Developing a Web Learning Environment

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Abstract

The world wide web is used mostly to disseminate information but it also provides a great opportunity to extend learning outside space and time boundaries.

Educators know that the learning environment has an important role to play in successful learning at all levels. The challenge is creating the environment, using the web, that will make learning successful.

Why use the web for course delivery?

Institutions are under pressure to move toward more flexible learning. Web based learning has the potential to meet that perceived need for flexible pace, place and face (speed, location and feedback). The Web allows education to go to the learner rather than the learner to their education. The concept of workplace learning and just-in-time learning are becoming more widespread, allowing students to access their learning and still practice in their own environment.

"The Web is one of the most accessible tools available for academics to use. It allows an easy means of publishing material, it has a low learning-curve, the majority of its browsers are graphical and user-friendly, and above all it is free to most people in Higher Education." (Lee, 1996)

Web based delivery can be successful. Research shows that hypermedia, like web based hypertext, allows users to feel they have control over their learning and appear to have more motivation to learn (Jaffe, 1995).

Other research has indicated that students using the web as a learning tool even learn better. (Schutte, 1997)

A further bonus with web based learning is that students are able to build up links to resources that, unlike a textbook, will continue to be current long after the programme has

ended. They learn how to get access to experts and resources without being hindered by distance or time. Or as Dede puts it "A personal brain trust scattered geographically, but offering answers to immediate questions" (Dede, 1996).

So how do we make this developing and potentially excellent learning mechanism succeed for the learner. It seems that what we have done so far has not lived up to the expectation. According to the June 1998 IEEE Computer magazine, "The web is not yet suitable for learning" (Bork, 1998). One reason mentioned is that "In some Universities administrators pressure the faculty to provide such courses without offering guidelines for how the internet might best be used". Poor web courses have been the result. One of the stated criticisms is that "Those developing courses on the Web often seem to be confused about the difference between delivering information and delivering learning".

> *It is a bit like "how easy it is to spend hours with textbooks without any substantial learning payoff ... people don't learn much just by reading the fine words of experts" (Race, 1997)*

If the current web courses are poor, what are the keys to delivering learning, using the web, that will make it successful? What is the missing component?

The Learning Environment

In our classrooms we are well past the notion that learning is a case of opening a learner's head and shoving information in. Within education there is a return to focussing on the learning approach more than the information. The information and literacy revolution meant that we put considerable importance on information. Now that more information is disseminated, we are putting more emphasis on learning by doing and applying rather than only reading and listening.
The difficulty establishing that 'doing and applying' environment is that students differ in their approach to learning and their support requirements.

Some students merely need to be pointed toward a quality resource and they will be actively learning with minimal support. Other students need a patient, discovery approach, with considerable links to their existing knowledge and access to content specialists and peers.

No fixed environment is going to be the best for every learner. Whatever the learning style, it becomes obvious that a teacher is needed to manage the learning. A teacher who can monitor and modify the environment to keep the student actively learning. "It falls upon the teacher to constantly recreate the instructional process and offer a variety of choices for

approaching information and tasks in order to meet the learner's ever changing, individual needs"(Smith, 1997).

The Teacher

At present many of the courses on the internet use little more than a set and forget 'textbook' type delivery method where the student is left to self manage and self motivate their learning. Current students have not learnt how to handle this approach and difficulties associated with delivery are transferred from the teacher to the student, encouraging a high dropout rate (Phipps, 1999).
In 1997 undertook a post graduate one semester, web based, paper and was surprised that a lot of the students from the previous semester had not completed the paper. I also noted that deadlines were missed regularly by other students. There were fixed newsgroup activities and a couple of organised chat sessions but I personally did not receive any interaction with the lecturer other than what I initiated. At a particularly busy time I got way behind in my coursework. I felt like it didn't matter whether I did the work or not. I heard nothing from the lecturer to encourage me or see whether I needed help. Although the resource materials where brilliant, I was on my own and if I had been having serious trouble the lecturer would never have known and I would have dropped out.

