E-Learning and e-communities – asymmetries and dilemmas

Abstract

Mike Hart
School of Social Sciences
University College, Winchester
email: mikehart@winchester.ac.uk

Roz Graham
School of Social Sciences
University College, Winchester
email: roz.graham@winchester.ac.uk

Introduction

Is learning essentially an individual or a social activity? Wenger (1998) confidently asserts that all of our social institutions are predicated upon learning being an individual process, with a beginning and an end, and that it is the result of teaching. It is certainly the case that it is the individual who is typically assessed – and, of course, the individual who is certificated as having a certain level of competence (in the form of degrees, certificates and the like). However, Wenger would like to take issue with much conventional practice and in developing the concept of *communities of practice* argues that learning is essentially a social phenomenon that needs to be located in the context of the matrix of social relationships that constitute our social world.

This paper explores some of the ambiguities, contradictions and dilemmas generated by the opposition of what might be crudely termed individualistic versus socially oriented modes of learning that have a particular relevance to e-learning models and activities. Along with Wenger, the arguments advanced here are not intended to arbitrate or even cast a judgement upon the range of learning theories advanced by psychologists an educationists. Rather, it is intended to contribute to our understanding of the ways in e-learning activities can be organised and promulgated.

A simple contrast: traditional v. e-learning stages of learning

At the risk of considerable over-simplification, I present a broad contrast between the ways in which an element of learning within a higher educational establishment might be characterised. By traditional stages of learning, I mean in this context the type of learning associated with the preparation of a typical assignment in the social sciences and humanities at a time when e-learning was not yet a reality, say 1990.

Stages of Learning	Traditional model – tendency towards…	e-learning model – tendency towards…
Information gathering	Library based	Internet based
Assessment of material	Argument dissection	Project relevance
Selection	Often tutor-directed	New selectivity skills demanded
Construction of assignment	Debates frequent e.g.'case for and against'	Application to real-world problems
Discussion	Face-to-face	Face-to-face *and* e-mediated
Presentation	Document	Artefact (e.g. presentation)

Information Gathering
The library was typically the heart of the conventional higher educational experience. Students would have been issued with often quite detailed reading lists and their task was to access and digest material required for assignments. In the e-learning counterpart, students will typically be required to undertake their own searches (conventional as well as electronic) to access material

Assessment of material
The intellectual task, often heavily tutor-directed, was to understand, dissect and attempt a dialogue with material presented in books and journals. In the e-learning model, there is a shift towards choosing material which is within scope of the assignment demanded and greater skills in selectivity may be demanded (but these skills are 'caught rather than taught')

Selection
In the traditional model, selection was often confined to what was available within the context of the library shelves or university bookshop. Selectivity had to be applied within these materials i.e. within a relatively narrow range.

The e-learning model, however, can overload the student with often low-level and ephemeral material which may be of doubtful provenance and is far less likely to be subject to peer-review or quality assessment criteria (given the difference between the 'surface web' and the 'deep' web). Selectivity and judgement of quality assume much greater salience.

Construction of assignment
The traditional model would typically place a greater emphasis upon the 'classic' debates at the heart of academic disciplines studied. Whilst this is evidently still found in the modern university, the rise of multidisciplinary, vocational and applied courses typically involves application of materials to problem-solving scenarios. The assignment itself is likely to call for evidence of 'reflective skills' following the model of the 'reflective practitioner' advocated by Schon (1987).

Discussion
The traditional model would involve the use of the *seminar* in which (in theory) students (either individually or collectively) would prepare a paper and read the same to a small group of their peers under the guidance of a tutor. Other students having read the relevant material in preparation for the seminar, would then offer critical comments upon the seminar presentation which might then be written up into an essay. In the e-learning counterpart, the traditional seminar might be replaced by a *workshop* and virtual learning environments can be deployed to facilitate e-mediated discussions. We might note that the problem of non-participating students has remained acute under either model.

Presentation
In the traditional model, the final product subject to assessment would be a document, typically an essay or a written examination answer. In the e-learning models, these traditional assignments are likely to be supplemented by presentations, reports and presentations reflecting a more applied flavour permeating higher education.

