Online Tutoring e-Book

Editor Carol Higgison

Chapter 1
Learning Online:
Models and Styles

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Preface

It is essential that we understand how online environments and technologies can be used to support and enhance learning if we are to create effective online learning experiences for our students. This chapter examines the context and pedagogy for online learning. It explores how this understanding can inform our choices and help us create appropriate and effective online learning opportunities which meet the diverse needs of our learners and accommodate their diversity of learning styles and approaches.

The OTiS e-Workshop[1] established a community of online practitioners (academics, faculty, lecturers, instructors, staff developers, facilitators and trainers) from education and business who could share their expertise and reflect on their practice.

Two of the key issues addressed were 'tutor and learner styles' and 'models of online learning'. Through case studies and online discussions we attempted to clarify these issues and identify effective practice. This chapter is a synthesis of these discussions.

Sarah Cornelius, the author of this chapter, was a rapporteur during the e-workshop, summarising and reporting on the key highlights of each day's discussion.

The success of the e-workshop was due to the interest and enthusiasm of the participants and their generosity and willingness to share their experiences and expertise. We hope that the participants in the e-workshop agree that they became part of an active and supportive online learning community.

My sincere thanks to all the participants and, in particular, the authors whose commitment extended long beyond the end of the e-workshop.

Carol Higgison
(editor)

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[1] The OTiS International e-Workshop on Developing Online Tutoring Skills was held between 8–12 May 2000. It was organised by Heriot–Watt University, Edinburgh and The Robert Gordon University, Aberdeen, UK.

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1 Introduction

This chapter combines material from two themes that were considered separately at the OTiS e-workshop:

- tutor and learner styles,
- models of online learning.

The aim is to examine the context and pedagogy for online learning. Contributions from case studies, discussions and other aspects of the e-workshop are used to demonstrate how different theoretical approaches can inform learning styles and why a knowledge of these styles and approaches is useful for the online tutor (Rosie-D 2000d).

The approach we adopted is summarised by Gilbert-Hunt and McLaine:

> "However, the focus in developing the subject was on how best the technology could enhance the student learning, so that the teaching and learning process was the driver of the subject development and not the technology." (Gilbert-Hunt and McLaine)

This chapter considers theoretical perspectives on the learning styles of adult learners and models of learning that adapt to the online environment. Throughout, contributions from the e-workshop are used to relate these perspectives to current practice. These contributions include a wide range of case study exemplars that illustrate the many ways of accommodating different learning styles using online pedagogies.

References given without dates are references to OTiS e-workshop case study contributions. References designated by the letter 'D' and with dates are references to e-workshop discussion group contributions. Details for both of these are given in Appendix A.

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2 Learning Styles

Online courses have the potential to reach a huge number of learners. Each learner is an individual, with his or her own motivation for studying, access to resources, and study habits and practices. 'Just in time' and even 'just for me' education is often proposed as a way of meeting the education needs of today's learners, so educators need to understand who their learners are and how they learn. Appropriate activities can be designed only when there is a clear understanding of the different approaches to learning adopted by adults.

One of the ways in which any diverse group of learners can be characterised is by their 'learning style'. Keefe (1979, reported in Ellis, 1994 p499) suggests that a learning style is:

> " . . . the characteristic cognitive, affective and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment. . . Learning style is a consistent way of functioning, that reflects underlying causes of behaviour."

Lockitt (1997) stresses that there is no single learning style that will be perfect for every individual, since human beings are complex. He refers to research by Honey and Mumford (1985) which indicates that your individual learning style affects the way that you accept and assimilate information.

Many authors have attempted to classify learning styles. A few of the most commonly used classifications that are applied to adult learners were discussed during the OTiS e-workshop:

- activists, reflectors, experimenters and theorisers,
- deep and surface learners,
- visual, auditory, tactile and kinaesthetic.

These three classifications are introduced below, and comment is provided on their role in online learning. Then the practical question of how to assess a participant's learning style is addressed.

2.1   Activists, reflectors, experimenters and theorisers

One of the most widely adopted and adapted classifications of learning styles is based on the four learning modes identified by Kolb (1976) and based on experiential learning theory. It classifies learners as **active**, **reflective**, **experimental** and **theorising**:

2.1.1 Active learners (learning through concrete experience)

These learners learn by trial and error. They tend to be impatient and want to do things for themselves rather than wait and be told how to do them. This leads them to give spontaneous answers and to quickly move on to something new. Slow, methodical work bores them and they often take the lead to push on ahead. ("I want to get on and do things.")

2.1.2 Reflective learners (learning through reflective observation)

Reflective learners adopt a 'wait and see' approach. These learners try to think things through and do not give the first answer they come across but require more information. They tend to be uncertain about what to do and this leads them to confer with other people to see what their opinions are. ("I want to think about things.")

2.1.3 Experimental learners (learning through active experimentation)

Experimental learners seek to find new ways of doing things. Even if they like to be shown how to do something, they need to put their newly acquired knowledge immediately into practice. What is important to them is finding the most effective way of putting into practice what they know. They tend to be energetic and impatient and they do not hesitate to take short cuts in solving problems. New challenges are seen as new possibilities for learning. ("I want to see if there isn't a better way of doing things.")

2.1.4 Theorising learners (learning through abstract conceptualisation)

Theorisers try to build an all-encompassing logical system. In thinking problems through step by step, they question assumptions and make rules from different cases. 'Concrete' examples are perceived as being too limited to understand the general whole. Their effort goes into making coherent pictures of complex situations. In doing this they try to detach themselves from emotions and personal opinions, often making them less sympathetic to the feelings of others ("I want to understand things").

2.1.5 Their role in online learning

Research using Kolb's inventory of learning styles was reported at the OTiS e-workshop:

> "…we do measure learning styles against the Kolb inventory. When we did a bit of research to see which type of people preferred asynchronous collaborative learning, it was interesting to find that reflectors did not find it most appealing. Activists got turned onto the idea, but soon became bored if there was not enough activity, and reflectors seemed to want to work more alone, and be less collaborative, despite the advantages of the technology for reflection. The results were not what we expected, I must admit."
> (McKenzie-D 2000)

Honey and Mumford (1992) created their own version of Kolb's classification – **activists**, **pragmatists**, **theorists** and **reflectors** – after revisiting the work of Kolb (1984). Salmon (2000) in her book (*E-moderating: the key to teaching and learning online*) reviews how well the adapted learning styles can be catered for by computer mediated conferencing (asynchronous communication):

- **Activists** need a range of different activities to keep them occupied. They like to 'hold the floor' (or conference), and be able to bounce ideas off others – asynchronous learning caters for all these needs very well.

- **Reflectors** probably benefit most in asynchronous discussions. They benefit from the opportunity to engage with the learning and think deeply, and to give considered responses in asynchronous discussion.

- **Pragmatists** need to have opportunities to try out what they have learnt. They need online activities that allow them to evaluate what they have learnt.

- **Theorists** need time to explore links between ideas and situations. Asynchronous activities would suit these learners well, allowing time for exploration. Opportunities for lots of structured and appropriate interaction are likely to appeal to them.

2.2   Deep and surface learning

The classification of learning styles into deep and surface has particular relevance to online learning since it is based on observations of how students interact with text. The ideas are based on the work of Marton and Saljo (1976) and Svensson (1977):

2.2.1 Deep approach

In deep learning the learner processes a text in a 'holistic' way, looking for structure and meaning. Deep learning involves (Rosie, 2000):

- employing an effective and efficient strategy or strategies for conceptualisation,

- being open to different forms of conceptualisation,

- seeing interconnections between concepts and data rather than merely amassing large amounts of data,

- showing personal commitment to learning,

- drawing on higher order cognitive skills,

- adopting a genuinely reflective approach.

2.2.2 Surface approach

When taking a surface approach to learning the learner focuses on key words and phrases, and processes the text in an 'atomised' way. This may distort the original structure and meaning. Surface learners are more likely to learn things by rote. Adopting a surface approach to a text may lead to a student trying to remember it – and thus not really learning what it is trying to convey.
Commonly, surface learning is taken to include (Rosie, 2000):

- drawing on lower level cognitive skills,

- amassing detail rather than establishing a structure into which detail can be placed and indeed rearranged,

- completing tasks with minimum effort but not necessarily in the most efficient way,

- using a limited set of conceptualisation,

- drawing on texts and sources without critical reflection or personal response to such sources.

2.2.3 Promoting deep learning

Rosie (2000) considers deep learning a highly desirable outcome and suggests that the development of effective online tutoring skills "must address ways of promoting deep learning". Rosie (D 2000c) also provides an insight into how deep learning could involve a number of different learning styles:

> "I think OL [*online learning*] is a context and we can have deep and surface learning going on. Reflecting on a synchronous discussion and responding asynchronously and perhaps revising and reformulating a problem to integrate knowledge and ideas would be an example of deep learning using a number of different learning styles." (Rosie-D 2000c)

Salmon agrees with these ideas:

> "I agree with you – I think what kind of learning occurs could even be said to depend on the extent to which the learner in familiar, comfortable, effective etc. in the online context." (Salmon-D 2000)

The need to make the learner feel 'at home in virtual space' so that they want to work with others is also highlighted by Rosie (2000) as a prerequisite for deep learning. Rosie cites several of the OTiS case studies that pay attention to the development of empathy with the learner, no matter what learning style is adopted. These include Whittington and Dewar, Finkelstein and White and Moussou. In general:

> "It is the commitment of the tutor to the online setting and to establishing empathy and understanding rather than a superficial acknowledgement that establishes the conditions for deep learning." (Rosie, 2000)

Establishing student 'comfort' in their online environment may also be helped by the inclusion of opportunities to have some 'fun':

> "Exchanges of a more social nature, such as the sharing of jokes and interests are also encouraged in order to build a sense of belonging and group identity within the Learning Sets." (Pickering and Duggleby)

Rosie (2000) also provides a useful list of measures that tutors can take to encourage deep learning:

- establish the personal (making the learner at home in virtual space),

- deliberate use of strong positive reinforcement,

- ensure engagement between theoretical and practical,

- encourage self-reflection and seeking out of differences – help students to move from thesis to antithesis and use this to create a synthesis.

Cowan describes the use of reflection to encourage deep learning in students on two undergraduate courses – a '*Personal Development Planning'* module offered at Heriot–Watt University, UK; and '*Enquiry and Psychology*' modules at the University of the Highlands and Islands, UK. Students submitted reflective journals for comment in a style exhibiting empathy, unconditional positive regard and congruence (a Rogerian style – see Zimmer and Alexander). Students then self-assessed this reflection, and were given assistance to make objective professional judgements.

