Learning “From” or “Through” the Web: Models of Web Based Education
Des Casey
Monash University
McMahons’ Rd
Frankston 3199 Australia
+61 3 9904 4602
des.casey@monash.edu.au

1. ABSTRACT
Much of our human learning involves some form of face to face communication between those that learn and those that teach. The World Wide Web has become a medium of education in recent times and a number of models of learning have been used in teaching via the Web. It is argued that any models so used need to include a significant element of human interaction, otherwise such models will be less than satisfactory for a significant proportion of the learning population.

1.1 Keywords
Web based education, distance education, models of education.

2. INTRODUCTION
The education sector is embracing the Web as an instructional medium. Providers of distance education courses see the Web as offering a flexible delivery method. Course providers, faced with shrinking local markets, look to expanding international markets, and see the Web as a means for delivering courses partially or wholly off shore and, consequently, as a means of alleviating locally shrinking budgets.

Developers and marketers of Web technologies are, likewise, keen to exploit the educational market. They see the financial benefits from their technologies being used in the delivery of courses, for upcoming generations of students to be comfortable, and so inclined to purchase, their technologies on entering the workforce.

These financial and technological forces are influencing the way that Web based education is developing. The financial forces see the Web as a means of reaching potentially large numbers of students without a commensurate increase in staffing costs.

The educational model behind such thinking sees the Web as an electronic book: simply put the subject material on the Web and students can learn from it. The technology developers tend to propose methods of learning which are determined, to a significant degree, by the capabilities and limitations of their particular technologies.

While financial imperatives and technologically driven initiatives are a necessary component of the new flexible delivery mix, they do not represent the whole recipe. In the end, educational imperatives will have a large say as to whether or not Web based education succeeds or fails. If only a limited proportion of students are able to learn easily and successfully from the Web in its electronic book model of learning, for example, then the market will remain commensurately small. The aim of Web based education must surely be to develop a model which will enable a relatively large proportion of the student population to learn relatively easily and successfully.

3. COMMON ELEMENTS OF MODELS OF LEARNING
All over the world, in all cultures, successful learning takes place. We could say that, as a species, we humans are quite successful at teaching one another. Education takes place in a wide variety of settings: some of which are well stocked with educational paraphernalia, while others have few learning materials.

Many learning theories and models have been proposed: models based on human biology, psychology, sociology and educational theory. The role of the teacher is significant in many, if not all, of these models. We speak of one who teaches and one who learns. Teaching and learning is seen as a human to human interaction. Of course we can learn without a specific person who is the teacher: we can learn from our own observation of the environment around us, for example. However, much human learning, both structured
and informal, takes place in this context of the passing of
knowledge from one human to another.
Some very general characteristics of this person to person
teaching/learning process can be noted:

- There is some person to person contact between one
  who teaches and one who learns. The role of the
  teacher generally includes the assembling and
  presentation of some information. The teacher is often
  the manager of the learning process: directing students’
  activities. The teacher will often act as a social agent:
  motivating the students, for example.
- Spoken language plays a significant part in the process:
  both the actual aural words together with the
  accompanying body language and the general context
  of the situation, all of which influence the meaning
  attached to verbal communication.
- Written language is used extensively. Language
  includes the written word, images (still or moving) and
  symbols.
With these elements we pass on information, develop
understandings and engender attitudes in students. This
simple model contains elements of:
- a teacher who directs or influences students in what
  they will do as part of the learning process,
- a teacher who communicates material in face to face
  interaction through speech and a variety of media,
  including text and images.
This model is, of course, very simple and ignores much of
the detail contained in various, more specific, models. However, even such a simple model is a useful tool when
examining the various Web based educational models that
have come into use. If, for example, a significant
proportion of the learning population has come to expect
that normal learning usually involves the elements of this
simple model (such as person to person interaction), then a
Web based model that omits these elements to a significant
extent may appear unsatisfactory to these learners.

4. SOME CURRENT WEB BASED
LEARNING MODELS
Some of the currently used Web models of learning can be
identified.

4.1 The Web as Source of Information
Perhaps the simplest use of the Web has been as a
convenient place to store supporting information for
traditionally offered courses. A typical university course,
for example, supplies students with various resources:
printed lecture notes, assignment specifications, practice
exams, for example, which have been previously distributed
in print form. Students use the Web to access sites for
information required for assignments or projects. Certainly,
the Web is very good in the role of information source. It is
a welcome adjunct to the teacher as source of information.
This model uses the Web only as a part of the learning
process. Students still encounter a real live teacher in a
formal class situation.