It should stressed at this stage that this simple representation of learning assignments in UK higher education is sketched at a very general level. There are some disciplines and universities which would exhibit characteristics much more closely associated with the *traditional* model, whilst others which are particularly but not exclusively oriented towards multidisciplinary subject areas (business studies rather than economics) would show patterns more associated with the e-learning model. Most subject areas, particularly under the impact of quality assurance regimes, would actually display a judicious blend of philosophies and techniques so the table indicates the two ends of a continuum rather than rigid dichotomies.

Further provisos need to be entered as well. The simple characterisations are meant to apply to undergraduate rather than postgraduate levels of education. The e-learning models may well apply with much more force to those institutions subject to increasing *massification* attendant upon a rising cohort of students entering an under-resourced higher education system in which it is anticipated that some 50% of the age-cohort will experience higher education by 2010. The e-learning model may well

be a response to patterns of higher education experiencing staff-student ratios in excess of 25:1, which represents a doubling of student numbers compared with a generation earlier.

Emergent Problems with e-learning modes of learning

A meta-analysis by Tom Russell of North Carolina State University of over 300 studies into distance and technology-based learning concludes that we cannot conclude that there any significant differences to be found between conventional and distributed learning approaches (Russell, 2001). Such evidence should not be lightly disregarded and should serve as a backdrop for the remarks that follow. On the other hand the processes of *massification* and particularly of VLE-mediated modes of delivery are relatively recent in the history of higher education so it is possible that we are still at the stage where problems are best described as 'emergent' rather than stated with any degree of assurance. Nonetheless, educators have expressed concerns (whether justified or not may well have to await more definitive study) into the following issues.

The 'Electronic Shovel'

The increasing accessibility of material through the internet is held to encourage students to scoop large volumes of material, probably uncritically, from the internet in order to research their assignments. In the graphic words of McKenzie (1998)

> 'the *New Plagiarism* may be worse than the old because students now wield an *Electronic Shovel* which makes it possible to find and save huge chunks of information with little effort, reading or originality' (emphasis in the original).

The argument here may well turn on the adequacy and availability of material deemed relevant to an assignment. Faced with too little retrieved information and perhaps demonstrating poor time management skills, a student may well face a pressure to incorporate whatever material can be found in order to comply with a deadline. Higher institutions which enforce rigid deadlines to simulate the processes to be found in a 'real' working environment may well be contributing to student pressure in this respect. But a more common problem is a surfeit of information where students may

not have the intellectual experience to differentiate between that which is worthy material and that which is not.

The problem of superficiality is compounded by the fact that search engines such as *Google* are likely to trawl the 'surface' rather than the 'deep' web. He, Patel, Zhang and Chang (2004) argue that search engines do not reach much of the data on the internet which has been rapidly deepened by online databases. It has been estimated by Bergman (20001) that at the turn of the century the 'deep' web, consisting of massive databases not readily accessible through static URL links may well be of the order of 500 times the size of the surface web on a 'per document' basis. If an absolute measure is used then the deep web may well exceed the surface web by thousands of times. Paradoxically, Bergman (2001) reports that more than 97.4% of deep Web information is publicly available without restriction and the deep Web appears to be the fastest growing component. On the measures of quality that they devised, the deep Web documents were three times as likely to be quality based than surface web documents.

However, the problem of accessibility remains, particularly for the inexperienced researcher. If all of entire world's scientific and periodical literature to be made available 'freely accessible' on the web, then academic publishing as we know would cease to be profitable and would cease to exist. So a student who has not acquired some deep web search skills may well confine researches to material which does not represent current debates or dilemmas within the discipline.

How do students learn the arts and the skills of selectivity? This interesting question remains unexplored. Undoubtedly, institutions of higher education do devote considerable resources to making on-line journals and other 'deep web' materials known and accessible to students and give specific instructions on accessibility. However, the over abiding impression remains that such the relevant deep web skills are 'caught not taught' by the majority of students who probably opt, in the majority of cases, for search engines such as the increasingly popular *Google*.

