

# Developing study skills through technology supported learning

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## Background

The project described in this paper sought to develop generic study skills materials for a wide constituency of students. The learning materials defined in the project brief were to be technology rich and transferable to schools and departments beyond the School of Education (SEd).

At the time of initial conception SEd was planning the creation of a set of 5 inter-related and self-supporting WOLF topics – WOLF is the University of Wolverhampton's (UoW) virtual learning environment (VLE). WOLF topics (a discrete unit within the VLE framework), at that time, tended to be module specific; those planned by SEd were intended to provide an overarching resource for the variety of subject and professional routes within the school. Where micro topic describes module level and meso topic describes subject level then the intention was to create 5 macro topics one of which contained technology rich resources concerned with the development of students' study skills.

## The innovation

In September 2000 *Learning for Success* (LFS) was transferred to a WOLF based domain to both reduce tutor contact time and to encourage students to engage with technology. Study of the initial pilots identified that students experiencing the quasi distance-learning version of this module felt isolated, confused and unmotivated by the learning experience (Sutherland 2001). What the students objected to most was the unstructured, passive digital page turning experience; a common feature of content centred resources. Clearly technology without considered application or underpinning pedagogy is unlikely to add value to the student experience (Salmon 2000). Research within the institution (Dalziel and Sutherland 2001) has shown that transferring learning to digital environments is often characterised by the simple reformatting of existing content into HTML. Whilst this suggests a transmission model of teaching, or a quantitative conception of learning (Biggs and Moore 1993), it may also be the product of 'first steps'. Perhaps, however, it is also the result of an immediate, time-constrained response to institutional pressure for the early adoption of digital technologies. Ongoing evaluation of the LFS module, and studies into the wider deployment of technology supported learning (TSL), have revealed, some would argue unsurprisingly, that using VLEs to support learning requires the development of activities and transactions which realise active engagement.

The delivery of the LFS module then, in the light of student feedback and tutor evaluation of the pilot cohort, adopted the format of a taught module which was supported by the on-line resources accessed through WOLF. This format, because of the nature of the communo-collaborative exercises which contributed to the students' study, necessitated the exclusion of non-participating students. It seemed therefore that the large number of resources available within the topic:

- ought to be made available to students not studying LFS;
- that these resources should be redesigned in such a way as to make them more easily navigable; and

- that individual resources should be deployed in ways which promoted student engagement with the materials beyond mere screen reading.

During the early phases of the project all of the files, around 240, which made up the content of the original LFS WOLF topic, were downloaded for work to begin. The relatively simple task of reformatting, editing and sizing took over 40 hours. The files had originally been formatted by a technician who used an accepted protocol for naming the files, however, for the enthusiastic academic trying to insert, reorder or delete files the coding 'u2p47.htm' was not helpful and it was necessary to catalogue file names against content before any restructuring could take place.

Early evaluation of the project indicated that its original intentions were hugely optimistic. Technical expertise was not available within the school to produce the kind of complicated animations or interactive exercises which were previously envisaged and the cost of employing external designers / writers was prohibitive. This realisation called into question the whole of SED's macro-topic project. The time intensity of resource production was further highlighted by Thomas (2001) who, following a semester-long sabbatical secured to produce science-based WOLF materials, reported how little progress was possible even when engaged full-time over a number of months. Thomas's report confirmed growing evidence elsewhere in the University that content production was much less efficient than the use of collaborative devices to promote engagement and learning.

Given the evidence, and the experience, that without considerable technical support and without the benefit of full time engagement, the content could not be converted into image- or interaction-rich media it was necessary to rethink the project.

There was a moral imperative to strive to achieve as much of the original intention as possible. To this end the project diversified into two strands. The first was to continue with the redesign of the existing study skills module to produce a framework which would be accessible by a diverse range of students. The topic could then be 'handed over' to the Centre for Learning and Teaching (CeLT) for further development and editorial control. An overview of the contents available in the topic 'CeLT Study Skills' is provided at Appendix 1.