4.2 The Web as Electronic Book
A number of institutions have moved to use the Web to
present information in a more structured way. In this case,
the structured presentation of information becomes the
教学 process. Students follow screen instructions to
read material, activate multimedia demonstrations, take
self-correcting quizzes or other activities. The course
material often consists largely of factual information, which
is to be learned from the Web page and any accompanying
media. There is no interaction between teacher and the
students through the Web.

4.3 The Web as Teacher
Some Web based courses have moved past the previous
model to include some form of personal communication
between students and teacher and between students and
other students. Typically these courses use email and
perhaps chat rooms to implement this personal contact.
It should be acknowledged at the outset that, while the Web
is adept at delivering vast amounts of information to the
student, it is not a very good medium for inter-personal
communication and relationships, when compared with face
to face interaction. However, it may well be a case of
making the most of what is available.

4.4 The Web as a Communication Medium
Between Teacher and Students
A more satisfactory model views the Web as a
communication medium between teacher and students.
Essentially, students learn from the teacher: but “through”
the Web and not "from" the Web. Under this model, the
Web still may present structured information, but it also
provides the communication medium for the necessary
human interaction.
Face to face learning environments employ a variety of
learning strategies and models. Web based education will
be limited to those strategies and models which can survive
with the limited interaction available through Web
technologies. Consequently, in designing Web based
environments we should look for those face to face
strategies which can be ported successfully to the Web.
There may well be areas of learning for which the Web is
unsuited as a medium, simply because it cannot support the
level of human interaction required for successful learning.
An example of such an area might be the teaching of
professional acting, where student and teacher may well
need to be physically present to one another. Other leaning
models, which, for example, may only require the
A model such as this aims to mirror face to face learning, as far as is possible. Of course, this face to face model is not the only method of learning, and is not necessarily the best in all circumstances. However, it is a model that is widely used and one with which a good proportion of the student population would be familiar.

5. IMPLEMENTATION

An attempt has been made to implement this last model (http://neptune.fcit.monash.edu.au/cfrl 150/). The site, developed by the author, teaches a first year undergraduate subject on the design and implementation of Web based material. The site uses text, graphics, pre-recorded audio and video clips and hyperlinks in its electronic book role. Asynchronous two way interaction is provided through a dedicated newsgroup and email. Synchronous two way interaction is provided for by dedicated chat facilities.

Additionally, Web based live audio and video broadcasts are used for lectures and personal contact.

Figure 1 shows a typical lecture screen. The main site navigation menu is positioned down the left hand side, with navigation buttons across the bottom to move between sections of the material, to go to related exercises or hyperlinks, or to play pre-recorded audio or video material.
The material being taught is presented in the two central scrollable windows (in this instance the material concerns the use of image maps in HTML documents).

In the top left hand corner there is a floating window through which students can see and hear their lecturer explaining the material (i.e., giving a lecture) in real time. In the top right hand corner of the screen there is another floating window through which the student can ask questions, or make comments, using text entry. All participating students can see the questions or comments as they are entered. The lecturer can respond in real time through the video window. This mechanism can be used for formal lecturing, less structured tutorials or individual teacher/student consultation. The mechanism is used to facilitate the human interaction critical to this model. Of course this mechanism does not equate to full person to person contact. But given limitations of the Web medium, it does provide an improvement on the electronic book model.

One of the advantages often quoted for distance education study, is that students are not restricted to aligning their lives to real time lectures: they can study when they wish. The implementation of this subject allows for this, in that the broadcast lectures and discussions are recorded as they are broadcast. Students can then view them at any later time.

6. CONCLUSION
Web page developers are quick to point out the high costs of developing Web based materials. Professionally prepared pages often require input from technical people, content developers, graphic designers and code cutters. Educators are also confronted with high development costs, often in this instance, expressed as the considerable amounts of time needed to prepare Web based materials for their students. Attempting to place on the Web everything that would be said in a semester’s series of lectures, is tantamount to writing a book. Consequently, the electronic book model quickly becomes impracticable. The Web as communication medium model (with supporting material), on the other hand, is viable. The information that would be passed on verbally is still passed on verbally; no attempt is being made to write it all down.

Students will need to adjust to this Web based learning model. However the amount of adjustment required for this model would appear to be less than that required to adjust to a model where the central element of the teacher has been largely removed.

Those who see the Web as a means of cheap mass education will be disappointed with this “Web as communication medium” model. On-going staffing costs will not decrease, and will probably increase, as staff will need to work around the limitations of the medium to establish and maintain viable teacher-student relationships. Given the integral role played by human interaction in the learning process, course providers should aim to provide such interaction as educational best practice. If students start looking for a learning environment with which they are comfortable and familiar, before parting with their credit card numbers, then market forces, if not educational best practice, might induce course providers to include person to person contact in their course offerings.