Originality and Imagination

In the UK there appears to be a rising tide of concern over the fact that increasing accessibility to web-based materials may well be generating a culture of plagiarism in which 'cutting-and-pasting' from web-based sources into assignments without attribution is now commonplace. The Joint Information Systems Committee , the UK body charged with the responsibility for providing guidance in ICT to support learning, research and administration in higher and further education, has established a Plagiarism Advisory Service at the University of Northumbria. Their concerns are expressed in the preamble to their 2004 conference

> 'Plagiarism in student work is not a new phenomenon but technological advances in recent years have led to concern within the academic community that the incidence of this type of behaviour *is set to increase dramatically* '(emphasis added)

> (JISC Plagiarism Advisory Service, 2004)

The full extent of plagiarism depends partly upon the definition of plagiarism used and its measure of severity. Under the headline 'Survey shows cheating is rife', Baty (2004) reports that a quarter of undergraduates admitted some forms of plagiarism. The question was asked

> 'inserted sections of text from any outside source into your own work, whether they are left whole or amended to conceal their origins'

This figure may well be an underestimate as the data was derived from a survey of 600 recent graduates and 1000 members but achieved a response rate of only 22.7%. A reasonable inference might be that plagiarism could be more extensive in the three-quarters of the sample who chose not to reply.

Certainly, there is a perception that cheating is common. Dordoy (2002) presents the following data from a survey undertaken at the University of Northumbria

Table 1: Proportion thinking form of cheating common	staff %	students %
Copying a few paragraphs of an essay from a book/internet, uncited	70.9	73.9
Copying most of an assignment from some source.	14.7	24.3
Downloading a whole essay from a cheat site on the internet	3.4	11.2
Buying an essay from a ghost writing service	1.7	11.1
Cheating in an exam	3.7	21.1
Making up data for a project or lab class	19.8	60.2
Working with another student on work that is meant to be individual	61.8	76.6
Passing off others' ideas/images/designs as your own	45.2	50.7

Source: Dordoy (2002)

Here it is interesting to note that that over 70% of both staff and students *thought* that copying uncited from the internet was common. Much of the research in this area tends to rely upon self-report studies and the true extent and severity of such cut-and-paste material is open to question. It would be reasonable to make the generalisation that outright cheating is comparatively rare but that uncited copying of internet-accessed material could be widespread.

The question remains whether the accessibility of material, the pressure of deadlines upon a student body who increasingly have to combine part-time work with study and staff over-burdened by an under-resourced expansion of higher education contribute to a diminution of quality in student assignments. It could be that conventional methods of assessment do not adequately measure the thought processes that lie behind the words that flow from the word-processor (or the internet) into the finished product.

Some solutions to this problem have been suggested. The solutions each demand that new approaches need to be taken to the whole philosophy and practice of assessment of work. For example, McKenzie (1998) has suggested that:

'If we hope to witness our students producing fresh thinking, then we need to award credit for smart collecting but also show them how to differentiate between **the ideas they have collected from others** and **those ideas which have emerged in reaction to the ideas of others**.

They may change colors while note-taking to signify and separate.
Black text signifies the ideas of others.
Green text signifies fresh thinking.
We award credit for originality, noting each new contribution.'
(McKenzie, 1998)

One experienced academic has suggested that new forms of assessment might be tried which include writing an essay under examination conditions (Ryan, 2001). Asking students to append cop(ies) of journal articles read in the original to their assignments is yet another strategy to overcome problems of superficiality.

An implicit assumption behind such observations is that when students engage in 'cut-and-paste' activities, they do so in an uncritical fashion. There is an argument, albeit not a very convincing one, that *some* level of learning will always be achieved by incorporating material in this fashion. However, it is hard to ascertain the intellectual activity demonstrated unless students are advised, and rewarded, for commenting critically upon their source material.

Communities of practice engage in e-learning

The discussion, up to this point, has focussed almost exclusively upon the e-learning activities of undergraduates in higher educational establishments in the UK. But academics do not often fully appreciate the degree of learning which takes place outside the formal educational system. Such learning might be unformalised and unstructured but can make a tremendous difference to the skill levels and productivity of practitioners who avail themselves of the opportunity. A case study is presented below which generates some useful insights.

The case study : Members of a bulletin board discussing a techniques with CSS (Cascading Style Sheets) **[The case study material is produced in Appendix 1]**

Cascading Style Sheets (CSS) are well known to those who design web pages using HTML and its successors. CSS enables designers to specify attributes of text in a style sheet – such definitions can inherit characteristics one from another and hence the notion of Cascading Style Sheets. What is less well known is that multiple style sheets can be specified so that characteristics of more than one definition (for example a font in one definition and a font colour in another) can be applied to a portion of a document.

The 'Aha!' experience

The author stumbled across this bulletin board whilst trying to solve a problem encountered in implementing CSS. It is evident that experienced designers had not realised the potential that the use of *multiple* definitions would allow. Once the 'discovery' (if indeed it was) had been made, then it was shared amongst other members who contributed to the discussion.