In Chapter 2: *The Tutor's role and effective strategies for online tutoring* issues of deep and surface learning and the use of technology are raised. Clarke considers that the use of technology may facilitate 'surface learning'. To help to avoid this she echoes the view that tutors should encourage reflection and deep learning (Clarke-D 2000).

2.3   Audio, visual, tactile, kinaesthetic

Gardner, in his theory of Multiple Intelligences (Gardner, 1983), suggests that there are seven different ways of processing information. These seven ways are related to seven different types of intelligence, and give rise to different learning styles (see for example Edwards, 2001 and Winters, 2001)

1. **Verbal intelligence** – learners have the ability to use words (orally or written) effectively.

2. **Spatial intelligence** – learners have the ability to perceive the world accurately.

3. **Musical intelligence** – learners have the ability to work with musical forms.

4. **Logical (mathematical) intelligence** – learners can use numbers effectively and reason well.

5. **Bodily–Kinaesthetic intelligence** – learners use their body to express ideas and feelings, they are likely to be 'good with their hands'.

6. **Interpersonal intelligence** – learners can perceive and make distinctions in the moods, motivations and feelings of others.

7. **Intrapersonal intelligence** – learners have a good level of self-knowledge and can act on the basis of that knowledge.

In practice, simpler versions of this classification are often used in connection with learning styles. Lockitt (1997) suggests three categories of learning style related to the senses:

- **auditory** – using words and sounds for learning,

- **visual** – visualising images during the learning process,

- **kinaesthetic** – feeling and doing things in order to learn.

Labour (D 2000b) prefers four classes:

1. Visually oriented learner.

2. Auditory oriented learners.

3. Tactile oriented learners.

4. Kinaesthetic oriented learners.

Labour (D 2000b) cites sources that suggest that visual learners make up 65% of the population, auditory learners 30%, and kinaesthetic learners 5% (McLuhan, 1964; Labour, 1998). Tactile learners are those who need to be in 'direct' contact with elements of the object of knowledge, and kinaesthetic learners prefer learning according to how they perceive physical performance; their learning involves nonlinear perceptual processes.

An alternative model of learning styles is the VARK model developed by Fleming (no date). VARK refers to four sensory modal preferences for taking in or giving out information – Visual, Aural, Read/write and Kinaesthetic. Fleming has observed that most respondents (60%) to a VARK Inventory to assess their learning style exhibit multiple preferences.

OTiS e-workshop participants considered the needs of learners with different sensory learning styles. For example:

> "… some people access experiences through auditory memory and some through visual imagery, and for others text is a good method of instilling remembrance. So in theory if we present the same material through different media, we ought to be able to help people remember better." (McKenzie commenting on Creanor)

> "We … felt that [*meeting*] face-to-face allowed for meeting a range of learning styles, ie the auditory learners among us, not only the visual." (Murray)

> "Initially, we did not realise that some folks did not have a sense of 'space' as they moved from the learning circle, to the sandbox, to the journals. So, in our last course, we started using different coloured light backgrounds for each area and the students responded that this was very helpful. We also increased our use of images which we can easily upload. The visual learners in the group were delighted. People played with their own pictures, created collages to express ideas and used visuals to express complex ideas. We are currently working on an icon set to use as well." (White and Moussou)

Online learning, with its current reliance on written communications, would appear to favour learners with a read/write or verbal learning styles. Salmon notes this, and identifies some of the problems that may result:

> "CMC [*computer mediated conferencing*] occurs through reading and writing. It is likely therefore that it will appeal to those more comfortable with the written word. This places at a disadvantage those for whom writing (or typing) is a problem, or who are working in something other than their first language." (Salmon, 2000)

Finally, there are some courses where the subject matter demands non-text based presentation, for example language learning. This may provide interesting opportunities to meet the needs of different learning styles, as in the case of an Italian language course offered by the University of Auckland, New Zealand:

> "The course is delivered via a mix of technology that is, via the WWW, CD-ROM and print. The course features a total of 50 hours of language tuition on the CD ROMs plus other material and facilities." (Radic)

> He goes onto say "This multimedia course delivers nearly 1 hour of video clips, 10 hours of audio files, an audio dictionary as well as rich graphic material." (Radic)

2.4   Personality and learning style

Two OTiS case studies (Whittington and Dewar and Gilbert-Hunt and McLaine) consider the impact of personality on learning style and the online learning experience:

> "Commentators have noticed that whereas introverts have been disadvantaged in face-to-face classrooms, the online classroom levels the playing field…Our quantitative evidence reveals that introverts and extraverts participate equally in this medium, although they do experience it differently. . ." (Gilbert-Hunt and McLaine)

> "We are using the Myers-Briggs Type Indicator (MBTI®), a personality assessment tool, to help understand how different personalities interact in online learning situations." (Whittington and Dewar)

Whittington and Dewar go on to explain the Myers-Briggs Type Indicators (MBTI®):

> "The MBTI® is a self-report inventory with four psychological dimensions*, energising, attending, deciding* and *living*. Within each dimension are two preferences, each of which is represented by a letter. The eight preferences are:

> - extravert (E)–introvert (I) (energising dimension),
> - sensing (S)–intuition (N) (attending),
> - thinking (T)–feeling (F) (deciding),
> - judging (J)–perceiving (P) (living).

> "An individual's four letter type is determined by which end of each dimension they tend towards. An individual's type does not indicate strength of preference, but rather which combination of preferences they would ordinarily use in various situations. The sixteen types are based on the sixteen possible combinations of preferences." (Whittington and Dewar)

Whittington and Dewar give an assessment of how these preferences relate to the online context:

> "…it is quite clear that the feeling types are showing a clear preference for the more informal areas of the conference where their postings reveal them developing relationships with other research participants. The thinking types, on the other hand, posted little in the informal areas, and confined their comments to the ideas of the research when they did post. This is in keeping with the MBTI® theory which suggests that the thinking types attend more to ideas and concepts while feeling types are concerned with creating relationships (Briggs Myers and Myers, 1980, p68)." (Whittington and Dewar)

White and Moussou also comment on the use of the online environment for supporting different personality types:

> "We have found it helpful to segment the space. Space helps organise content and sets the 'tone' for the type of online interaction – serious discussion, play, reflection, work. This has been helpful for me with other online work groups and it helps accommodate different styles. Some folks just 'want the meat' and have little interest in socialisation, relationship building or fun. Others need that social cushion to set the stage for learning. By creating a certain degree of segmentation, learners can choose their mix as needed and as their time allows." (White and Moussou)

2.5   Evaluating learning style

The question 'How do we determine the preferred learning styles of our students?' was posed by Higgison (D 2000a) at the OTiS e-workshop. In attempting an answer workshop participants also identified problems with the whole concept of learning styles. The limitations of learning styles classifications have long been recognised in the literature:

> "The idea of pigeonholing students may seem like a convenient simplification of the vast diversity of those idiosyncratic individuals we are faced with, and I see no objection in theory to attempting to describe people in this way. It is always salutary, however, to try to pigeonhole oneself in one of these categories…applying it to oneself illuminates the crudity of the classification." (Laurillard, 1994)

The main problem seems to be that an individual's learning style is not fixed:

> "It is possible to accept that there can be both consistency and variability in students' approaches to learning. The tendency to adopt a certain approach, or to prefer a certain style of learning, may be a useful way of describing differences between students. But a more complete explanation would also involve a recognition of the way an individual student's strategy may vary from task to task." (Entwistle, 1981 cited in Laurillard, 1994)

OTiS participants echo these views:

> "It has been noticed that different student groups respond differently to the same environment for example, HND students generate much discussion in the introductory week, but once 'serious' learning is expected through the conference tasks they tend to become less enthusiastic. The BSc Mathematical Science students operated in the opposite way; preferring the more structured tasks and seeming less likely to interact in an exploratory session." (Street)

> "My problem with 'learning styles' is threefold: 1) Does is refer to self-perceived learning styles by learners via self-evaluation questionnaires?

2) Does it refer to the results based on observation by a third party while the learner was actually at work? 3) Does it refer to a combination of both points 1) and 2).” (Labour-D 2000a)

Kolb (1984, cited in Lockitt, 1997) recognised that the learning experience is unique for everyone and that identification of preferred learning styles should not be used to 'typecast' learners, but rather to develop potential and extend the choice available to the learner. Thus, an understanding of preferred learning styles may assist the development of appropriate learning opportunities:

> “If we believe that engaging learning styles has an impact, then, surely we should attempt to engage them all, having decided on the most appropriate typology, as we do in the live training room. There is an online University based in Canada that does precisely this – there are different versions of learning materials and support which learners choose after completing a learning styles inventory. Clearly there are development cost issues here, but it would be interesting to find out how successfully that University has sustained or increased its completion rates.” (Mackie-D 2000)

To assist the evaluation of a learner's preferred style a number of techniques are available. Rosie (D 2000b) suggests that the first step is to ask the student:

> “We'd probably agree there are many different learning styles for all of us and some work better for some things than others. Evans and Abbott (1998) (I think) found that the great majority of students on a range of courses used a set of surface learning styles and this proved effective but quite stressful. So maybe a start point is to ask the student and to work through some alternatives to a question to see which ones strike chords and which don't. I think learning styles and question setting go together. If you want to use a surface learning style you will turn the question in such a way that this will happen, or conversely you will seek out styles of question that will support your favoured learning approach.” (Rosie-D 2000b)

One of the many more formal approaches is suggested by Labour:

> “Giving the learners power to decide how and what to learn according to their learning styles and objectives is the cornerstone of a lifelong learning project. Learners need to learn where to get help and how to negotiate for it with the various forms of learning partnerships that can be developed. This does not mean that tutors need be passive facilitators. Their role is to co-ordinate activities such as group surveys about the online learning and techniques in learning from computer mediated texts. One example is that of the five-step technique proposed by the *International Tandem Network* (http://www.slf.ruhr-uni-bochum.de/email/).” (Labour)

Gilbert-Hunt and McLaine used students' exploration of their own learning styles as an exercise in the first module of their course:

> **“**Module 1: Learning Techniques provides an environment in which students explore their own learning styles and approaches to client education, whilst at the same time develop the necessary technical skills of Internet searching, using email, and participating in the threaded discussion.” (Gilbert-Hunt and McLaine)

In an assignment, students were given an introduction to learning and learning styles, then:

> “ … asked to chose three learning style models from the readings or web sites (which are linked to the study guides). They were asked to apply the rating scale in each model to themselves and compare the results with each other and their own knowledge of self. They were then asked to repeat this process

on a friend or relative, looking for consistencies, etc. The students then discussed their findings with each other through the threaded discussion and shared any new resources." (Gilbert-Hunt and McLaine)

An online source that allows evaluation of whether you have a visual, aural, read/write or kinaesthetic approach to learning is http://www.active-learning-site.com/, and further details of the Myers-Briggs® methodology and learner characteristics can be found at http://opstrain.com/calliope/mbti/over.htm.

