Learning to Learn from Online Dialogue: Are we building Cairns or Dry Stane Dykes?

Liz Broumley, UHI Millennium Institute, Perth College, Crieff Rd, Perth, PH1 2NX,
liz.broumley@perth.uhi.ac.uk

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Introduction

The revolutionary potential of using Information and Communications Technology (ICT) to support learning lies not merely in delivering information but in enabling communication and dialogue, which, many would argue, are at the centre of pedagogic effectiveness (for example, Laurillard 1993, Mayes 2000). This facility is particularly significant for distance learning students. When campus-based students use ICT to support their learning they often do not need to take advantage of its potential for dialogue (Crook 2002). Distance learning students however, find that the technology gives them a potential for communication with tutors and peers that has not previously been available (McAteer et al 2002). In order to maximise this potential, both staff and students need to become skilled in using asynchronous communication for learning (Salmon 2000). This paper argues that part of the process of becoming skilled in using asynchronous communications for learning involves using it to develop academic capabilities. This means moving from posting content about a particular topic to integrated, analytical dialogue about that topic; moving from building cairns to dry stane dykes[1].

UHI Millennium Institute (UHI)[2] is one institution that is seeking to develop vibrant learning communities using the potential offered by ICT. The geographic area covered by UHI (the Highlands and Islands of Scotland) includes some of the most geographically remote communities in the UK and covers one fifth of the UK landmass. It is a dispersed, networked institution comprising thirteen partners (FE colleges and research institutions) situated across the region. UHI uses ICT as a means of creating learning opportunities amongst people in these diverse and often remote locations. Feedback from pilot studies has indicated strong support for using ICT to create learning communities within the region, and a significant feature of learning communities was seen as participation in academic discussions online (Broumley & Weedon 2001). The academic year 2001/02 saw the introduction of two new online degree programmes within UHI. Using evidence from transcripts of online discussion and feedback from both tutors and students, this paper examines some of the issues about the role of asynchronous online dialogue in learning in relation to the development of academic capabilities.

1 Both cairns and dry stane dykes are made from uncut stones, a cairn is a pile of stones, often used as a way mark, a dry stane dyke is a wall comprising carefully integrated stones.
2 UHI Millennium Institute is an HEI, which is working towards becoming the University of the Highlands and Islands.

edialogues

Much has been written about the value of dialogue for student learning (for example Ramsden 1992, Biggs 1999, Bligh 2000), and of the potential for collaborative learning based on dialogue in e-learning situations (eg. Mason & Kaye 1990, Laurillard 1993, Koschmann 1996, Bonk & King 1998, Mayes 2000, McAteer et al 2002). The benefits of edialogue are particularly apparent to those who approach elearning from a social constructivist pedagogy and who see the potential for students to use computer mediated communication to co-produce knowledge through activity (Brown et al 1989, Jones & Asensio 2002). The connectivity provided through elearning offers a real potential for students in remote areas to build communities of practice (Wenger 1998) which can extend beyond the learning community.

Despite this potential, accounts of experience suggest that student engagement in both asynchronous and synchronous dialogue is often patchy, and may contribute relatively little to the achievement of the specified learning outcomes (Hara & Kling 1999, Bonk 2001). Crook (op cit) suggests that serious revision of our models of learning and teaching may be necessary for successful development of networked learning to become an "arena for community". As part of this revision and to facilitate the realisation of elearning's potential we need to pay attention to what happens in edialogue and how this affects student learning.

A critical issue in developing effective networked learning is the development of new skills by both lecturing staff and students. In early examples of elearning we often see both groups struggling to adapt their existing face-to-face communication skills a very different environment, and quite deliberately using strategies such as face-to-face induction to create a 'safe' environment for online collaboration (Nicol et al 2003). For increasing numbers of elearners face-to-face induction is not a realistic option, irrespective of the pedagogic appropriateness of such an approach. Salmon (op cit) develops a model of emoderating skills founded on online socialisation, which helps to develop the online social skills that are a necessary part of collaborative learning.