From reading the discussions contained in the case study, it is evident that:

- e-learning is definitely taking place ('the wool has been lifted from my eyes')
- members of the bulletin board appreciated the new knowledge because they were experienced designers who could see the potential of the new techniques
- a certain amount of instruction and practical help is taking place
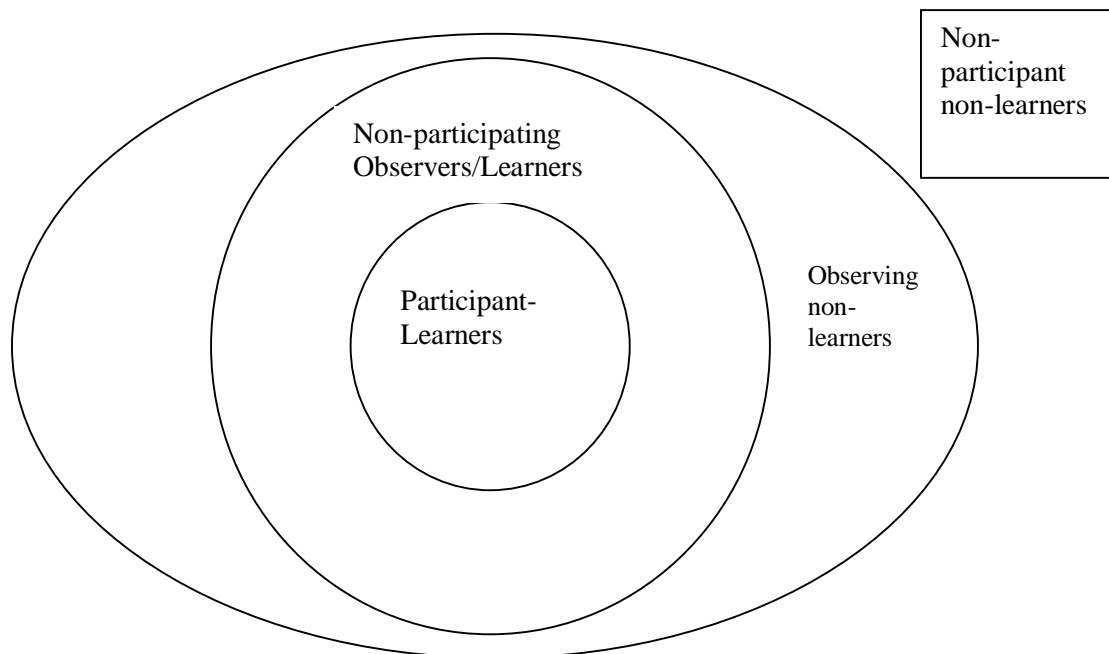- there is evidence of some reflection ('Now I think about it…')

Of course, this is a small fragment from the millions of discussions that are taking place on a daily basis – we do not know the identity of the participants, their level of expertise (although we can make some reasonable inferences), whether they are engaged in CSS for work-related or personal reasons and so on. But this does really matter? E-learning is undoubtedly taking place and the contributors to the discussion would fall within the rubric of a *community of practice* in Wenger's (1998) terms.

Participants and learners

From the fragment of discussion (interested readers can access the web pages and read the full five pages!) we can infer certain characteristics of e-learning in communities of practice

    a)   Active participants will become learners

    b)   Some observers (but not participants) will learn in either a positive fashion (good coding practices to be followed) or a negative fashion (determined not to follow the example shown)

    c)   Some observers will not be learners

Figure 1: Modes of Learning and Participation

Discussion

It is a truism in educational circles that active participants will become learners, particularly in the context of face-to-face tutorial systems. The assumption is also made that this applies with even more force to the e-learning modes of learning. The interesting problem becomes the exact boundary lines between the non-participating observers/learners and the observing non-learners. Experienced teachers will not be surprised by the phenomenon of the 'silent learner' who does not appear to be actively engaged in a group discussion or activity but subsequently surprises everyone at a later stage by manifestly demonstrating that learning *has* been taken place. Equally, alongside him or her may sit a fellow student who fails to demonstrate that they have learnt anything. The same issue was visited in the context of plagiarism discussed earlier when at least the theoretical possibility exists that 'cut-and-paste' exponents may well be learning something as a result of their endeavours.