Developing learning experiences and resources that will meet the learning styles of a group of learners is clearly not an easy task. To accommodate different learning styles a range of learning models can be used. Models that are student-centred and involve the construction of knowledge, collaboration, experiential learning and reflection on experience appear to be particularly favoured for the online environment, and these are introduced in the next section.

3 Models of Learning

There are many different theoretical approaches to learning that inform teaching practice. These range from instructivist, tutor-centric classroom approaches, to student-centred discovery learning involving action and interaction.

This section reviews and illustrates the application of different learning models in the online setting. The models covered are:

- constructivist learning,
- collaborative learning,
- experiential learning,
- problem based learning.

It should be remembered that the methods are not mutually exclusive. In particular constructivist and collaborative learning work together well. In many cases, tutors use a variety of approaches to meet the needs of their learners.

3.1   Constructivist learning

The adoption of a constructivist approach to learning is demonstrated in a number of OTiS case studies. In each case the focus is on the learner's construction of knowledge and understanding through appropriate activities.

Newby-Fraser and Clayton describe the approach they adopted for a staff development course at Waikato Polytechnic, New Zealand, in which all participants were involved in course development, delivery or support:

> "A constructivist approach, where it is argued that knowledge is actively constructed by the cognising subject and not passively received from the external environment led to an approach that included reflection and tasks based activities involving learning by doing. This ensured that participants were involved in activities that were relevant and meaningful." (Newby-Fraser and Clayton)

Hird describes a graduate level course on integrating reading and writing into middle level (ages 10–14) classroom instruction at Feinstein School of Education and Human Development, Rhode Island College, USA. This course is:

> "… based on a constructivist learning approach in which students are expected to build their own understanding of effective strategies for middle school teaching. Students do this through their own integration of insights and experience gained through course discussion, reading, group projects and field experience. Feedback from other students and from teachers in the middle school field placement is as important as feedback from the instructor. Although I have used a constructivist approach in prior teaching, the interactive web site provided a learning environment more conducive to this approach than a traditional classroom." (Hird)

Salter outlines the model used for staff development in online teaching for academics at the University of Western Sydney, Australia:

> "In the constructivist model I use, learning is viewed as the result of mental construction. Students learn by fitting new information, gained from interacting with objects and events, with what they already know. Typically, learner autonomy and initiative is accepted and encouraged." (Salter)

Salter provides more details of the constructivist principles upon which online teaching can be based, and gives some comment on these:

1. Multiple Representations of Content and Complex Learning Environments – Hypermedia lends itself to a constructivist perspective for organising information. Rather than a linear sequence leading to certain conclusions set by the author, the information can be fragmented and presented in discrete units. . . . Learners can select the information in the quantity and order they choose and in ways which make sense for them.

2. Social Negotiation and Collaboration – a discussion area to which learners will be encouraged to contribute is needed. Contributions might include reflection on current practice, sharing a good idea, peer review of other comments, or providing a link to an external resource.

3. Understanding the Knowledge Construction Process – by experiencing online education as learners themselves, teachers will have a much greater understanding of what will be required by their students.

4. Student-Centred Instruction – as well as having the freedom to use the module as they wish, contributions from participants should be welcomed and additions to the module made by incorporating appropriate contributions. (Salter)

The case for constructivism is enthusiastically supported by Janes (D 2000), and here by Ewing (D 2000b):

> "I am a supporter of the constructivist approach to learning and the aspects of this which I think link closely with student support for online learning are rather 'built in' to the online approach. For example:
>
> 1. Conceptual learning through active involvement – student learning online by its very nature means that the learner is actively involved with the learning environment from the moment he makes contact with the online learning environment. True, this may or may not be at a very 'deep' level (depending on the internalised learning events which are part of the student's interaction). The learner will create personal meaning by interaction (physically as well as intellectually) with the learning environment and he will (hopefully) be less inclined to sit back and let it all happen around him as he might in a lecture environment.
>
> 2. Learning is through collaboration with others – this aspect of constructivism contributes to other areas of the online learning scenario but as far as supporting the student online there is already lots of evidence (including many comments from participants in this e – conference) where it is clear that students can gain a lot from sharing their thoughts with fellow learners and often make significant advances in their own thinking through trying to communicate their ideas online (with the semipermanence which is not present in face-to-face exchanges).
>
> So I try to promote constructivism as a theoretical basis for online learning." (Ewing-D 2000b)

Ewing (D 2000c) goes on to explain what he feels are the features of his model of learning which contribute to its success with student teachers:

> "There is information which has to be made available to the learners and will (hopefully) become his personal knowledge. This is available online both through tutor prepared web pages and from those which the students can access from the web.

1. There is the verification of this knowledge and the clarification of misunderstandings or poorly developed concepts. This would normally be implemented through submissions, tests, assignments or other text based interactions between student and tutor …

2. There is application of (improved) knowledge to a new scenario where it becomes meaningfully internalised through linking with a (new) practical environment. This is relatively 'easy' for student teachers because we always ask them to try and apply their knowledge and understanding in a real (or virtual) classroom situation. The number of such 'new' environments is therefore virtually endless and our students can always find something new for the application of their learning. Students will (but mine are not quite there yet) be expected to produce this application of their learning in an online format.

I try to attempt online learning with these three elements. The first two already happen quite successfully, the third is 'getting there'." (Ewing-D 2000c)

Perhaps one of the reasons for this enthusiasm about constructivism is the relationship it has with deep learning:

"Deep learning … seems at first sight to be much more aligned to a constructivist approach. It refers to learners not just being personally involved but also to them making connections and organising fields of knowledge in ways that are personally meaningful. The online environment can be really helpful here." (Rosie-D 2000e)

But Rosie (2000) also notes that constructivism does not hold all the answers:

"The online world is a constructed one. If web sites are used then they are returned to the online classroom for reflection and documentary. It is here that learning processes are paramount. If we accept that different learners adopt different learning strategies can a constructivist approach say anything? Can it handle the variety of learning styles and say anything meaningful? Perhaps the crucial element is the need to help learners build up conceptual maps, ones they cause in their learning but also maps which they can revise as required." (Rosie, 2000)

Not all e-workshop participants were enthusiastic about constructivism. Phillips (D 2000) outlines his problems with the approach, and suggests some alternatives:

"Now, I am not much of a fan for 'constructivism'. For one, constructivism is a term with flexible meanings, as pointed out by Graeme Salter …What do you mean by it? [This is a rhetorical question – please don't respond.] It also doesn't address aspects of scaffolding and relevance, which are covered in part by Situated Cognition Theory, Cognitive Flexibility Theory and Laurillard's Ideal Teaching and Learning model." (Phillips-D 2000a)

Mackie (D 2000) is also pleased to see moves away from constructivism in online learning:

". . . I am delighted to see that there are significant attempts being made to move away from the didactic and/or constructivist positions that currently dominate much of what currently passes as learning theory in the context of online learning. As a practising trainer for over 15 years and a designer of learning web sites since 1996 I am aware that these two approaches have their place but appeal to only some learners, engage only some learning styles in some typologies and are not appropriate to all content." (Mackie-D 2000)

3.2   Collaborative learning

Daele (D 2000a) reviewed some of the ideas behind collaborative learning for the OTiS participants. He explained how learning through collaboration takes place as a result of aiming for a common goal, the sharing of a common body of knowledge and interaction with peers.

Several OTiS case studies that illustrate the application of this collaborative approach. Gwynne and Chester provide an example where students were encouraged to learn from each other. Undergraduates involved in a compulsory liberal arts program at RMIT University, Australia, were asked not to meet for the duration of the course so that an online implementation could be evaluated. The course included:

> "Collaborative work where lecturers are moderators/facilitators to encourage students to learn from and critique each other." (Gwynne and Chester)

In particular they used collaboration to inform course development:

> "Teaching and learning is a collaborative engagement, an iterative developmental cycle: the approach is student-centred; we learn from our students which informs our curriculum design and assessment procedure, either improving or adapting materials and methods." (Gwynne and Chester)

Scheuermann *et al* describe an international seminar where students and professionals can meet to develop their skills and ideas. This demonstrates how interactions can become quite complex:

> "Learning within the environment is structured to be multilevel[*ed*] and complex. Learners are learning from the team, but also from other learners. The team is learning from learners and other team members and participating institutions are learning from learners, teams and other institutions. These complex webs of different learning levels are intimately related to the collaboration taking place across all these levels. Meta-learning is built into the design. Feedback has shown that learners rate this collaboration structure highly." (Scheuermann *et al*)

Collaboration can also be coupled with other approaches – such as in Janes where experiential learning (learning by doing) is supported by a sharing of knowledge and interactions between students and tutors:

> "Work based learning, projects, activities and papers involved learning by doing. Using real-life examples and scenarios are encouraged as is sharing of practice and theory. The strength [*of the programme*] is the online collaborative discussions, and presentations between participants and the interaction between online tutors, participants and international guest tutors." (Janes)

Collaboration is not always the best option for all learners. McKenzie, describing how Henley Management College, UK, designed and implemented a large scale collaborative learning project for a major international client, noted that the time needed for collaboration became an obstacle for some learners, in this case where the process was not directly assessed:

> "Time to participate in the course became an obstacle for many course members, given that they were travelling extensively, and working very long hours. The collaborative learning process was seen to be time consuming, and not directly beneficial because performance on that dimension did not contribute to the qualification process." (McKenzie)

More closely linking collaboration and assessment might overcome this problem:

> "… evaluation revealed that although the emphasis on collaborative learning did not suit all students, they appreciated the integration of activities with assessment, because it guaranteed the involvement of all students." (MacDonald)

3.3   Experiential learning and reflection

> "In line with adult learning principles, we learn better when we 'do'." (White and Moussou)

Experiential learning, the gaining of knowledge and learning through experience (Laurillard, 1994), is particularly applicable to adult learners, many of whom will appreciate the opportunity to put their new knowledge into practice in the workplace:

> "This link to practice appears to influence the student groups' energy and ability to generalise the skills developed." (Gilbert-Hunt and McLaine)