In addition to the development of online communities, feedback from UHI students (internal evaluation studies) highlights the importance to them of interaction that furthers academic understanding. Developing academic discussion involves a range of skills; at first year undergraduate level this might include:

- learning to use the language of the discipline
- relating theory and practice
- communicating ideas effectively
- thinking critically using a range of knowledge sources
- building new knowledge/understanding in collaboration with others

The development of these skills is facilitated by tutors providing models of appropriate discourse, scaffolding, providing feedback and stimulating debate or shared tasks. These issues affect face to face learners too, but the transcripts which are available from online discussion allow analysis that can help in understanding the process of academic discourse which is not easily possible for classroom dialogue (Hillman 1999). This analysis can provide feedback which can help us to move towards more integrated edialogue - the dry stane dyke.

edialogues in a UHI context

From its inception UHI has developed networked degrees which can be accessed by students in a variety of locations across UHI. These were supported using a mixture of face to face teaching, video and audio conferencing, email and web-based resources. Degree programmes were developed within frameworks that encouraged a social constructivist approach to the use of technology to support learners (Broumley 1999) and the systematic and progressive development of transferable graduate skills[3]. If UHI is to succeed in developing online degree programmes based on these frameworks then increasing our understanding of the role of edialogue in developing academic skills is essential.

The introduction of the first two degree programmes that were designed to be entirely online, with all tutorial interaction taking place through the communication tools of a Virtual Learning Environment (VLE) happened in September 2001. These programmes provided an ideal opportunity to work with tutors and students to investigate the role of online discussions in developing learning communities. This paper focuses on the one of these degrees, the BA Child and Youth Studies (BACYS). It draws students from most parts of the UHI and attracts full- and part-time students, who study the same modules together. As one of UHI's first online degrees the BACYS was being carefully evaluated so questionnaire feedback was available from students and staff. This has provided baseline data on the value students place on edialogue. Because the degree draws people from such a wide region and includes both full time and part time students there is no joint face to face induction for the whole group although there is local college induction, this is not compulsory.

In creating online resources the course team had consciously encouraged a social constructivist approach to learning, with plenty of opportunities for group participation in learning activities. However, as this was the first time they had worked online, they recognised a need to 'learn how to learn' online and therefore were keen to use evaluation and subsequent research to improve both the student experiences and their own online skills. Therefore one purpose of the present analysis is to contribute to a practical understanding of how edialogue can contribute to students' learning online.

We started the investigation with some initial questions:

- How do individuals differ in their online behaviour?
- How do students respond to one another in online discussions?
- How valuable do students find different online activities for learning?

In the process of investigating these additional questions were identified which are discussed in the final section and will be investigated during academic year 2002/03.

edialogue research methodology

To investigate edialogue a discussion from one BACYS module was chosen for in depth analysis. The discussion is from a first semester module and took place in weeks 7-9 of a 15 week module. The particular discussion was chosen because it occurred at a point when the students were becoming accustomed to online discussion and before submission deadlines for assignments were competing for attention. By this time the students had had the opportunity to take part in three

[3] Details of UHI's approach to graduate skills can be found at www.pdp.uhi.ac.uk

previous discussions therefore the medium was not new to them. The module itself included students from all parts of the network offering the degree, 43 students started the module and 36 completed. By week 7 all those who dropped out of the module had left. For the students this was their first experience of online learning, the tutor had presented this module once before in a pilot study.

The following data on the discussion were collected:

- Transcript of the discussion
- VLE computer log showing the pattern of participation in discussions during all 15 weeks of the module
- The tutor's reflective account of her interaction during the discussions based on the transcript.

In addition, evaluative data about online discussions were collected independently by questionnaire from both students and tutor.

The topic of the discussion was Health Promotion, which was introduced by the tutor with two questions:

> "Many people are in a position to promote the health of children. Should we expect them to do so (on top of their other work)? If so, how can we ensure that health promotion is on everyone's agenda?

The tutor's objectives for this discussion (as derived from a reflective interview) were to:

- encourage the students to consider their experiences of health promotion in the light of the theoretical course material they had studied so far
- facilitate the development of the analytical skills they would need for their first summative assessment

These objectives were not made explicit to the students, although in previous discussions she had encouraged students to reflect on their own relevant experiences in the light of the material they were studying. The nature of the task was very open ended, students were being asked to contribute their thoughts regarding the question but not produce either an individual or group consensus. The tutor was allowing a relatively unstructured discussion in which students could create new threads.