The case study is a useful reminder to academics that e-learning processes might be much more vibrant and effective when applied outside formal academic institutions which are necessarily concerned with assessment and certification of progress. The wider philosophical raised here ('do universities educate') will not be explored here.

How do communities of practice foster e-learning?

The starting point for the discussion here is that communities of practice are essentially social groups and the well-known social psychological characteristics of social group theory will apply to them. Succinctly, this is that participants need to subscribe, at least minimally, to a core set of values and beliefs i.e. they wish to be considered as members of the group. Compliance with or deviation from group norms will be met by a gradated series of sanctions with expulsion from the group being the ultimate sanction (cf dismissal, ex-communication). In order to function effectively, members of social groups have to engage in reciprocal activities i.e. bring resources or rewards into the group. In the case of the wider scientific 'community', a well-known model is that associated with Hagstrom (1965) who proposed the information-recognition reward system. In this theory, it is suggested that the motivating forces at work in the scientific community are not pecuniary but ultimately symbolic. In return for their intellectual efforts, rewards flow in the form of

publications, citations and the ultimate accolade for some, eponomy, in which a scientific phenomenon is named after its discovery (e.g. 'van Allen radiation belt', the 'Geiger counter') In some cases, members of groups may be tolerated because although they do not contribute directly to the group's activities, they bring along other commensurate advantages (e.g. the professor's name goes onto an academic paper to increase the chance of a favourable reception even though the actual contribution of the individual concerned could be minimal!)

More explicit recognition of such fundamental group processes may well be necessary to foster e-learning activities. In terms of the boundaries discerned above, more determined efforts may need to be made to encourage observing non-learners to at least breach the boundary into becoming a non-participating observer/learner with the desired end-state being that of a full participant-learner.

Action Learning and the e-community

In the context of this discussion, I shall use the term e-community to refer to those communities of practice (following Wenger,1998) whose existence is enabled, facilitated or enhanced by the utilisation of web-based technologies. The initial discussions centred around the undergraduate experience in a massified higher educational system in which it is possible (and in many cases probable) that web-based technologies are used in a highly instrumental fashion in order to access materials required to undertake assignments, the grading of which contributes towards units of assessment (module marks) and ultimately the receipt and classification of an award (the undergraduate degree). The argument here is that the undergraduate experience does not necessarily lend itself to the formation of communities of practice in the terms that Wenger would recognise.

However, there are exceptions to this crude generalisation. The author was responsible for the 'teaching' of a module to a group of mature local government officers released to work in college for half a day a week. Once some course materials had been made accessible over the web, the students proceeded to download the materials, assess its worth, argue over its applications and confront their tutor at the end of the afternoon with the observation that 'that was the best course we had

ever had'. Interesting in this observation is that individuals with a degree of self-confidence, well-motivated to make good use of valuable time, immersed in a world of demanding practical problems could form a community of practice in which they took responsibility for their own learning. Although meeting on a weekly basis, the degree of interactions, mutual support and learning experiences was undoubtedly facilitated by the opportunity to use a judicious blend of traditional and e-mediated delivery of materials.

The case study of the CSS Bulletin Board was also a dramatic illustration of the ways in which group members can share and learn techniques which could enable them to become more efficient webpage designers. It is interesting to note in this case that the past experience of group participants helped to quickly appreciate the importance and the potential applications of the new insights generated by the group interactions and discussions.

These several streams of experiences can be combined into the river of *action learning*. In the words of Bowerman (2000)

> 'The assumptions behind action learning are the learning does not simply happen as a result of listening to a lecture or receiving a piece of information from another individual, or a book. Learning happens when we take that information and actually apply it in our behaviour…By taking action, and then reflecting on that action through good questions, in the company of others working on similar problems, we learn'

> (Bowerman, 2000, p.101)

The action learning approach has many advocates, not least amongst those working at the interface of academia and industry through the establishment of the corporate virtual university (CVU). The focus of much academic work in this area has been the nature of the infrastructure required to support such collaborative learning environments. Another major concern addressed by Wills (1990) is that the development of learning acquired in the workplace has made universities confront, often painfully, their re-conceptualisation of measures of academic attainment Worthy though these approaches are, however, the nature of the *e-learning* experience has not been highlighted as a significant area of investigation for these students who are typically working at a post-graduate, part-time or work-experience mode.