Coupled with reflection on experience, as advocated by Salmon, experiential learning, when combined with reflection, can be a successful strategy for the adult learner keen to put into practice their new knowledge:

> "Engaging in reflective and interactive online activities, especially those leading to explaining, justifying and evaluating problem solutions, is a very important learning process. In 1983, Schön pointed out that people change their everyday practice by having reflective conversations, they frame their understanding of a situation in the light of experience, and they try out actions and then reinterpret or reframe the situation in the light of the consequences of that action." (Salmon)

Several OTiS case studies illustrate the application of experiential learning approaches. Sharpe and Baume describe the postgraduate certificate in 'Teaching and course design in Higher Education' – a professional development course run by the Open University, UK. This is clearly a context where experiential and task based learning have relevance:

> "The courses are designed to support the development of competent teachers in higher education through organised and reflective study and assessment leading to an accredited award. The courses are strongly grounded in the day-to-day practice of teaching and associated experiential learning. Therefore, great emphasis is placed on reflection, task-based activities and the sharing and learning from peers." (Sharpe and Baume)

McKenzie provides some ideas of the methods that can be used to deliver experiential learning opportunities:

> "[*There is an*] emphasis on practical application of theories and concepts to the learners' business environment problem using case teaching, online discussions, and projects, some of which may be company sponsored. The expectation is that the design of the process to deliver the content will simultaneously provide experiential learning in virtual team working." (McKenzie)

MacDonald and Nurmela both highlight the need for reflection on experience in an experiential approach:

> "… an experiential approach in which online activities and interaction form a central part of the course. The activity-based structure requires students to learn by undertaking practical activities linked to the assessment. They are required to reflect on issues debated online in their assignment essays, and to

> draw on evidence from messages contributed to online discussions, and other resources, in order to illustrate course issues." (MacDonald)

> "Learning by doing is the key methodology used in *Online Tutor Training*. Participants get models and ideas about how to guide individuals and groups in online education and use WebCT to practise these new skills. By doing and reflecting on their own actions and thoughts during the course, students get a picture of the tutor's role and tasks in online learning. In this sense both good and bad experiences are welcome." (Nurmela)

> "Self-evaluations and reflections were seen as an effective method when it was time to move on from experiences to a more conceptual level of tutoring online." (Nurmela)

Rosie (2000) recognises in Ewing's case study an emphasis on

> " … students developing shared learning, a sense of community, the opportunity to work at one's own pace and time. This required an emphasis on experiential learning as referred to above and a deliberate use of strong positive reinforcement. Within this a tight structure was adopted to enable students to complete tasks. This in itself reinforces the point that deep learning does not just happen. As with any learning situation it has to be planned and structured. Tutors might use pre-set questions or points (Bowskill) but for deep learning, as Ewing shows, it is not just transmission – it is learning through communication." (Rosie, 2000)

3.4   Problem based learning (PBL)

> "From the practical point of view, Problem Based Learning is very interesting for online learning. Indeed, PBL is based on a 'problem', a 'case', a 'question'... and leads the students to find solutions. They can discuss about their own solutions, research information, encounter experts in the field... All these activities are well supported by the 'new' technologies." (Daele-D 2000c)

Ballantyne advocates problem based online learning to help students apply new knowledge to complex real-world situations:

> "One of the pedagogical problems confronting social work educators – and others working in professional education – arises from teaching an ill-structured and contested knowledge base to students who are expected to make practical use of this knowledge by applying it to complex, real-world situations. Many of our undergraduate students struggle to make the connection between theory and practice within their academic assignments. More worryingly there is evidence that after graduation they continue to struggle to apply useful knowledge in their professional practice with individuals and families. Advocates of problem based learning (PBL) argue that this problem of 'inert knowledge' may be overcome by teaching ideas in the context of their use, with authentic problems from the field acting as the stimulus and focus for student learning." (Ballantyne)

The approach adopted by Ballantyne in an undergraduate social work course at Strathcylde University, UK was to have students working:

> " … collaboratively in small study groups reading relevant literature, discussing ideas (face-to-face and online), making online submissions on their hypotheses about multimedia case studies of family situations, and receiving tutor feedback." (Ballantyne)

Higgison also illustrates problem based learning. The context here is a professional development course (LOLA – Learning about Learning Online) for practitioners in higher education delivered by distance learning to staff in, amongst other countries, Romania:

> "The course was designed around learning by doing and task-based learning. Active learning was encouraged through the use of self-assessment tasks, activities, reflection and discussion points at appropriate points throughout the material which drew heavily on the students' own experience and work environment. These tasks were designed to build towards and integrate with the tutor marked assignment, which was set at the end of each module." (Higgison)

Problem based learning also occurs where the students themselves identify and formulate the problem and collaborate to provide a solution:

> "For those students who could access the online environment, the discussions became active and productive when the students themselves identified a real task that was of direct benefit to them. They needed to establish local meanings for some of the specialised open learning technology used in the course, ie agreeing a glossary of ODL terms in Romanian. The task of agreeing definitions helped to clarify and make explicit understandings and misunderstandings." (Higgison)

Problem based learning has clear relevance where students lack experience or opportunities to apply their knowledge in a work context. Problem based learning facilitates the development of 'professional competence' through defining and scoping problems before suggesting and developing solutions. In common with experiential learning, reflection is a key part of the learning process, and a deep approach should be encouraged.

3.5   Selecting a model

> "The Internet is better suited to student-centred activities, supported by learning resources, than to the transmission of material, and the challenge for teachers is to design activities which encourage students to discuss, critique, summarise and reflect." (Phillips)

Instructivist learning models, involving transmission of material from tutor to student, are not recommended in the online environment:

> "I firmly believe … that an instructivist … didactic approach is inappropriate for learning with computers at university level." (Phillips-D 2000a)

Although, as reported by Salter, this is often the model that is used:

> "… it has become apparent that … most simply want to use the environment to post lecture notes electronically. This has been observed at other universities. Many of the online subjects currently promoted as 'flexible' often do little more than place lecture notes on the Web (McNaught, Kenny, Kennedy, and Lord, 1999). . . . Educationally ineffective or inadequate patterns of online teaching may become habits embedded in online teaching practice." (Salter)

Phillips (D 2000a) reinforces the need for student-centred online learning:

> "I think the measure of any online teaching and learning model is its degree of student-centredness. Palloff and Pratt support this view in their Keynote. That is, pay less attention to the writers of theories, and ask, 'is this activity student-centred or teacher-centred?'. That is the key – think of the way in

which the activities you design can assist students to learn your discipline area, and use appropriate technology to achieve that." (Phillips-D 2000a)

Selecting from a range of learning models and catering for a range of learning styles is recommended to help move away from instructivism, and this is demonstrated in many of the OTiS case studies. For example:

"The approach of the online course was constructivist and collaborative. This approach posits that knowledge is actively built by learners, as opposed to instructivism that assumes an instructor who delivers knowledge and expects learners to receive and repeat it." (Clarke)

"Partly based on constructivist and social collaboration, and action learning principles, different teaching and learning approaches are integrated: individual work, group work. Competitions etc; communication oriented, work performed by asynchronous exchange of messages and upload of documents within the self-developed WWW-learning environment." (Scheuermann *et al*)

Daele (D 2000a) provides an example of a course based on ideas from constructivism, collaboration and computer based collaborative learning:

"The design of our online learning project (Learn-Nett) is based on several theories in Pedagogy and in Psychology. These theories have a particular impact in our field: teacher training." (Daele-D 2000a)

Whichever model, or combination of models, is selected, attention must be given to interaction:

"Online instruction fails when it expects interaction, but simply delivers content or content that does not invite interaction. To facilitate interaction there must be sufficient attention to relationship building, creating a comfortable and appropriate environment for the learners, logical and strong connections between content and the value of interaction around that content." (White and Moussou)

Blom notes how online students do engage in interaction in two different models for online learning:

". . . two models for web based learning, the so-called 'self-paced model' and the 'web-class-model', and we are in the process of testing some assumptions about the interaction pattern in the two models. Our evaluation so far shows that the students in the self-paced model want to concentrate on student-tutor interaction and state very little interest in peer interaction, whereas the web-class students engage themselves eagerly in peer interaction." (Blom)

In addition to interaction, reflection and deep learning are needed to make online learning successful. Rosie (2000) offers a set of strategies to encourage deep learning:

- Explore a range of pedagogies when developing online learning work and draw on different approaches. We all feel comfortable with some over others but do not ignore the less appealing.

- Think through how students are going to become explicit commentators on their learning.

- Think through the assessment strategy from the outset.

- Ensure the assessment requires synthesis and overview and a search for alternatives rather than excessive detail.

- Students are going to feel uncomfortable some of the time. This can be productive as well as negative. Work through where some of the problems are likely to occur.

- Get students talking to each other.

- Use empathy, empathy, empathy, but not in a 'there, there it's ok' way. We have to learn how to handle our own learning.

And students need to:

- Understand what the key signposts are and what assessment demands.

- Use each other as much as possible.

- Recognise that communicating together is an important part of learning.

- Go beyond reflection as a retelling of a story. Be critical in the sense of working out how things could be different and why that might matter."

Finally, flexibility in approach may be necessary to meet student learning needs:

> " I have had instances where I have had to resort, as a tutor to the model of learning that most helped my student make the connections and move to the next level of learning...sometimes that means choosing to use techniques that might not be your first choice but that are appropriate to the situation and the learner needs." (Janes-D 2000)

To summarise, the experiences of OTiS e-workshop participants suggest that an online tutor should:

- select a student-centred model of learning,

- consider mixing models (eg collaboration and constructivism),

- provide opportunities for reflection,

- encourage deep learning,

- be flexible in applying learning models to meet student needs.

All the examples provided so far have made use of pre-existing learning models, developed with the classroom or first generation distance learning situation in mind. Blom suggests that there is a need to establish completely new models of learning to accommodate the online learning experience:

> "Developing suitable models is a major challenge when the Internet becomes the main vehicle for our instruction. We have developed two models where the main difference is student progress: our traditional correspondence model focuses highly on full flexibility in time and space. The students register at any time and they are fully self-paced. We want to establish a similar model on the web, believing that this very flexible model caters for the needs of many among our target groups. On the other hand, the web lends itself easily to a model where we gather students in web classes that start at the same time and proceed at a set pace. In other words, their flexibility is restricted in time compared to our traditional model, but there are also obvious gains." (Blom)

Whatever model is chosen for the design of an online learning experience, there now comes a need to find the most appropriate strategy for course delivery. The next section reviews strategies for delivery and experiences of delivering online education using different technological tools.