There are a variety of frameworks to analyse online interactions (eg Sugar and Bonk 1998, Hillman op cit, Chappel et al, op cit), we have used the Elements approach (Chappel, ibid). This approach is grounded in learning theory and has been developed from involvement in courses which follow a social constructivist pedagogy and use computer mediated communication as the principle learning environment. The 'elements' approach can be used to provide feedback that facilitates the development of academic and tutoring skills. The approach identifies six discussion elements; organising, facilitating, disseminating, diverging, converging and framing (see table 1). It gives a basis for both statistical and reflective analysis that can be used to investigate both student and tutor behaviour. In addition, where student contributions to discussions are assessed, it can provide criteria for assessment[4].

[4] Personal communication Dr E McAteer.

Table 1: Description of the 'Elements'

Element	Description
organisation	Interactions between group members designed to co-ordinate collaborative tasks, including meeting deadlines, planning and scheduling.
facilitation	Setting a collaborative climate for learning through acknowledging, recognising and encouraging others; sharing resources; providing social glue.
dissemination	Proposing an idea, presenting new information or resources, using external resources and experiences; explaining; justifying.
divergence	Opening out discussion; questioning; offering new perspectives on shared thought; prompting exploration of other views; dissonance or disagreement.
convergence	Promoting agreements; summarising; weaving; building on the thoughts of others; identifying areas of consistency and agreement; application of newly constructed meaning.
framing	Framing the understanding of a collaborative task; generalising; theorising; identifying task boundaries; scaffolding.

(Adapted from Chappel ibid)

This approach can be used to create a group participation profile and examine individual behaviour, both of which were considered important for this study. It was used to identify individual differences between students and differences between the students and the tutor. The analysis gave an anatomy of the discussion in terms of the types of contribution people made and the context in which these contributions were made in terms of the person to whom the contributor was replying. The analysis tool was selected because it also appeared capable of giving insights into the academic skills being evidenced during the interactions.

In order to help contextualise the analysis computer logs were used to identify whether the levels of contribution seen in this discussion were typical for these students across the module. In addition, students' responses in the end of semester evaluation to questions on their level of participation in online discussions, the usefulness or otherwise of these discussions, their satisfaction with online tutor support and their view of online discussion in comparison with face to face discussion have been used. The tutor's reflections provide another perspective on the context for the discussion by setting the implicit learning outcomes and giving the moderator's views on the postings in relation to these outcomes.

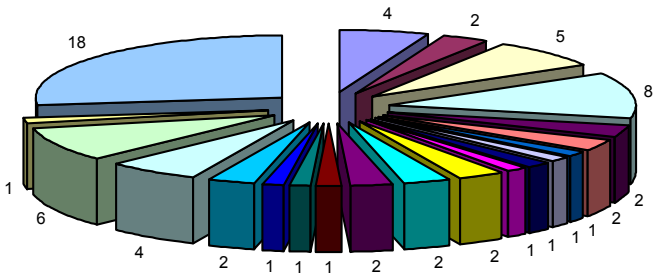
edialogue findings

The answers that emerged to our original research questions were as follows:

How do individuals differ in their online behaviour?
Over the three week period 20 students took part in the discussion, with participation rates that were typical of their contribution rates in other discussions. Diagram 1 shows the pattern of contribution. There were a total of 67 contributions by 21 contributors (including the tutor). The tutor made 18 contributions or almost 27% of the postings, with 63% of postings from students. Using Salmon's guideline of tutors

contributing about 20% of the postings the tutor's contributions here seem rather high. However it has been suggested that in order to establish frequent participation online it may be necessary for tutors to 'front load' their online tutorial support in the early weeks of a new discussion group (Broumley & Weedon op cit, Nicol et al op cit). Student feedback also suggests that online tutor presence was valued.