The second strand was to produce a significant learning resource that:

- promoted effective learning;
- promoted active learning;
- was challenging; and
- was readily adaptable to any cohort of students.

The design, production and evaluation of this resource are described below.

## **The Referencing Exercise**

At the centre of any study skills development has to be concern for the development of 'information' skills; that is those skills associated with the gathering, interpreting and presenting of information (Fairbairn and Winch 1996, Race 1999) and student development cannot be divorced from an understanding of learning styles (Fielding, 1994). While seeking to create a resource that would address the outcomes outlined above, a further dimension was considered. Entwistle (1991) suggests that students become more efficient and effective learners if they not only understand something about their own preferred learning style but are also aware of how adopting approaches different to their customary ones may further optimise their learning potential. It was therefore decided to develop the resource around a piece of text which discusses learning styles and which provided the foundation for a series of problem solving tasks directed at information gathering, interpreting and presenting. Clearly the principal dimension, given the aims of the project, was to develop a resource and activity that was technology rich.

The developmental MOST model (Sutherland 2001) was used to plan levels and types of engagement within the activity. The acronym MOST identifies engagement with the:

- **material** e.g. causing the students to refer to the material in order to complete some further phase of activity;
- **outside** world, e.g. moving beyond the immediate environment to physically access further resources or electronically search databases or the www;
- **students**, e.g. designing into the activity opportunities or requirements for collaboration;
- **tutors**, e.g. interactions with the tutors to gather information between phases of the activity or for formative feedback during or upon completion of the activity.

In addition to the application of the MOST model the design of the resource was also informed by Print's (1993, pp145-150) six content selection criteria. The resource needed to reinforce the fundamental skills required in all student assignments, those of knowing how to locate information and how to reference it appropriately in assignments in addition to those skills relating to style and technical accuracy in writing. In the sense that such skills are common to all programmes within any university, the content of this resource was felt to satisfy the criterion of *significance*. Within the context of transferable skills and the requirements of study in HE, the resource was felt to have *utility*. The resource needed to meet students' needs by being widely and freely available at a time and in a place convenient to them. It was further felt that the elements of *relevance* and *validity* could be addressed by creating a piece of text that would be meaningful and have personal value for all students, irrespective of the academic route they were pursuing; thus the topic of Learning Styles seemed appropriate. *Learnability* and *interest* were promoted through the levels of interactivity already discussed.

Having provided a contextual background to the resource, a brief description is now tendered. Students access an MSWord paper from the group folder within WOLF; the paper provides a brief synopsis of learning styles theory (750 words). The paper can be printed, saved or read on screen. When reading on-screen students can access a series of 'pop-up boxes' created with the *add comment* tool; these provide useful tips and explanations directly related to the style of writing, the grammar, spelling, citation and punctuation (examples included at Appendix 2). It can be argued that, in addition to providing useful information about academic writing, the resource, used in this guise, fulfils the role of self-assessment tool and instrument for formative feedback. The students also download and print from WOLF a task sheet which has two component parts. Component 1 requires that the students prepare a 250 word synopsis from the paper. They are expected to use examples of direct quotation and paraphrasing and are required to reference their work. The completed artefact can then be submitted on-line through another WOLF tool for formative feedback from the tutor. Equally, the tutor may ask that students forward it through email as an attachment according to the particular ICT skill being promoted.

Component 2 requires that the students complete a series of tasks generally related to the Harvard Referencing system and based upon the actual references for the learning styles paper. Successful completion of the questions used in component 2 engage the students in a range of search activities which encompass specialist education databases (ERIC, BEI), the university catalogue (OPAC), the internet and, importantly, using the index, bibliography and contents sections of books held within the university's learning centres. Component 2 can be completed individually or collaboratively and, when complete, can also be submitted electronically through WOLF.