An important element of the learning experiences derived particularly from the workplace is the importance of the learning log in which a record of learning experiences is recorded but also subject to analysis in terms of a reflection upon professional practice. Such learning logs have also been introduced into the schools curriculum so that it could be that the traditional university curriculum is influenced by a new flow of entrants as well as student experiences such as work-based learning (WBL) in which the use of a learning log is probably universal.

Conclusions

The examples drawn from the above discussion lead to two broad conclusions, each of which poses interesting dilemmas for those academics with interests in pedagogy.

The first of these conclusions is that

E-Learning might be of greater salience outside rather than inside the undergraduate programmes of institutions of higher education (HEIs)

Many will regard this statement as almost tantamount to heresy. But until the academic community has convincingly demonstrated that it can re-think the traditional forms of course delivery and assessment, then the risk of plagiarism and surface learning can only increase. New forms of assessment will undoubtedly call for an examination of *processes* as well as *outcomes.* This calls for an examination of the ways in which knowledge has been acquired, digested, reflected upon and applied built into assignment strategies. This does take place to a limited extent already (for example by awarding marks for the project management of a final year project or dissertation).

The second conclusion is not unrelated to the first. It would be that

E-learning activities are much more likely to bear fruit outside the conventional 18+ intakes into higher education.

Here again a paradox is confronted. For some managements of higher educational institutions, the rapid adoption of e-mediated learning such as Virtual Learning Environments (VLEs) is a way of attempting to deliver a quality education experience in a climate of massified university entrance, declining units of resource and an undergraduate experience in which 'every student is a part-time student' as

they engage in part-time work to supplement student loans. But the elements of the student body who appear to reap the highest rewards appear to be those students who already have some significant work-experience, know how to time manage and juggle competing commitments and are committed to education as a good in itself. The dilemma that confronts us is whether those elements of the e-learning experience that appear to have met with some degrees of success can be successfully deployed throughout the whole of the undergraduate population.

Appendix 1: CSS Bulletin Board
(downloaded from: http://www.webmasterworld.com/forum83/966.htm)

The wool has been lifted from my eyes. I was blind and now I can see. Everything is clear to me now.

Papabaer just casually mentioned this in another thread, but it was such a complete revelation to me (and several other forum members, including Nick_W) that I felt it deserved its very own thread.

Say you have a class for 'framing' your elements. Something like..

```
.framed {
border: 1px solid #ccc;
margin: 10px;
padding: 0;
}
```

..and now you decide that you'd like to have something framed and floated to the left. In the past I would have either specified this in the style="" attribute of the element or I would have created a new 'framedleft' class that included the old rules and added float:left

But instead you can do this: define a new class..

```
.left {
float: left;
}
```

..and then combine the two in the html like this..

```
<img class="framed left" src="apic.gif">
```

Obviously this is a trivial example. You can make the rules much more complex and specify as many classes for each element as you like.

I have previously moaned to other developers about the lack of inheritance in CSS, but how little did I know. I take it all back. This is like multiple inheritance with wings.

All hail papabaer - the bringer of new knowledge to old minds!

16

I did not know that. Thank you for noting it, will come in very handy in the future.

More than once I have duplicated an entire class definition, some long ones, with only a slight change. Always seemed to be a foundation for code bloat…

BlobFisk
Moderator Forum 21

11:59 am on Apr 30, 2003 (utc 0)

Using multiple class definitions on elements will allow us to streamline our CSS very highly. The float example shows this very well - you can have a number of class definitions that do highly focused tasks (border, float, margin etc.) and then apply those needed to an element.

This rule will prove extremely useful to me going forward!

grahamstewart
Senior Member

12:01 pm on Apr 30, 2003 (utc 0)

> More than once I have duplicated an entire class definition, some long ones, with only a slight change.

Well that shouldn't lead to code bloat either, because you could always do this..

```
.framed, .framedleft {
 border: 1px solid left;
 margin: 10px;
 padding: 0;
}
.framedleft {
 float: left;
}
```

But I like this 'new' way a lot better!

BlobFisk
Moderator Forum 21

12:05 pm on Apr 30, 2003 (utc 0)

Actually, one thing I think to be careful of with this 'new discovery' is code bloat. There may be a temptation to create a large number of highly focused classes (eg: one for a red border, one for a blue border etc.), which may not be ideal at all and lead to a CSS file with a large number of classes.