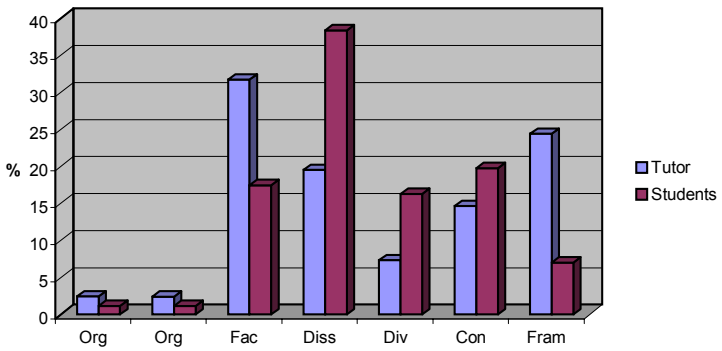
Diagram 1: Number of postings made by each participant



Although 20 students participated, eight only posted once, seven posted twice and five posted four or more times. Between them the five 'frequent posting' students (those posting 4 or more times) contributed 40% of the total postings and 55% of the student postings. This pattern of a sub-set of relatively active participants with a larger number of less frequent contributors is not untypical, Mann (2002).

Use of the 'elements' approach to analyse contributions provides a richer insight into the edialogue than simple frequency statistics on postings. As one posting can contain several elements the total number of elements is greater than the number of postings. The tutor posted 41 separate elements and the students 85. A comparison between the tutor and the students showed that the tutor's postings contained an average of 2.28 elements per posting and the students 1.76. However what also became apparent was that the students and tutor were making significantly ($p < 0.02$) different types of contribution, as can be seen from diagram 2.

Diagram 2: Comparison between tutor and students



org = organisation
fac =facilitation
diss = dissemination
div = divergence
con = convergence
fram = framing

From the outset the students were more likely than the tutor to post a straightforward dissemination (38% of student contributions) mainly giving information to the rest of the group in answer to the tutor's questions. However this dissemination was often being done with little attempt to build on the contributions of others; the individual contributions were 'on topic' but many did not make explicit reference to other postings even where one posting was a reply to a previous one. In these cases the students appeared to be building cairns, placing a relevantly shaped (on topic) contribution on top of others. It is possible that the students were implicitly acknowledging others, with mental agreement or disagreement, but this wasn't obvious from the written postings.

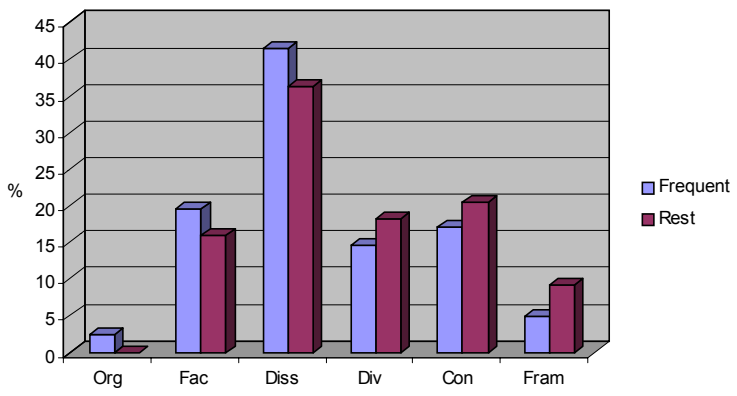
As the discussion progressed students did make more use of both divergence (16% of student contributions) and convergence (20%), which suggests that there was a growing attempt to inter-relate comments recognising what had preceded them. With this we begin to see some move towards building a dry stane dyke, creating an integrated discussion. Whilst the students made relatively little use of the framing category this was the second most frequent element for the tutor, a finding which reflects student - tutor roles, the tutor was providing the scaffolding and boundaries for the discussion. Neither the tutor nor the students made significant use of the organising category, which perhaps reflects the relatively unstructured nature of the discussion; as the students were not required to come to a group decision organisation was not particularly relevant.

The tutor's preferred element in this discussion was facilitation (32% of her comments). This was something the tutor had used quite extensively from the start of the discussion, interestingly after 8 days some of the students began to demonstrate facilitating behaviour too. One interpretation of this is that they were modelling their behaviour on that of the tutor. If this is the case, then good edialogue practice by the tutor might make a significant contribution to the development of edialogue skills in students.

In order to understand more about the difference between students the types of posting by 'frequent posters' were compared with the rest. What transpired was a difference in usage of the discussion board; the frequent posters were more likely to post a contribution that had only one element, rather than a multi-element posting. Overall the frequent posters had an average of 1.52 elements per posting compared with an average of 2 for the rest.