4 Online Delivery Strategies

> "We need to look at the types of online delivery that exist, then see how each suits varying preferred learning styles. There is so much variety in what instructors do online – as witnessed by the case studies." (Roberts-D 2000)

Roberts (D 2000) suggests that there is a progression in the types of delivery modes available:

1. Simple web sites with hyperlinks.
2. Web sites, mainly text, but with some interactivity.
3. Asynchronous sites.
4. Sites with quizzes or self-assessment.
5. Synchronous sites.

Here, we will examine web sites (linking 1, 2 and 4 from the list above), and the use of asynchronous, synchronous and mixtures of communication tools in turn, in an attempt to get a view of the variety of delivery strategies that online tutors use. Throughout this review, Roberts' (D 2000) caution should be kept in mind:

> "All of this should perhaps be seen in a subject context. The way instructors use the various online delivery platforms varies between science and humanities type subjects. I teach statistics and IT, but have spent some time advising a media studies lecturer how to put material online – and it certainly needs a different approach." (Roberts-D 2000)

4.1   Web pages

The simplest use of web pages is the 'put the book on the web' solution (Roberts-D 2000) This will probably include the use of hyperlinks:

> "We may turn up our noses, but there is a lot of it about! Advantages: lecturer does not have to print off the notes. Hyperlinks to definitions, other chapters, other materials or other sites. Disadvantages: material that is well designed for a screen does not print neatly. If students are simply going to print the stuff, they were better off with the book. This is the easy way out – no interaction no discussion. It could be seen to sit with the "instructor as source of wisdom, pour it into the empty vessels 'behaviourist' model of learning." (Roberts-D 2000)

Rosie challenges Robert's view that the experience of working with a 'book on the web' is interaction free:

> "You refer to the 'putting the book on the web' approach as behaviourist and sure it can be largely interaction free. My question is to take your point that it is not all bad and maybe try to find some other strengths. My experience is that some use of WebCT and tools such as Topclass can be synchronous, asynchronous and highly behaviourist in a way that does not promote learning. Meanwhile some other explicitly behaviourist sites are actually more challenging and helpful for learners." (Rosie-D 2000e)

Many of the OTiS case studies have employed web sites. In most cases the use of the web goes beyond simple 'book on the web' idea, to include material tailored to the specific needs of a student group, material not available in textbooks, material from 'real life' case studies, and interaction and interactivity. In Sitharam and Norikazu interaction was provided by using email in addition to web pages on modules specifically targeted towards postgraduate civil engineering students at Yamaguchi University.

> "As the course needed a wide range of knowledge from theory to practice, web pages were constructed on structured topics with working links providing several case stories with picture galleries. . . . In another course, engineering terminology has been introduced both in English and Japanese by creating small dictionaries by the students and linking to the WebPages of the course. As many Japanese students are very quiet in the classroom, interaction was encouraged using e-mail, which was found to be very effective." (Sitharam and Norikazu)

In another example Saunders describes how a traditional lecture based course in microbial genetics at the University of Westminster, UK has been changed to make use of a range of online learning materials. Interactivity was introduced through tutorials and formative tests:

> "All course material was converted into web pages. In addition an interactive tutorial was written for each topic within the course and short formative tests, (comprising multiple choice, multiple response, fill in the blanks and diagrammatic hotspot questions) for each topic were set." (Saunders)

Roberts (D 2000) gives her observations on where interactive web sites can be found, and how, in her view, they move the learning model towards a more student-centred approach:

> "I see these a lot in the statistics area – instructional applets that illustrate sampling variability, effects of outliers on sample statistics, effects of changing slope of line of best fit, etc. I imagine there could be others out there illustrating topics in physics, economics (supply and demand graphs?) etc. These are moving towards a constructivist model of learning – students encouraged to experiment and construct their own understanding of what is happening. Of course they need some good instruction around them, and not many that I have found on the web have that." (Roberts-D 2000)

Creanor's experiences probably reflect the aspirations of many others who would like to introduce more interactivity into their web sites and cater for a wider range of learning styles that are constrained by technical limitations and costs:

> "The online MSc in Lifelong Learning is very heavily text based at the moment and we have been discussing how to introduce more multimedia elements where appropriate. So far our use of multimedia has been limited as most of our students log on via a modem and telephone line and we don't want to burden them with huge files and slow-loading web pages. Another reason for doing this would be to assist students who are in some way disadvantaged. For example we have one student who is dyslexic and has problems reading large amounts of text. Using more animations, video and audio could be one way of helping with this.
>
> It's really a trade off between possibility and accessibility – while we want to create an attractive and effective web site for the course, we have to put students' requirements first." (Creanor-D commenting on her case study)

Rotheram documents the development of a web site for undergraduate social science students at Nottingham Trent University, UK. Incremental development of web based resources by individual tutors in this way is common. This web site is intended for students who (should) attend classes. It began by delivering lecture notes to enable students to develop or consolidate their IT skills. Several versions of the site have been developed to meet changing students' needs and circumstances, in a pattern that probably reflects that of many other web sites and accompanying classroom courses:

- Version 1 – provided partial lecture notes and references for two modules, together with an email link to the author. It was in addition to the usual classroom handouts.

- Version 2 – included a smarter interface and additional modules. Documents were provided in Word as well as HTML format. Paper lecture handouts and assessment details were now largely abandoned. Students received basic notes on how to access the site and were under pressure to use it to obtain core course materials.

- Version 3 – introduced more content – PowerPoint slide shows of the transparencies put on the OHP during lectures. It also featured a web form, inviting contact with the module leader. There was an experiment with the use of frames.

- Version 4 – included frames and abandoned the Word documents. Frames were then dropped to avoid printing problems, difficulties for the visually impaired and for users coming direct to the site.

- Finally the interface was redesigned again, to include links to external web resources and reports on student feedback. A 'module notice board' that allows students to access a special 'public folder' on the University email system has been introduced. The folder contains announcements about the module, and copies of the handouts still given in seminars. Additionally, the author has begun to initiate email contact with students on matters to do with their modules, eg newspaper articles that may be of interest.

For any web site based strategy there will be a need for constant development and update. In this case each new version of the web site included features that were designed to enrich students' learning, and reflects the trend away from the tutor-centric classroom setting to a more student-centred approach.

4.2   Asynchronous (time independent)

Roberts (2000) outlines the features of typical asynchronous sites:

> "… asynchronous sites … provide for discussion as well as instructional material – eg LearningSpace, WebCT. Here we need to look at different ways instructors are using the discussions – free chat, specific topics to be commented on, comments for everyone to see or restricted to teams, topics provided by the instructor or suggested by students. Then it all depends on how the instructor responds as to what sort of learning takes place." (Roberts-D 2000)

The use of asynchronous techniques makes special demands on tutors:

> "… we argue for wider recognition of instructor-led asynchronous distance learning as fundamentally discontinuous with other delivery models since it demands entirely different approaches in the dimensions of course development, pedagogical behaviours, and student expectations than are used for the classroom or synchronous distance learning." (Neal)

However, if these demands can be met, there are significant advantages for the tutor, particularly in terms of promoting opportunities for experiential learning and reflection:

> "Asynchronous distance learning has the advantages of time zone independence and that, once developed, it can be reused much more easily than the synchronous or classroom versions, with a knowledgeable facilitator to replace or assist the instructor. There is also the pedagogical advantage that students have time to think about points made in class and their contributions (Laurillard, 1993), as well as to relate what they learn to their jobs." (Neal)

A typical asynchronous activity involves the students in discussions using an asynchronous chat room or discussion forum, with or without associated text or web based materials.

Examples of these were found in a computer mediated Italian language course offered at a distance by the University of Auckland, New Zealand reported by Radic:

> "Students study from multimedia CD ROMs and text book in their own time and at their own pace. Their point of reference, 'classroom' is the asynchronous chat room on the course web page." (Radic)

Ehmann describes the use of asynchronous techniques to facilitate writing exercises:

> "The asynchronous writing sessions are organised such that students submit a piece of writing … 24 hours/day, 7 days/week and receive a response within 24 hours. A tutor's written response is designed to improve an immediate draft, but above all, a student's broader composition skills. Tutors' commentary, therefore, focuses on larger issues such as thesis statements and overall organisation. Surface level features including grammar are addressed as second order concerns.
>
> … The writing programme is supported by a platform that allows for an asynchronous, exchange of essays and comments. Papers are exchanged in three steps.
>
> 1. Students log on to the web site and complete a writer submission form, this form along with a student's draft is uploaded to a queue.
>
> 2. When a tutor is on duty he/she reviews the first submission form and essay in the queue.
>
> 3. The tutor completes a response form and returns the submission to the student's … mailbox.
>
> … archives of each tutorial exchange are kept; both tutors as well as individual students have access to these archived sessions." (Ehmann)

Clearly, such an activity requires careful preparation. Kennedy, commenting on Neal, offers some of his own reflections on this preparatory work, and how it is actually very similar to the preparations for a face-to-face activity:

> "In designing an asynchronous online discussion, I find that I'm using the same skills as I use in preparing for a small group discussion in a classroom. These skills include preparing the question, scheduling it in the timetable, linking it to the wider materials and issues of the discipline, eliciting comment from the participants, moderating the discussion, summarising the discussion and archiving the conclusions.
>
> "I would like to propose that the discontinuities [*between asynchronous online learning and face-to-face discussion*] are ones of time and place – but not, as you imply, of pedagogy." (David Kennedy commenting on Neal)

MacDonald makes some suggestions for ensuring success based on research using four courses run by the UK Open University. In each case there is an element of assessment based on participation. She suggests an initial face-to-face meeting of participants to encourage participation:

> "In common with work from other universities we found that one of the factors influencing the success of the management of online collaboration was an initial face-to-face or real time meeting. I think this is partly because of the management decisions like timing and task allocation, which need to be made. These decisions are time consuming when arrived at asynchronously. There is also the affective side – the encouragement derived from real time meetings, when compared with asynchronous exchange." (MacDonald)

Of course, a face-to-face meeting may be impractical where participants are widely dispersed. Other problems that may be faced include getting students to contribute:

> "It is often difficult to get substantial student contributions to asynchronous discussion. Some students are reluctant to commit ideas to writing for fear of being wrong. Others are discouraged when there is no feedback for several days." (Roberts)

Saunders recognises the problems:

> "Generally attempts to focus students on a topic for asynchronous discussion is extremely hard work and requires a quite different approach to that used in the classroom." (Saunders commenting on Neal)

One solution seems to be to get the students to identify their own discussion topic:

> "I would say that the only time that I have seen successful asynchronous discussions, with respect at least to the numbers of students actually contributing, has been when one or a group of the students have arranged and managed the discussion topic." (Saunders commenting on Neal)

> "The most active discussions occurred when the participants identified an issue they wished to discuss rather than activities that were put forward by the tutor. These came up as a result of workshops or issues in their teaching." (Bailey)

Finally, asynchronous communication is not always appropriate. It does not, for example, support group problem-solving or decision making (Harasim, 1989) and it can impact on group dynamics as reported by McKenzie:

> "The second module required some collaborative discussion of subject issues that was not assessed, but was subject tutor facilitated. The emphasis of the learning support tutors was on helping the group work through the storming process, by encouraging the course members to surface their differences on line, and express their feelings about the experience of working collaboratively. This helped the course members experience the impact of asynchronicity on group dynamics and experience the way conflict differs in an online environment to face to face." (McKenzie)

4.3   Synchronous (real-time)

Synchronous or real time communication systems have an attraction and fascination for many educators. There are many varieties and flavours of real-time communication as described by Bowskill:

> "The first thing most people think of if they ever think of real-time systems is chat technologies. This may be because of the profile chat holds in the media or it may be because they are the most commonly used systems. Even within such a framework there are chat systems that are telnet or web based and considerable variation between different chat systems.