## Evaluating the resource

The first pilots of the exercise were conducted with postgraduate students studying on a post-compulsory teacher education programme. The feedback generated by the WOLF evaluation tool indicated a mixed response to the activity. The general view was that

whilst the activity in itself was useful it was undermined by 'not having an appropriate time span to work to' and that work was hindered (by WOLF) because there were 'too many sub-headings and folders' and the students were not 'used to the programme'. The students were given 2 hours to complete the tasks (Appendix 3) and it soon became clear that the process of navigating WOLF, learning how to search effectively on OPAC and choosing when alternative search forms were appropriate was time consuming. Some groups quickly divided the work between themselves and made swifter progress – only coming together to resolve difficulties or share answers. Other groups stayed together to tackle problems as a team though it was observed that within these groups some students adopted a passive role while others tended to the requirements of the task.

Notwithstanding the time pressures some students did complete most of the tasks and reported that 'as a bit of a technophobe, it has actually forced me to use the system whereas prior to the session I was reluctant to do so' and that the exercise had provided the opportunity for 'learning new techniques and approaches for researching relevant subject areas.'

After the initial pilots the exercise – sometimes in a condensed format – was used with first year undergraduates. The writing task was separated into a different component and the activity was conducted once students had already learnt to navigate their way around WOLF, rather than as a mechanism for promoting WOLF use as had been the case with the postgraduate students. This group of students responded positively to the activity and its context; all reported positively to the linked questions:

- My TECHNICAL skills enhanced my engagement in this activity; and
- My ACADEMIC skills enhanced my engagement in this activity

In addition to the feedback received through the evaluation tool the students were asked to respond to questions posed by the tutor on the forum. A representative sample of responses is given at Appendix 4.

## Conclusion and Future Developments

The 'product' took two members of staff 4 days each to produce but the result is a very student-centred learning task which provides at least 4 hours of directed activity time. It is arguably a complete resource: promoting individual as well as team learning; developing reading and writing skills; enhancing e-library search skills and text based information (bibliographies and indexes); advancing learning as a problem solving and sense making activity; it is based within a meaningful context; and sponsors communo-collaborative activities such as forum, group folder, on-line submission and e-evaluation.

This project has demonstrated that it is not necessary to equate technology-supported learning with complex media imagery, animated agents or click and go functionality. Word documents with pop up boxes can convey a wealth of additional information for students to use for learning, revision or assessment purposes. When a series of problem solving tasks are linked to this so the engagement is amplified and delivery and/or assessment through a VLE creates a further value adding dimension both freeing the student from the classroom and developing a wide range of ICT based communo-collaborative skills.

In addition to exploring further uses of the 'add comment' tool within Word there is also great potential in using the Forum for adding an element of gaming to any activity as student's entries are timed on posting. Importantly technology rich resources like this can easily be prepared by an academic member of staff, even with limited ICT skills. This means that activities and resources are not mediated or modified by non-teaching technical staff and so allow tutors to remain in control of the learning they seek to promote through their artefact.

## Acknowledgments






Valerie Austin, Senior Lecturer in Education – SED, for working with me in the development of the referencing exercise.

## References










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# Appendix 1























## Overview

-  About this module
-  Working in groups
-  Working with technology
-  Learning in HE
-  Assessment details




## Information

-  Gathering and Interpreting
-  Reading for information
-  Improve your reading rate
-  Reading academic material
-  Survey reading techniques
-  Note taking
  
-  Presenting
-  Written work
-  Example essay structure











## Success in...

-  Time management
-  Introduction to Time Management
-  Goal Setting
-  Time Perspectives
-  Planning & Scheduling
-  The Monthly Planner
-  Weekly Objectives
-  Losing Time
-  Time Thieves
  
-  Stress management
-  Note taking
-  Note taking
  
-  Designing Questionnaires
-  Interviews
-  Memory skills
-  Working in groups
-  Teamwork
-  Learning in groups
  
-  Reflection
-  Writing a CV
-  Action Planning
-  Introduction to action planning

## Essential Skills

-  Literacy
-  Numeracy
-  Working with IT

## About Learning

-  Learning styles
-  How we learn
-  About learning styles
-  Learning styles questionnaire
-  Learning styles inventories
-  Personality profiling
  
-  Motivation
-  Learning theory
-  What is 'learning'?
-  Conceptions of learning