When the types of elements used were analysed there was no significant difference between the two groups although frequent posters were slightly less likely to use the divergent, convergent and framing elements than other students, and more likely to use facilitation, as shown in diagram 3.

Diagram 3: Comparison between frequent posters and the rest



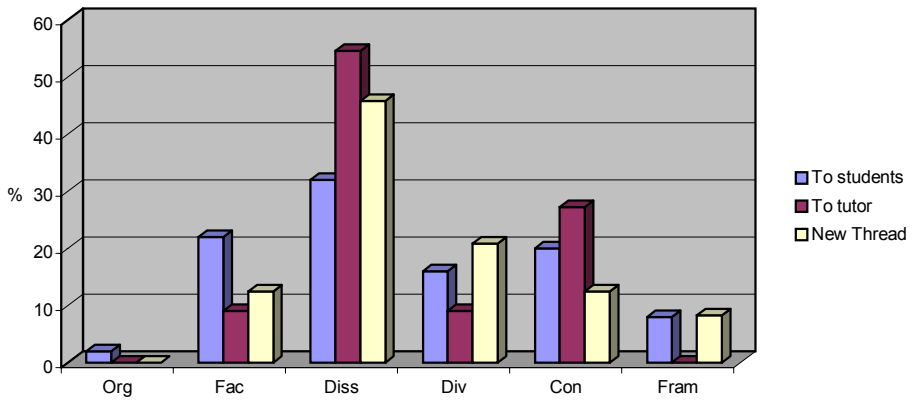
What might be emerging are two different patterns of contribution. One pattern was frequent postings giving new information but often only containing1 or 2 elements, another showed less frequent but longer (and more reflective) postings, with a greater number of elements, including elements that built on the academic contributions of others.

How do students respond to one another in online discussions?
In order to consider this question it was decided to analyse the elements according to the person to whom the students were responding. This was determined using the computer log detailing the message replied to, and gave three categories:

- a reply to a student
- a reply to the tutor
- the start of a new thread

New threads were started when someone posted a message with a new topic heading, rather than using the reply option to link to a previous posting. The first message in the discussion always starts a new thread, participants can chose whether to reply to another contributor or start a new thread themselves. Diagram 4 shows the distribution of elements in these three categories.

Diagram 4: Comparison of elements used to students, tutors or when staring a new thread



The observed differences in diagram 4 are significant, $p < 0.01$. Although the primary type of response is dissemination regardless of to whom the student is replying, it appears that students are more likely to use facilitating and divergent responses with peers and fewer disseminations than they do to the tutor. Not only do student present more information to tutors they are also more likely to give convergent responses to tutors than to peers. The framing category is never used in response to the tutor although it occurs in response to peers and when introducing a new thread. In this discussion students introduced 13 new threads in comparison with 3 by the tutor.

These patterns of interaction may reflect expectations about the roles of tutors and students. Tutors are expected to provide direction and support for students, and although online dialogue creates a more student led environment (Nicol et al op cit) the students here were still less likely to organise, facilitate or frame when they responded to the tutor than when they respond to their peers. Similarly they are more willing to express divergence from peers than from the tutor. When the pattern of responses to other students is considered as a whole it suggests that this group of students were developing the academic skills necessary for collaborative learning

relationships. They were willing to present new information to support one another and express both agreement and disagreement, they seemed to be beginning to build a more integrative dialogue - a dry stane dyke?

How valuable do students find different online activities for learning?
On the basis of the responses to student evaluation questionnaires we found that for BACYS students as a whole:

- discussions were reported as the most useful online activity
- there was a positive correlation between student satisfaction with tutor support and the frequency of tutor presence online
- 47% of the group thought that online learning was better or much better than face-to-face learning, 34% thought face-to-face was better or much better and 19% had no preference

When responses from students in this module were analysed, it was found that they were even more likely to report that the discussions were helpful, and that they preferred online learning, than were the whole student group. This finding was not known when the module was selected for in depth study.

The students claimed to value the help they received from others[5]; this first quotation suggests the development of a learning community.