> "There is however a broader range of real-time systems (even leaving out video-conferencing tools as I will here for reasons brevity). There are text based and graphical systems for instance and some of the graphical environments offer three-dimensional spaces. Some other real time systems also offer a combination of synchronous and asynchronous tools within the same overall space (such as Multi-User Virtual Environments or MUVEs).

> "The point I would make here is that real time technologies are both complex and diverse in their facilities, potential and feel. They are more than just chat tools." (Bowskill)

There are many examples of the use of synchronous systems. Roberts describes a well attended synchronous class on a postgraduate diploma course at the University of Ballarat, Australia:

> "The most popular synchronous lesson has been the 'how do you tell what statistical test to do on the data for your assignment' one. That lesson starts with a PowerPoint (converted to html and run from a web site) overview of the main steps. Then there are some whiteboards with examples of scenarios from previous years' assignments, with multiple choice questions like 'the experimental unit is'. . . 'the variables measured are...'. With immediate feedback, students who were getting most wrong on the first couple of examples were starting to see the point by the last one. Finally control is passed to different students for them to type in details of their own assignment problems (collecting and analysing data from their workplace). These new contexts are then used as the basis for general discussion and feedback. Note that this process did not actually do the assignment for the students, but merely ensured that they were going to use the correct techniques, and could understand where to start.

> "The synchronous classes…are designed to review the main points of the weekly topic, seek feedback on levels of understanding, and engender a sense of community in a geographically dispersed class. Finding a common time for the synchronous class was a problem with this group too. Students found it valuable, and tried to be there. Average participation ran at about eighty per cent of the class. Whiteboards and other summaries of the sessions were later posted to the LearningSpace site for those who missed the live class." (Roberts)

Many examples combine synchronous and asynchronous techniques within their courses. Ehmann describes maths tutorials provided by the American company Smarthinking:

> "The live math tutorials are offered during key morning and evening hours. Tutors help students through problems and examples using association, organisational, and visualisation teaching strategies.

> "… The synchronous math programme is supported by a white board and chat capabilities which allow for synchronous, real time interaction and communication between students and tutors. Students can also 'email' their questions to a tutor. Tutors respond to students on an archived whiteboard within twenty-four hours; students then access their particular whiteboard with a special password." (Ehmann

Gwynne and Chester describe their learning environment, which includes spaces for community building activities and uses synchronous tools to help develop relationships:

> "We had a number of different spaces designated for different tasks and depicted by different icons, utilising both synchronous and asynchronous discourse. One was the Mailbox where journals were sent, another was the Conference space which were the separate folders for each Conference. Another was the Personal Identity Pub where students could socialise, build up rapport with each other (where the tutors joined in but did not intrude) – a space for 'chilling out'. The other facility was the synchronous component for real-time chat which also provided an opportunity for relationship building, asking questions about the software of each other, finding out more about the others online, the significance of the aliases and forming some

impression of them, their interests, their gender, their course, etc. The limitation we found was that only five people could have a real-time chat simultaneously." (Gwynne and Chester)

White and Moussou outline synchronous activities including audio and visual components, designed to meet the needs of different learning styles:

"Two sets of synchronous activities were included to provide exposure to a range of tools to support online interaction and to provide an additional sensory experience (audio). We all learn/hear/think in different manners and pure text does not work for everyone. Phone calls add another 'human' touch of voice – to hear laughter, seriousness, etc, adds an important dimension. Also, as an online tutor or facilitator, we need to recognise our styles and how to assess the styles of group members and design/facilitate/tutor accordingly. The audio conference was really important to some, and fairly irritating for others. We also shared techniques to make audio conference calls more engaging. We have also started using more visual tools – colour, images – and this sparks engagement for some folks and, yes, is irritating to others. Kind of a balancing act!" (White and Moussou)

Where synchronous techniques are integrated with asynchronous activities, it is difficult to evaluate the synchronous tools alone. Roberts (D 2000) has found this in her case study on LearnLinc:

"Here I try to replicate a face-to-face classroom environment. I am not sure what sort of learning goes on – it is always combined with asynchronous material." (Roberts-D 2000)

It is also true that synchronous events do not suit all learners and learning styles. Those who may have difficulty with synchronous strategies may include participants who are not using their first language, those who have poor typing skills and those who do not like the immediacy of the format.

"Another barrier that we didn't expect was the high proportion of participants with complete lack of keyboarding skills – up to a third of some groups. Whilst they picked up clicking on links and icons with the mouse quickly they found operating Shift & Caps Lock difficult which led to great problems…" (Wishart)

"Designers and facilitators of online courses need to be aware of, and have respect for, the diverse needs of their learners. In particular, informal chat areas in online courses are vital to the overall positive learning environment for feeling types. Making participation in these informal areas compulsory, however, might disadvantage the thinking types." (Whittington and Dewar)

Finally, there are some guidelines for tutors:

"Facilitating live discussions is a developed skill, but we found it much easier than the facilitation of asynchronous discussions, where it is challenging to draw out people who are not contributing, quiet others, and comment appropriately and constructively on contributions. Integration of real-time discussions and chats, as will be available in subsequent releases of LearningSpace, benefit the students and instructor, since they learn more from, and are more of a resource to, each other." (Neal)

"Tutors in synchronous classes do need to design the questions carefully, and concentrate on those areas where they suspect there may be difficulties. Students participate most enthusiastically when they feel they are getting a lot out of it." (Roberts)

Other guidelines for tutoring synchronous activities can be found in Chapter 2*: The tutor's role and effective strategies for online tutoring*.

4.4   Creating a strategy for online delivery

Many online courses employ a variety of strategies for the delivery of material and the close link between synchronous and asynchronous technologies has already been demonstrated. Many tutors will employ the full range of opportunities to produce learning activities that fit within their chosen learning model and suit the learning styles of their learners.

Saunders' strategy includes multimedia tutorial materials, synchronous, asynchronous and face-to-face sessions:

> "Interaction was promoted online via the use of discussion webs that were used both for synchronous and asynchronous discussions. Interaction in face-to-face sessions was promoted directly by student's access to the online learning materials. The tutorial material was built in a multimedia authoring package allowing a good degree of interaction between student and the on-screen information." (Saunders)

In Webster's case study an undergraduate seminar, 'Planning and the Market' at the University of Wales in Cardiff, was run using WebBoard. The tools needed were structured into an innovative e-seminar:

> "E-seminars/tutoring allows peer tutoring, allows students lacking in confidence to ask questions (anonymously if they wish) and contribute to discussion. Running the seminar over a month allows considered responses. The e-seminar format in particular supports students in achieving objectives …The students log in to a virtual seminar room in which they find resources, questions and discussion groups." (Webster)

Roberts also employs the full range of opportunities:

> "The online units are delivered with a mixture of asynchronous web based learning materials (unit structure, materials, threaded discussions, multiple choice quizzes, and assessment submission and return facilitated using Lotus LearningSpace). Software and large multimedia files are delivered via CD-Rom, and there are supplementary text book or printed notes, as well as the weekly synchronous classes." (Roberts)

Including face-to-face contact as part of the strategy may help to meet diverse student needs or to fit the chosen learning model:

> "Feedback from the first running of the module suggested that first year students who came from secondary school environments where face-to-face contact was the norm, expressed unease at the lack of such contact. Implementing a mixed mode of asynchronous virtual and synchronous face-to-face delivery in the second running of the module helped eliminate this tension." (Finkelstein)

> "On campus, mixed mode: face-to-face sessions with the local tutors, ad hoc meetings between the local participants, computer conferencing via a web based course environment, email, three videoconferences between the two participating groups. Tutor/peer support via email and the course web site conference forums; local face-to-face sessions." (Tammelin)

McKenzie selected online methods specifically to develop student skills in online collaboration and teamworking. These skills were identified by their employer as essential for the support of virtual team working:

"Emphasis on practical application of theories and concepts to the learners' business environment problem using case teaching, online discussions, and projects, some of which may be company sponsored. The expectation is that the design of the process to deliver the content will simultaneously provide experiential learning in virtual team working.

"Practical experience of collaborative learning was a primary educational objective for the client, who wished to use it as a catalyst for improving the corporate capability for team working, both virtually, and face-to-face.

"[*The learning experience was*] designed to build cumulatively towards the objective of collaborative learning online. So, whilst the course members were studying content, they were doing so in such a way that they developed the necessary skills for virtual team working." (McKenzie)

Newby-Fraser and Clayton report on a staff development initiative which aims to promote and support innovation through 'reflection' and 'learning by doing'. Again, their approach was to focus on the skills needed rather than the delivery techniques:

"Participants … were encouraged to reflect on their existing practice and seek guidance when they perceived a weakness. Staff were not instructed on specific mixed mode delivery techniques rather they were taught the specific skills they identified they needed." (Newby-Fraser and Clayton)

Tutors can experience resistance when attempting to change or modify known modes of learning and establish new practices, but this can be overcome by providing support and links to a known framework of experience.