As always, it depends on need - but I certainly foresee using it quite a lot!

netcommr

12:19 pm on Apr 30, 2003 (utc 0)

so true BlobFisk, I have usually done things like this...

TD.standard { color: #44EEFF; background-color: blue; }

<TD class="standard"> hard to read text...</TD>

<TD class="standard" style="background-color: white;"> easy to read text...</TD>

just to make slight changes runs much faster than 2 classes. From what I understand each class definition requires the object construct and a seperate memory request which can slow pages down.

BlobFisk

12:29 pm on Apr 30, 2003 (utc 0)

> From what I understand each class definition requires the object construct and a separate memory request which can slow pages down.

Very interesting, netcommr! Is that when the browser reads the CSS or when a class/id is called from the HTML?

netcommr

12:37 pm on Apr 30, 2003 (utc 0)

I am not sure. I would guess the developers would think for efficiency and tend not to construct a class not used in the current page. Say if your style sheet is remote from the page and contains classes for other pages.

grahamstewart

12:38 pm on Apr 30, 2003 (utc 0)

BlobFisk: absolutely. You don't want to be writing `class="red bluebg floatleft 1pxbordered"` otherwise you might as well use inline styles. But used carefully this could be a very powerful tool.

netcommr: don't confuse CSS classes with classes in proper languages like Java or C++. I very much doubt that they create any 'objects' from these classes.

However, even if using multiple CSS classes used more memory than inline styles, there is **no way** it would slow down the page because (A) your PC has loads of memory and we'd only be talking about a difference of a few bytes and (B) the bottleneck is the download time not the rendering time.

netcommr
12:41 pm on Apr 30, 2003 (utc 0)

Now that I think about it more, it would have to be only when needed since a class can be constructed differently when applied to different type of elements in a page.

List of References

Baty, P. (2004), 'Survey shows cheating is rife', *Times Higher Education Supplement*, 2nd July

Bergman, M. (2001), 'The Deep Web: Surfacing Hidden Values' ,*The Journal of Electronic Publishing*, July
[online: accessed 24/09/2004. Available at:]
http://www.press.umich.edu/jep/07-01/bergman.html

Bowerman, J. (2000) 'Strategising at Work' in Prestoungrange, G., Sandelands, E. and Teare, R. (eds), *The Virtual Learning Organization*, London, Continuum

Dordoy, A. (2002), 'Cheating and Plagiarism: Staff and Student Perceptions at Northumbria', Northumbria Conference [on-line]
http://online.northumbria.ac.uk/LTA/Documents/Staff_Development_Events/Northumbria_Conference/2002/AD.doc

Hagstrom,W.O. (1965) *The Scientific Community* , New York, London: Basic Books, Inc.

He, B., Patel, M., Zhang,Z and Chang,K, (2004) *Accessing the Deep Web: A Survey*, Computer Science Department, Urbana,University of Illinois
[online accessed: 24/09/2004]:
http://eagle.cs.uiuc.edu/tr/dwsurvey-tr-hpzc-jul04.pdf

JISC Plagiarism Advisory Service (2004a), 'Plagiarism: Prevention, Practice and Policies,2004' [on-line]
http://online.northumbria.ac.uk/faculties/art/information_studies/Imri/Jiscpas/site/eve_conferences_past.asp

McKenzie, J. (1998) ,'The New Plagiarism: Seven antidotes to prevent highway robbery in an electronic age' in *From Now On: The Educational Technology Journal,* **7**(8) [Online accessed 24/09/2004]
http://fno.org/may98/cov98may.html

Russell,T. (2001), *The 'No Significant Difference' Phenomenon*
[online: accessed 24/09/2004]
http://nt.media.hku.hk/no_sig_diff/phenom1.html

Ryan, C. (2001), 'Case Study: How to get better essays while reducing your work and plagiarism', [on-line]
http://www.economics.ltsn.ac.uk/showcase/ryan_essays.htm

Schon, D. (1987), *Educating the reflective Practitioner' ,* American Educational Research Association
 Available at: *http://educ.queensu.ca/~ar/schon87.htm*

Wenger, E. (1998) *Communities of Practice – Learning, Meaning and Identity*
Cambridge, CUP

Wills, J. (2000) 'Credit Mapping' in Prestoungrange, G., Sandelands, E. and Teare, R.
(eds), *The Virtual Learning Organization*, London, Continuum