> "With so many people working at the same time, any queries I had were resolved by another student in a matter of hours. Everybody went out of his or her way to help other students and if no one knew the answer we'd contact the tutor. I enjoyed the conversations, jokes and answers to queries."

They appreciated the support from tutors:

> "… there was high involvement from the tutors on the discussion boards, this was very encouraging, giving a more personal touch s the course can be very isolating."

Interesting discussions themselves became a motivator for students to take part, particularly when they felt they could contribute a different or novel view, rather than simply agreeing with the rest.

But there were drawbacks:

> "… I found that if I was away from the computer for any reason when I came back to the discussion I was overwhelmed by the quantity of messages."

> "… if someone misreads what you're trying to say … everything can be taken out of context and misconstrued, so had to be vary wary of how sentences are worded."

> "(in face-to-face contact) … you can explain through words/body language and expression more clearly and obtain clear, full answers to questions."

Interestingly these last two points may also be true of face-to-face situations, where imprecise verbal comments and non-verbal behaviour can be misinterpreted leading

[5] The following quotes were made in response to open questions on student evaluation questionnaires

to similar problems to the ones these students describe. Face to face interaction can also suffer from communication breakdown.

Several students mention time as a problem, online discussions take longer, both to participate in physically and to conduct a whole conversation, they impose a cognitive load not found in face to face discussions as people have to reconstruct a dialogue over several days. Finally, students did recognise that they had to learn new skills in order to take part in edialogues:

> "At the beginning I was apprehensive about using them, although now I am making more of an effort to be part of the conversations."

Discussion and conclusions

This work began by outlining the importance of edialogue in realising the potential of elearning, and specifically in relation to the potential or ICT for collaborative, social constructivist learning which can create vibrant learning communities and enable students to develop recognised academic skills. On the basis of the data analysed here we have some grounds for optimism; in addition we can identify some practical outcomes, both in terms of feedback to practitioners and for ongoing research. Although this study has provided some initial answers to opening questions, it has also helped to identify further questions, which will become part of the next cycle of action research. The 'elements' approach has helped to identify differences in behaviour between individuals and differences according to whom individuals feel they are 'talking'. It is also helping to identify the types of academic skills students are evidencing online, and suggested that students may model their behaviour on that of the tutor. For undergraduates learning the language of their discipline this might help encourage appropriate use of academic concepts and procedures. However the methodology is capable of extension using reflective feedback from students as well as from tutors (Tomlie 2001). For the tutor here the reflective interview proved an important part of her developing emoderating skills, reflective analysis with students may also prove a useful development process.

A point brought out by the tutor was that for edialogue to be effective it might be necessary to make the learning outcomes of the dialogue explicit so students have a clearer idea of what is expected. One way of achieving this might be by incorporating the outcomes into the module design and assessment. This could be done by building on Mayes's classification of three types of learning courseware (op cit). These are: primary courseware (which is largely content), secondary courseware (for example, activities) and tertiary courseware (such as dialogue or personal reflection). If this were combined with Biggs's constructive alignment (op cit), which creates an alignment of learning outcomes, assessment and learning and teaching activities, then having once decided on the learning outcomes and assessment, we can identify the learning and teaching, in terms of Mayes's courseware. We might even consider how to evaluate learning at the design stage. This could help to ensure that edialogue maps onto the outcomes and assessment, which could be expressed in the framework shown in table 2.

Table 2: Framework for module design and evaluation

Learning Outcome	Assessment	Learning and teaching Courseware	Learning opportunities	Evaluation of effectiveness
		Primary		
		Secondary		
		Tertiary		

Edialogues themselves could become part of the courseware, by making dialogues available to other students there may be able benefit from vicarious learning (Mayes 2002). In addition different types of collaborative activities could be incorporated to give students clear opportunities to acquire a range of academic skills.

Future research will investigate some of these issues and consider some of the implications for the social aspects of learning which have not been investigated here. Of particular interest are the boundaries for dialogue and the level of disclosure found amongst students, and how these might impact on a developing community of practice. This study has also raised interesting questions about the assumptions which are often made about the differences between edialogue and face to face dialogue.

In conclusion, this investigation has found evidence of both cairns and dry stane dykes, but is building cairns part of the process of learning to build a dry stane dyke?

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