When a course is totally web based, the lack of face to face communication means the teacher should compensate by wise use of other communication. The role of teacher, rather than being less interactive, needs to be more interactive. They need to be actively involved in "creating a learning environment, shaping web-based activities and hands on facilitation while the students are in the learning process" (March, 1997). In a study of experienced post secondary online teachers the majority reflected a concern "for personally encouraging students, fostering personal discovery and growth, or in some other way creating an affective component in their online environment" (Berge, 1997).

We need to see the web as an extension of what we already know. In a traditional environment, the competent teacher identifies the areas of learner motivation and readiness and provides structured and incidental resources, instruction, direction, feedback and support to assist learning. They analyse student progress and support the flagging student or extend the hungry learner. Phil Race outlines three things in best quality teaching that feedback to students provides. "Explaining to learners what to do when they can't yet answer a question,

helping learners to feel a glow when they do something correctly and helping learners find out exactly what went wrong when they make mistakes." (Race, 1997)

In the web environment we should meet the same needs using short email messages to see how the student is coping, regular positive feedback on progress though the programme and suggestions of learning strategies that match the learner to the material. The student should feel they have all the experience and support they need to be successful. The teacher on the other hand is receiving valuable feedback to make sure that the learner has the best possible chance of success.

The Class

A serious environment loss, using the web, is the classroom dynamic. In most learning situations communication between students and with a teacher are essential ingredients in a successful learning environment.
This is where discussion lists and internet chat can go a long way to providing the necessary communication.

Once again we need to avoid the trap of using the technology inappropriately. Managing discussion groups and chat rooms, like any other requirement in education, is more than setting it up and telling the students to "go for it". Tom March puts it in perspective by suggesting that "teachers who wouldn't dream of sending students to the library without a learning task and who would not sanction class time for students to pass notes, see surfing and chatting as somehow inherently educational just because they involve the Internet" (March, 1997).

Discussion and chat needs to be modelled and monitored by the teacher to add appropriate comments and feedback as well as stimulate discussion.
Like a class discussion, chat sessions need to be planned in advance. Students should be given prior reading assignments and discussion questions. All the tricks you use to stimulate discussion in a classroom need to be used in a web chat area (Downes, 1996).

It still comes back to the teacher managing the learning environment. The teacher is the professional who has been trained to provide the best learning experience for the student. What we need to do is keep being teachers even though the technology has changed.

We need to ignore the inappropriate aspects of the web but exploit the opportunities the web offers. For example, "Virtual classrooms have a wider spectrum of peers with whom learners can communicate than any local region can offer and a broader range of teachers and mentors than any single educational institution can afford" (Dede, 1996).

The world wide web also lets the teacher provide links to resources that someone else is maintaining. Rather than having to keep their own notes and references current, they can refer the student to the source of the data knowing that it is up to date. The teacher's notes could include a page of references to work by other people!

The Content

When teachers are providing the content it needs to be quality material that helps and doesn't hinder the learning process. Students should be able to concentrate on the learning and not spend their time struggling with the technology.
Learning material needs to be user friendly for both content and navigation. Although hypermedia can help the learning process it also can have the opposite effect. Various studies show that even small amounts of information in a hypertext format can cause disorientation and a restriction to the learning process (Lee, 1996). "If your readers are lost or have to spend time thinking about where to go next, they are not focussing on the learning material" (Downes, 1996).

There are some key practical issues with any web page that will make it learner friendly. The following list indicates some of the common principles of web design (Lynch, Karp)

Use quality Navigation

- Use default colours and give readers as little to learn about navigating the site as possible.
- Most readers prefer to be led through material. Readers like to know where they are, to have some sense of how much they've read and how far they have to go.
- Try to make every page no more than three clicks away.
- If someone comes to your site looking for a specific piece of information, it should be easy to locate it.

Think about each Page

- Keep your home/main page small so that it loads quickly - aim for under 15 seconds.