"What we encountered was a surprising and interesting resistance by students to the new technology, as well as a slow process of adaptation over the course of the module. … The resistance was also in part due to the changing work patterns that online study demands of students. Students were not used to dealing with a lack of a fixed time and place for tutorial presence and participation… Students also discovered that electronic tutorial participation required short but frequent visits to the virtual classroom. Some students found this quite liberating. Others attempted to maintain their traditional modes of study and work patterns, logging on infrequently or at the last minute before the lecture. Many learned the hard way with their first assignment that this was not always the best policy. Those who attempted to complete the assignment at the last minute found they had not built up sufficient reflective discussion to present an effective comparison. Those who had did better. Students seemed to have learned from this, and on subsequent assignments generally organised and managed their time and work more efficiently as a result.

"Following on from this was student adaptation of old frames of reference to deal with new ones. One of the most popular aspects [*was*] . . . its facility for allowing realtime online chats . . . Students liked this facility of instant communication, which is basically a virtual version of what often occurs in real tutorial spaces.

"These adaptations suggest an important point about utilising electronic teaching techniques. Students value situations that fix and allow learning to take place in group situations and through some form of face-to-face or simultaneous contact. Students also felt more comfortable working in groups where they knew other individuals, partly reflecting the problems that the anonymity of online tutorials can often present... On the other hand, the flexible tutorial work allowed students to fix their own schedules and work at their own pace." (Finkelstein)

Hird reports on the introduction of constructivist based methods into teacher training courses and identifies the need for redefinition of the roles and relationships between students and tutors:

> "In the new online environment, roles are not so clearly defined. The new space or context for learning provides an opportunity to shape anew the relationship between teacher and student. Since none of us has had previous experience in an online course, there were no pre-existing notions of what interaction should transpire (or not) between teacher and student. My experience to date has been that they are more willing to express their views in the online environment, even when they are in direct conflict with ideas I have presented. Since the most durable learning occurs as students work through the conflicting ideas, the course web sites have provided fertile ground for constructivist learning." (Hird)

Collis (1998) summarizes the key educational principles that characterise the approach adopted in the majority of OTiS case studies discussed:

1. Both the learner and educator play an active and unique role in the educational process.

2. The process of creatively acquiring knowledge involves human interaction and learner competence that are developed and evaluated within a communication-oriented educational model.

3. Contemporary models of learning support learner-centred instruction that encourages self-assessment, personal reflection, and elicits learner articulation of their ideas.

4. The learning environment should maximise meaningful and reflective interactions while providing a variety of opportunities for feedback.

5. Creating instruction that promotes learner self-regulation and individual responsibility is the product of educators who are academically well prepared and monitor the quality of student work.

6. Adult educators recognise that 'students want to move efficiently through their studies, in both time and energy; students do not automatically have good study skills, discipline, or motivation.' (p 375)

5 Issues and Recommendations

A number of issues surrounding the context and pedagogies for online learning were raised at the OTiS e-Workshop. These included:

- learning strategies,
- learning from text,
- assessment,
- gender and cultural issues.

5.1   Learning strategies

Higgison (D 2000b) asked OTiS e-Workshop participants what they considered to be the key learning strategies best suited to online learning. Responses to the question and evidence from elsewhere suggest a number of useful strategies for tutors.

First, the 'bottom line' – students need to understand why online learning is appropriate:

> "My bottom line notion with regard to 'key learning strategies' is that the students have a clear idea of why the online learning approach has been adopted. If it is because there is just nothing else available (such as for remote students), then fine. But if it is clear to the learners that online learning has been chosen because of specific benefits – with a clear statement of what these are – then better. If the students realise for themselves the value and the specific strengths of using an online approach for certain learning experiences – then best of all." (Ewing-D 2000a)

Next, including an element of collaboration in the process will make the online environment essential:

> "The process of learning should involve collaboration – the online learning environment becomes critical to the learning process." (Street-D 2000)

This collaboration could be used to help to set the objectives for the learning activity:

> "We developed a pedagogy, the first part of which was the involvement of students in setting learning outcomes (LOs). Obviously some LOs were fixed but students had control over some aspects and were assessed in relation to this. There was therefore a rationale for using online approaches. Students found they could develop their LOs through synchronous discussion. Also being online as the course tutor, meant I could turn the discussion back on students more easily than in face-to-face. Students used electronic tutorials for checking out their LOs and it was interesting that for seventeen of the students use of online was mentioned in their LOs." (Rosie and Thompson)

And, if collaboration is essential in the learning, this should also be made explicit:

> "Ensure the learning objectives demand collaboration and the content supports collaboration. Use open-ended activities for which there are no clear solutions. 'It is imperative in the design stage to think through collaborative exercises: What steps are the students asked to take? What specifically is the goal? The intended output? Are there milestones along the way? Are the early exercises or steps particularly straightforward and manageable?'" ((Kulp, 1999) quoted in Kulp)

Tutors can structure and design activities to make collaboration essential. Letting students select their own discussion topics is one strategy that has already been highlighted, providing controversial topics is another:

> "Discussion doesn't always work unless it's either controversial, or has an end result...this has led to the use of task based learning experiences. It doesn't appear to matter too much what these are as long as there is an end result; a collaborative essay, a group presentation, a group summary of text etc. These all bring the learning into the online environment by making the students use it (it has to be said that they also use offline where possible). The online environment becomes the repository of work." (Street-D 2000)

Another strategy to encourage collaboration is to assign students to roles and teams:

> "I assign participants to learning teams, and I assign one or more team roles to each team member based on their particular strengths or ask them to make the assignments themselves (Kulp, 1999):
>
> 1. *Team leader or Co-ordinator*, who clarifies goals, promotes decision-making, delegates tasks, keeps things moving and on track,
>
> 2. *Scribe or Monitor*, who observes accurately and documents the team's work,
>
> 3. *Specialist*, who has unique subject matter or technical expertise to offer the team,
>
> 4. *Encourager or Teamworker*, who keeps everyone on the team involved and averts friction,
>
> 5. *Checker*, who makes sure everyone on the team understands concepts and processes,
>
> 6. *Starter or Resource Investigator*, who reads ahead and initiates discussions and comments on resources,
>
> 7. *Implementer*, who turns ideas into practical actions,
>
> 8. *Wrapper, Summariser, or Completer-Finisher*, who integrates and summarises discussion, searches out errors or omissions, delivers on time." (Kulp)

Often, a high level of tutor support is required at the start of a course. This may be in the form of highly structured activities, or frequent tutor intervention. The gradual withdrawal of this 'scaffolding' as the course progresses will help learners to become more autonomous.

> "Vygotsky's concept of scaffolding is used specifically in Patsy Clarke's case study of online learners doing it for themselves." (Rosie, 2000)

Other case studies that illustrate the use of scaffolding are Ewing and Salmon. Ewing uses group work to support individuals before leaving them to work alone:

> "Students were encouraged (strong positive reinforcement) to work and to respond to these tasks in groups. The tasks were… progressively tailored such that the student responses became more closely related to the work involved in the individual research activities." (Ewing)

Salmon describes a structured approach that initially provides high levels of support that is gradually withdrawn as the participant becomes more skilled and confident in the online environment and with the online activities:

> "Our ideas are to try and integrate learning the software along with experiencing learning online (apprenticeship) and with appropriate online tutoring (we call it e-moderating) at each stage. So each of the five stages of the training offers just enough information and practice in the software to undertake their activities at that stage. What might be called a 'scaffolding' approach. It is pretty difficult to disentangle the three aspects, we think, but

necessary in order to build meaningful and worthwhile online training."
(Salmon)

As well as support strategies, tutors need to have strategies in place to deal with problems – particularly with technology:

"Research has found that students tend not to use CMC [*computer mediated communication*] unless it is an integral part of the course. However, a fully integrated use of CMC tends to suppress the use of other media, which means that a student will drop out if unable to cope with CMC. Technical difficulties were, indeed, the cause of the majority of withdrawals from the course." (Morrison)

However, Sitharam (D 2000) suggests that the new technology may be more of a problem for the tutors than for the students:

"It is my experience that this new technology will be adopted more easily by students than the tutors. Thus, tutor training is a must and how we do it is a big question? Some do hesitate to use as they are hesitant to use the new technology." (Sitharam-D 2000)

In summary, the key learning strategies suggested to encourage learning in an online environment are:

- make sure the students understand why online learning is being used,

- make collaboration an essential part of the learning process,

- encourage collaboration using appropriate techniques,

- use scaffolding techniques to encourage learner autonomy,

- develop strategies to cope with technical problems.

5.2   Cultural and gender issues

The background of students, and their previous online experience, has a significant impact on their success and experience with the online environment. An introduction to online learning that includes some face-to-face support may be appropriate for newcomers:

"… I feel a mixed mode (a face-to-face) along with online learning will work better as a transition before going to full online. One can use email, online discussion groups (synchronous as well [*as*]asynchronous techniques for improving the interaction. Web helps a lot in this direction to post the important information and provide easy access to the students." (Sitharam-D 2000)

For students with previous experience of school or traditional classroom situation, the adjustment to a more student-centred approach to learning can cause difficulties:

"… many students had difficulty in adjusting to a learning environment as opposed to a teaching one. All students who failed to meet the submission deadlines seemed to fall into this category. Some of those who did do all that was required of them felt uncomfortable being placed in a situation where they would learn the technique rather than one in which they would be taught it particularly, but not exclusively by any means, those students from an Eastern education background." (Glasson)

Conferencing may offer benefits in helping with this adjustment to the online environment:

"Conferencing also offered an opportunity to develop the students' approach to learning in HE [*Higher Education*], from lectures and tutorials and the

> traditional passage of knowledge from tutor to student, to
> motivated/task/sign-posted, facilitated learning. This appeared especially
> relevant to the teaching of statistics and mathematics where students seemed
> to expect traditional forms of delivery, and know how to deal with them."
> (Street)

The cultural background of students can have an important impact on their learning, and may determine their learning styles and preferences. Problems for students from an Eastern educational background were alluded to above, but the issue is broader:

> "Also another important point of Language and habits of people from
> different cultural background should also be kept in mind while discussing
> the tutor and learner styles. These styles very much depend on their
> background and practices. Learner styles depend on their pre-school training
> in their country / culture." (Sitharam-D 2000)

Where work is completely online, confusion over the gender of participants may occur, but Phillps (D 2000b) suggests that this doesn't really matter.

