in the discussion, but will facilitate free discussion from the user relating to the tasks. This is often referred to as ‘voicing’, whereby the user is required to talk freely as they are using the program, describing what actions they are taking and encouraging them to ‘think out loud’. This captures real frustrations and task failures.

**Focus groups**

The purpose of a focus group is to allow a group of users to talk in a free-form discussion with each other, in the presence of a usability design expert. As an evaluation technique it can be used as a debriefing session after users have had some exposure to the program being
evaluated. The usability design expert should get together an audio recorder and ideally between four and six users, and should prepare a list of topics for discussion.

Topics should be introduced one at a time, the main aim being to find out how people think naturally about the topics. The expert should not take part in the discussion, but should facilitate free discussion between users. A focus group would typically last about 45 minutes. If the users have been carrying out particular tasks on a system, the topics for discussion could relate to those tasks.

If only one type of usability evaluation can be conducted then it should always be user observation (as described above). Focus groups are valuable, but they rely on memory and can miss key points. Focus groups are an addition to the usability evaluation rather than an evaluation in itself.
Conclusion

We have argued in this paper that designers of e-learning programs must adopt a learner-centric design process based on best practice design principles in order to improve the usability of their e-learning program.

Poor usability is not the only reason why e-learning programs fail. It might be that they are instructionally unsound, or not well written. However, an improvement in usability will mean that learners have a greater chance of successfully achieving their learning objectives through the use of e-learning – and that good, well-constructed material is not marred by a poor user interface.

The cost of not ensuring good usability is high. There are direct costs to the business in learners being unable to achieve their learning objectives. On the positive side, there are substantial gains to be made from adopting a learner-centric design process that results in effective learning outcomes. Prototyping and reusability are key drivers to achieving a good return on investment from this learner-centric design process, as we have demonstrated.

The most important aspect of learner-centric design is putting your learners first. This means analysing their objectives, attributes and behaviour – and building profiles for each type of learner. This vital first step is the foundation on which learner-centric design is based.

Heuristic approaches are a popular method of defining usability requirements, and can be supplemented with more recent practices such as use cases, design patterns and workplace studies. Learning design, or instructional design, is a separate discipline, but
there are clear overlaps and consideration must be given to usability in learning design too.

Usability evaluations are important in determining the success of your learner-centric interface design. They can be conducted fairly easily and quickly through both focus groups and user observation techniques, and are vital in creating the feedback loop from learner to designer, in order to improve the design in an iterative manner.

Everyone has a role to play in achieving usability, from suppliers, who need to understand interface and learning design fundamentals and deliver on them, to project sponsors, who need to understand the impact of usability on their organisation and include usability issues as key project requirements from the start.

Learner-centric design processes must be adopted across the e-learning industry if e-learning is to continue to move forward. This will ensure that e-learning can meet the changing needs of learners and that all learners - from school children to head teachers, from hospital porters to chief executives - are given every possible chance to achieve their learning objectives and develop their potential.
References

Viswanath Shankar (2007), *Usability and Interface Design in E-learning*


**Websites:**

Web Design Patterns
http://www.welie.com/patterns/

Ask Tog
http://www.asktog.com/basics/firstPrinciples.html

Jakob Nielsen’s Website
http://www.useit.com
Other epic e-learning white papers

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