- Keep the interface uniform. Have the same controls perform the same action everywhere.
- Put a title on every one of your web pages. The title shows up at the top of the browser and if someone bookmarks your page, the title is what shows up in their list of bookmarks or favourites.
- Consider the signal-to-noise ratio of your interface. How much is useful and interesting, and how much is just noise?

Keys for Text

- The maximum any paragraph should be is about six lines or around four sentences.
- Try not to put links in the middle of a sentence or paragraph. Put them at the end, like footnotes (so they read the whole paragraph before going off somewhere else).
- Keep the scrolling to a minimum.
- Keep in mind that current computer screens result in a reading speed that is approximately 25% slower than reading from paper. (Nielson, 1996)

Keys for Graphics

- All graphics - even lines and icons - should contain an "alt" element. This tells the text-based user what is being missed.
- Don't put animated images on your page (lots of reasons for this).
- Use the technical or graphical aspect to support and enhance, but don't let it overpower the other aspects of the pages.

Setting up links

- When linking to an external site include the URL for people who print out pages.
- You can link directly into a search engine with a predefined search.
- You can link to internet-wide newsgroups and list servers.

Access issues

- Take a realistic look at your student's connection speed and availability of access.
- Check that course materials are supported by the browser software that your students will be using.

Testing

- Test your pages with several different browsers. Test all your pages after making even trivial changes to your site, just to make sure you haven't broken something.
- Make sure that you test your pages in a way that forces the browser to get everything - both text and images. This means turning off the caching, emptying the cache from within the browser, or deleting all the files in the browser's cache directory.
- How does your page look without its images? Turn on the "don't load images" menu item, or checkbox in your browser's option settings. Is it still possible to find your way around?
- What do the pages on your site look like when they are printed?
- Have other people test your web site.
- Could someone, after visiting your site, draw a simple diagram showing how the different elements are connected and how you get from one place to another?
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If you keep a handle on these key principles your content will be available to your students when and where they want it.

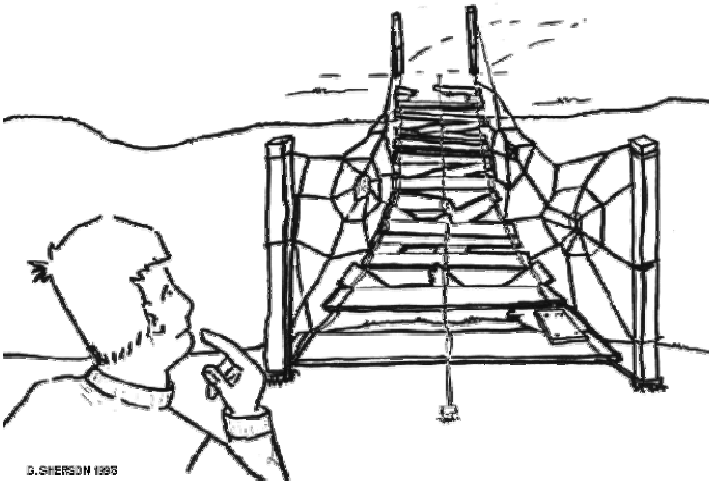
Final Words

In all education, to teach well, we need to be creative and treat technology like any other resource - with lateral thinking, imagination and ingenuity. As March says about web based teaching "It's a lot like what you are already doing, It's unlike anything you've ever done before. . . In other words, educators will recognise old friends like references, resources and lessons, but the breadth, depth, immediacy, passion and interactivity available in the web based brethren open up an entirely new way to educate" (March, 1997).
The key to any learning environment is the teacher behind it - good or bad. "if teachers merely add on technology to ineffective instructional methods ... there will be no improvement in student learning" (Clark, 1983).

Or to put it another way "the technology itself is relatively unimportant" (Brown,1997).

What we must do is create the environment with managed content, quality collaboration and feedback that matches the learning to the learner. Everything that we know that works, apply it to the web.

"Online education might not be easier, and it might not cost less ... it does open up a universe of learning possibilities" (Smith, 1997).



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