## Appendix 2

A model that is common in the Learning Cycle identifies four modes of learning: experiential, reflective, experimental and abstract. Kolb (1984), whose Experiential Learning Cycle identifies four modes of learning: experiential, reflective, experimental and abstract. Kolb suggests that learners will tend to favour one mode rather than another but that all four modes will play a part in any individual's learning experience. The modes therefore interact to create a learning cycle. Honey and Mumford (1992), building on the work of Kolb, suggest that while different individuals may prefer different approaches

**Transitional words:**  
As we discussed under 'essential' there is a danger of stating things as facts in academic writing. Using the word 'suggests' highlights the situation that, in educational debate, much of the 'knowledge' we deal with is tentative and open to question.

may not always be the most appropriate for all the learning tasks an individual is likely to encounter. Honey and Mumford's (1992) Learning Styles Inventory allows an individual's learning style to be identified as activist, pragmatist, reflective or theorist, thus enabling the learner to understand his/her preferred approach to learning. There is a danger, however, in a simplistic approach to identifying learning style and Kolb himself (1984), cited in FEDA (1995), points out that identifying preferred learning styles should not be used as a means of typecasting people.

**Writing Tip:**  
This phrase flags up a new element in the argument, alerting the reader to the introduction of an important development in the argument.

authors assert that there may be some distinctions between how males and females approach learning. For example, Sutherland (1995, p269) found that women in his study preferred to "tackle the details first, rather than the overall picture; whereas the males were evenly divided." He also found that men "tend to be more conservative toward problem-solving; whereas the women are more liberal." (ibid p269) Differences may also be attributable to gender specialisation (Cohen 1982:89, Bisiach and Berti 1990:81, cited in Riding and Rayner 1998 P???)

**Citation:**  
This phrase is used to identify the work of an author(s) whose work is used in someone else's work. In your references you should only cite the source from which you gained the information, in this case Riding and Rayner (1998).

In addition to recognising that individuals have unique approaches to learning, it has been argued that there are different kinds of

*intelligences*, challenging the notion that intelligence equates to academic ability or IQ. He lists seven types of intelligence which include linguistic intelligence, musical/rhythmic intelligence and interpersonal intelligence, among others.

**Writing Tip:**  
It is important that your closing paragraph(s) of a section, report or written assignment summarise what has been discussed or conclude with a statement that indicates the relevance of the information that has been presented.

The implications for the student in relation to these theories about individual differences in learning are far-reaching and challenging, at the very least highlighting the value in understanding your own approach to learning.

## Appendix 3

### Learning Styles: researching and referencing exercise.

Read the paper entitled 'Learning Styles – the importance of understanding individual approaches to learning.' There are two main exercises associated with this paper:

- write a condensed version of the paper;
- gather further information and complete the incorrect references;

The **condensed version**, or synopsis, should be completed in 250 words ( $\pm 10\%$ ). The spelling and grammar should be error free. You must include some of the citations contained within the original paper, which may be direct or paraphrased; you must include a references section, and, include a statement of the word count. You should attempt to write critically – that is, you should not accept what is written as absolute fact. It is only a version (or expression/interpretation) of theory and so contains strengths, weaknesses and limitations; you should try to expose these.

For the **referencing exercise** you should attempt to answer as many of the referencing questions as you can:

1. In the references section (item 3) the first entry is for Biggs and Moore (1993). Provide a full reference for any other book written by Biggs.
2. The second reference (in item 3) relates to a chapter within an edited book. Provide a full reference for any other chapter within that book.
3. The third reference lists two authors whose work is cited in the publication written by Heinström (2000). Which author is cited two below De Raad and Schouwenburg in Heinström's work? Provide a full Harvard reference.
4. The author Gardner, H (1983) wrote about *multiple intelligences*. List the 7 (sometimes 8) intelligences proposed by Gardner.
5. The book by Gibbs (1988) is published by the FEU. What does FEU stand for?
6. What is the shelfmark of the FEDA publication?
7. The title of the Heinström article is missing from the reference. Provide the full reference for this publication.
8. Honey and Mumford produce a learning styles inventory, many variations of these are available on the world-wide web. Find the uniform resource locator (URL or web address) for one of these questionnaires. Provide a full reference for it.
9. Complete the reference for the Kolb book.
10. The Nulty and Barrett article appears in a quarterly journal. These journals are bound into annual volumes. What colour are the bound volumes?
11. What do Riding and Raynor mean by hemispherical specialisation and what is the page number for this quotation? (Completion dependent upon access to book)
12. Sutherland's article includes a reference to Entwistle learning styles; you have already come across this author in Q3. Noel Entwistle is a noted academic, provide a short (50 word) profile of Entwistle.
13. What is the URL for Harvard University?
14. In the text there is a comment about strategic learning. Find a book, chapter or journal which discusses strategic learning and provide a full reference – adding the page number.
15. Reference a URL for any site which discusses strategic learning.



## Appendix 4

From: Shane Sutherland (in6509)

Posted: 19/10/2001 14:58:29

Subject: Supporting learning

In what ways does this exercise support student learning?

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> From: Student W

> Posted: 09/05/2002 19:53:52

> Subject: RE:Supporting learning

> The exercise, develops research and communication skills. It also helps build

> confidence with the use of information technology. Group members have

> benefited from others members knowledge- e.g. IT and language skills.

> Consolidates learning and ability to reference work appropriately.

> From: Student J

> Posted: 09/05/2002 20:24:39

> Subject: RE:Supporting learning

> It makes students more independent of others such as lecturers and peers.

> Self motivation is a must though to enable learning to be effective.

> From: Student N

> Posted: 09/05/2002 20:27:13

> Subject: RE:Supporting learning

> We have learnt many things by doing this thoroughly interesting exercise.

> It has aided us in our team-work skills, communication skills, referencing

> skills and developed our computer skills.

> From: Student G

> Posted: 09/05/2002 20:33:35

> Subject: RE:Supporting learning

> it helps you meet new people as you're working in groups, and helps you

> practise your research and reference skills.

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From: Shane Sutherland (in6509)  
Posted: 19/10/2001 14:58:53  
Subject: Abdicating responsibility

Do exercises of this type abdicate tutor(s) responsibility for supporting learning?

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> From: Student W  
> Posted: 09/05/2002 19:59:15  
> Subject: RE:Abdicating responsibility

> No, but the presence of a tutor is helpful in guiding the group in the right  
> direction and is also a good support should we need it. Yet, exercises of  
> this nature encourage independent learning.

> From: Student JR  
> Posted: 09/05/2002 20:23:53  
> Subject: RE:Abdicating responsibility

> No, it enables a student to work independently and yet know that help is  
> available when needed.

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From: Shane Sutherland (in6509)  
Posted: 19/10/2001 14:59:23  
Subject: Managing learning or managing time?

Are exercises like this predicated on concepts of autonomous learning or are they created as part of a strategic response to managing large numbers of students with diminishing resources?

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> From: Student T  
> Posted: 09/05/2002 20:04:02  
> Subject: RE: Managing learning or managing time?

> It can be a combination of both, as in view of the amount of students, these  
> types of exercises encourage autonomous learning, yet is a useful learning  
> tool and reaches many student if resources are low.

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From: Shane Sutherland (in6509)

Posted: 19/10/2001 14:59:43

Subject: Grammar tips

How useful is the learning styles text with the built in grammar tips?

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> From: Student W

> Posted: 09/05/2002 20:06:10

> Subject: RE:Grammar tips

> the learning styles built in grammar tips are very useful, in that they offer

> suggestions and choice of use of grammar and the context in which to use

> them.

> From: Student R

> Posted: 09/05/2002 20:26:11

> Subject: RE:Grammar tips

> Very, I have printed information off for reference at a later date.

> From: Student D

> Posted: 09/05/2002 20:30:20

> Subject: RE:Grammar tips

> We found these very useful and could be transferred to work in other modules.

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