> "One of the real difficulties with working online in a cross-cultural
> environment is working out the gender of the person with whom you are
> corresponding. Most of the time it doesn't matter, and I couldn't care less
> which gender a person has – it's what they write which is important."
> (Phillips-D 2000b)

Daele (D 2000b) agrees with this:

> "…you're right, in most of cases, the gender in online communication is not
> really important... but sometimes that helps to better understand the person
> with whom you are communicating..." (Daele-D 2000b)

But Morrison notes an incident where assumptions about gender led to problems in an online conference:

> "Gender issues became apparent in the tutor conferences at an early stage,
> when it was assumed (by a male tutor) that the person providing technical
> help, who had a non gender-specific name, was male. His defence that
> 'people should state their gender where it isn't obvious' led to the only
> outbreak of flaming within the tutor conference. Other researchers have also
> noted this assumption being made by male students." (Morrison)

The social and cultural background of students will influence their learning style and comfort with particular strategies. Where issues of culture, gender and background are explicit, it may be possible to accommodate them, otherwise the solution may be to offer a range of online techniques and strategies to encourage learning. These issues are explored more fully in Chapter 6 – *Cultural and Ethical Issues*.

5.3   Learning with text

It has already been suggested that some students will learn better from text, and will be happy communicating in writing, whilst others prefer a more visual or auditory approach. Nancy White notes the difficulty of accommodating a variety of learner preferences:

> "We started using more images in our course after a prompt from a student
> who was feeling buried in text. I had forgotten that I was so comfortable in
> text, but others might not be. Even changing background colours made an
> impact (used for navigation, space segmentation). The trade-off for download
> time, though, was an issue for our students who accessed the net at a cost-
> per-minute basis. If cost is an issue, I suppose we could tell students to turn

off images on their browser. That, however, would require those who do use images to 'tell' what is going on. Kinda defeats the purpose. Sigh." (White commenting on Creanor)

For learners whose first language is not English, the reliance on the English language also needs to be considered. Salmon (2000) offers examples of how the UK Open University Business School has addressed this issue. For instance, students are able to read and compose offline and take their time. Salmon also stresses the need for reassurance that minor mistakes are made by everyone in conference messages, and that this is unimportant, as long as the message is clear.

The use of the online environment may lead to other differences in the use of text, for example in the style of comments and feedback returned to students:

> "An important outcome, not a measure of success and one for which I have no quantifiable data, is our firm conviction that the style of the online comments is rather different from that of handwritten ones on hard copy. This has become increasingly apparent as my colleague and I sometime have to comment to each other on hard copy – and have clearly noted the difference in the style of comment." (Cowan)

5.4   Assessment

The learning strategies of many learners direct from school may include a competitive element – the desire to be top of the class. In fact many learners feel that they need to know where they stand in terms of the group, and how well they are doing. This may be particularly acute in the new online environment, where their role as a learner will almost certainly have changed:

> "It seems almost ironic, but I discovered through experience that grades are a problem for my students when I expect them to make changes in their roles as learners. Most of my students, all teacher education students, have been very successful in terms of grades in a traditional classroom setting. When I ask students to try new learning strategies, many of them harbour fears that they will not succeed and their grade-point averages will suffer. One student this semester was concerned that he could not figure out where he stood gradewise in relation to other students because he couldn't see them. Genuine collaboration is in very sharp contrast to the competitive ranking that students know well by the time they reach college. I find that I need to provide a tremendous amount of assurance to students that they do not have to get it 'right' the first time and that they will not slip off the honours list as the result of taking an online course" (Hird).

As well as motivating learners to succeed, assessment can be used to motivate them to participate and collaborate:

> "… assessment can be designed to provide the motivating force to participate online in a productive way, by maintaining momentum, influencing the quality of contributions and dictating the direction and timing of participation. It can also play an important role in providing the opportunity to practise, and reflect on the skills of online working. . . .Whatever the discipline or context, the extent to which online participation is an integral part of course aims and assessment will have a radical impact on the effectiveness of online tuition." (MacDonald)

Varying the assessment strategies used will probably be the best way to meet the range of learner styles in any group of learners:

> "Different kinds of assignments appeal to students with different learning styles…and they keep things interesting…So mix things up. Read, discuss, brainstorm, debate, role-play, research, reflect…Consider offering alternate learning paths to meet different learning styles and needs: collaborating, questioning, reflecting, reading, writing, telling." ((Kulp, 1999) quoted in Kulp)

6 Executive Summary

It is essential that we understand how online environments and technologies can be used to support and enhance learning if we are to create effective online learning experiences for our students. This chapter examined the context and pedagogy for online learning. It explored how this understanding can inform our choices and help us create appropriate and effective online learning opportunities which meet the diverse needs of our learners and accommodate their diversity of learning styles and approaches.

The context and pedagogy for online learning includes a number of important elements. Those that have been covered here are the preferred learning styles of adults, models of learning and strategies for online delivery. It is important to ensure that online learning opportunities are not technology-driven, but should focus on student learning, and the ways in which technology can be used to enhance learning.

6.1 Learning styles

Learning styles can be characterised in a number of different ways, but it is clear that for any one individual style may change over time, and within any group of learners there is likely to be a wide range of style preferences. It has been suggested that technology-led learning may encourage surface learning, so the role of the tutor is to encourage deep learning to take place, whatever the other learning styles in evidence.

6.2 Models of learning

To accommodate different learning styles a range of learning models can be used. Student centred models involving the construction of knowledge, collaboration, experiential learning and reflection on experience appear to be particularly favoured for the online environment.

6.3 Online delivery strategies

Delivery of the learning experience should also support different learning styles. The current reliance on text based communications may put learners with spatial, visual and audio learning styles at a disadvantage. Learners from other language and cultural backgrounds may also be put at a disadvantage by predominantly text-based media.

6.4 Issues and recommendations

It is important that participants understand why online learning is being used and that the process should involve some elements of collaboration. Learning activities need to be carefully structured to support the development of new skills and processes.

The participants' prior experience of student-centred approaches to learning and online learning can ease their adjustment to this new environment. Cultural background can determine the students' preferred learning styles and have an impact on their learning.

Learning with text, currently the predominant mode of online learning, will benefit some students, but will not suit all, particularly if the language of the course is not their first language.

Online learning offers new opportunities for collaborative and co-operative approaches to learning which can be in conflict with the requirements for assessment.

6. 5   Conclusion

As Creanor suggests, the best strategy to accommodate all these different learner needs appears to be to use a range of methods and media so that learners have the option to tailor their learning experience to suit their style:

> "…we should provide alternative media for students to support a range of learning styles, but bandwidth restrictions often prevent the full exploitation of all the possibilities. In my experience students will use the media provided to suit their preferred learning strategies just as they would in a more traditional situation. As long as tutors use appropriate resources to support a course students should have a choice. I also believe strongly that just because a course is online, it doesn't mean books and other paper-based materials shouldn't be recommended. There's something infinitely satisfying about a book which can't be replicated electronically.

> "Interactive TV and the new generation of mobile phones with internet access will provide even greater possibilities for reaching students by alternative means." (Creanor-D 2000)

Ehmann also advocates use of a wide variety of media to meet learning needs:

> " . . . incorporation of multiple modes of delivery, the online, practical exercises, and observation-feedback sessions. Moreover, despite feelings of isolation, the combination of web based and hard-copy materials, phone calls, and 'hands-on' exercises appealed to tutors with a variety of learning styles and strategies." (Ehmann)

Where it is not possible to offer the full range of alternative media, the tutor will have an important role to play to ensure that students' needs are met:

> "CMC must be tailored to appeal to all learning styles to avoid the need for offering a variety of learning methods. Teachers in the classroom respond to differing styles through working with individuals. Similarly, e-moderators should be responsive to individuals' needs online." (Salmon, 2000)

And Salmon suggests that this is what characterises a good online tutor:

> "The best e-moderators manage to keep a sense of the composite needs of the group, along with those of a variety of individuals." (Salmon, 2000)

Finally, Lockitt (1997) provides a quotation that seems to sum up the experiences and opinions of the OTiS e-Workshop participants:

> "A combination of flexible learning styles, an understanding of efficient learning strategies, supported by information learning technologies within a flexible, supported environment will produce a learning experience which suits individual styles and maximises the learner's potential."

Appendix A   References and Sources

A.1   Conference sources

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The case studies quoted in this chapter are listed below and are published in

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Roberts, Lyn. Conducting synchronous online classes: the voice of experience. Email:Lyn@ballarat.edu.au.

Rosie, Anthony and Thompson, Ray. Using "Topclass" to promote student learning. Email A.J.Rosie@shu.ac.uk and r.c.thompson@shu.ac.uk.

Rotheram, Bob. Social policy via the Web. Email:bob.rotheram@ntu.ac.uk.

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Saunders, Gunter. Promoting online learning on a traditional lecture based course Email:G.Saunders@westminster.ac.uk.

Scheuermann, Friedrich, Larsson, Ken and Toto, Roxanne. Organising international collaborative teaching and learning in virtual learning environments. Emails friedrich.Scheuermann@uibk.ac.at, kenlars@dsv.su.se and rytl@psu.edu.

Sharpe, Rhona and Baume, David. Online tutoring for teaching and course design in higher education. Email:r.sharpe@open.ac.uk.

Sitharam, Thallak G and Shimizu, Norikazu. Web based course modules: a new learning environment in Japanese postgraduate engineering education. Email:Sitharam@rock.civil.yamaguchi-u.ac.jp and shimizu@rock.civil.yamaguchi-u.ac.jp

Street, Deborah. Developing professional and IT skills online. Email:deborah.street@uwe.ac.uk.

Tammelin, Maija. Exploring the roles of the tutor in a mixed mode course for university students. Email:Tammelin@hkkk.fi.

Webster, Chris. Undergraduate e-seminar: tutoring in a collaborative learning environment. Email:Webster@cf.ac.uk.

White, Nancy and Moussou, Mihaela Facilitating interaction in an online environment. Email:nancyw@fullcirc.com.

Whittington, Dave and Dewar, Tammy. Type indicators and online learners. Email:d.whittington@elec.ga.ac.uk.

Wishart, Jocelyn. Online delivery of ICT in UK schools Email:j.m.wishart@lboro.ac.uk.

Zimmer, Bob and Alexander, Gary. Using Carl Rogers' communication principles to facilitate mutually supported learning online. Email:R.S.Zimmer@open.ac.uk.

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The online discussions are available on the Virtual Learning Space, online at http://itlearningspace-scot.ac.uk in the Community area.

Clarke, W (2000), 10 May 2000 Subject: none. Discussion Room: OTiS – Best Practice for Effective Tutoring (9) (accessed 12 Feb 2001).

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Janes, D (2000), 12 May 2000 Subject: none. Discussion Room: OTiS – Models of online learning and tutoring (8) (accessed 12 Feb 2001).

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Sitharam, T (2000), 12 May 2000 Subject: Tutor and learner styles. Discussion Room: OTiS – Tutor and Learner Styles (4) (accessed 12 Feb 2001).

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