

Digital Culture & Education (DCE)

Publication details, including instructions for authors <http://www.digitalcultureandeducation.com/>

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Rebecca Ferguson, Denise Whitelock and Karen Littleton

The Open University

Online Publication Date: 31 May 2010

To cite this Article: Ferguson, R., Whitelock, D. and Littleton, K. (2010). Improvable objects and attached dialogue: new literacy practices employed by learners to build knowledge together in asynchronous settings. *Digital Culture & Education*, 2:1,103-123.

URL: http://www.digitalcultureandeducation.com/cms/wp-content/uploads/2010/05/dec1034_ferguson_2010.pdf

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Improvable objects and attached dialogue: new literacy practices employed by learners to build knowledge together in asynchronous settings

Rebecca Ferguson, Denise Whitelock and Karen Littleton

Abstract

Asynchronous online dialogue offers advantages to learners, but has appeared to involve only limited use of new literacy practices. To investigate this, a multimodal approach was applied to asynchronous dialogue. The study analysed the online discussions of small groups of university students as they developed collaboratively authored documents. Sociocultural discourse analysis of the dialogue was combined with visual analysis of its structural elements. The groups were found to employ new literacies that supported the joint construction of knowledge. The documents on which they worked together functioned as ‘improvable objects’ and the development of these was associated with engagement in ‘attached dialogue’. By investigating a wider range of conference dialogue than has previously been explored, it was found that engaging in attached dialogue associated with collaborative authorship of improvable objects prompts groups of online learners to share knowledge, challenge ideas, justify opinions, evaluate evidence and consider options.

Keywords:

Asynchronous dialogue, Collaboration, Exploratory talk, Improvable objects, Online learning, Pedagogy, Sociocultural discourse analysis, Visual analysis

Introduction

During the past century, there has been a shift away from viewing knowledge as a transferable commodity, towards a growing recognition that knowledge is not a static entity but is actively developed within a context. The familiar metaphor of knowledge as noun has been supplemented by the metaphor of knowledge as verb (Sfard, 1998). This change in understanding can be related to a shift in educational practices towards a social constructivist approach which encourages and supports learners to construct knowledge in a social context (Vygotsky, 1987). This approach is typically associated with high levels of interaction and collaboration, which were difficult to achieve on a large scale in distance education until the development of online tools such as conferences and forums (Garrison & Anderson, 2003; Nipper, 1989).

Because these technologies do not tie learners to set hours and locations for interaction, they potentially provide learners with opportunities to collaborate without the constraints of time and place they would encounter in a face-to-face environment (Harasim, 1990; Jones, Cook, Jones, & De Laat, 2007; Wu & Hiltz, 2004). The asynchronous dialogue allows participants time to reflect, to clarify their thoughts and to present them in an orderly fashion (Garrison & Anderson, 2003). Their discussion is

resourced by transcripts and archives that provide them with a record of past interaction (Kaye, 1989; Lapadat, 2002). These factors are significant affordances of asynchronous dialogue, the perceived and actual properties that determine its possible utility (Gibson, 1986).

Making use of these affordances requires the employment of digital literacies, ‘the myriad social practices and conceptions of engaging in meaning making mediated by texts that are produced, received, distributed, exchanged etc, via digital codification’ (Lankshear & Knobel, 2008, p.4). However, it is not clear whether these digital literacies are an adequate substitute for face-to-face talk when it comes to providing the variety of support required to promote a rounded set of learner outcomes (Chester & Gwynne, 1998; Drummond & Hopper, 1993; Walther, 1992, 1996; Whitty & Gavin, 2001). Previous research has found that asynchronous learning dialogue produces a more limited set of learning outcomes than face-to-face interaction and that these outcomes tend to be cumulative in nature because the medium supports groups in combining information and ideas (Coffin, North, & Martin, 2009; Littleton & Whitelock, 2005; Wegerif, 1998).

Previous descriptions of asynchronous learning dialogue suggest that it is a variant form of familiar literacy practices. However, the participatory, collaborative and distributed affordances of online environments offer the possibility that knowledge construction within them could involve radically different practices.

The more a literacy practice privileges participation over publishing, distributed expertise over centralized expertise, collective intelligence over individual possessive intelligence, collaboration over individuated authorship, dispersion over scarcity, sharing over ownership, experimentation over “normalization,” innovation and evolution over stability and fixity, creative-innovative rule breaking over generic purity and policing, relationship over information broadcast, and so on, the more we should regard it as a “new” literacy. (Knobel & Lankshear, 2007, p.21)

In face-to-face settings, where groups build knowledge together through dialogue, researchers have shown that superficially similar exchanges between learners actually involve a variety of different practices. Identifying and describing these different practices resources improvements in practice by both learners and educators (Mercer & Littleton, 2007).

In the case of face-to-face learning dialogue, three distinct practices have been identified: disputational, cumulative and exploratory talk (Mercer, 2000, 2002; Mercer & Littleton, 2007; Mercer & Wegerif, 1999; Mercer, Wegerif, & Dawes, 1999; Wegerif, 1996; Wegerif & Mercer, 1996). Categorising practices in this way focuses attention on learners’ use of talk as a thinking tool. Disputational talk is characterised by individuals trying to take control; restating their own point of view while rejecting or ignoring the views of others. In cumulative talk, control is shared and speakers build on each other’s contributions, but they do not challenge or criticise each other’s views. This is akin to the dialogue previously observed in online conference postings.

In exploratory talk, reasons and explanations are made explicit where necessary and all participants make critical evaluations in order to reach joint conclusions. This type of talk is characteristic of an educated discourse because it involves constant negotiation

(Mercer & Littleton, 2007). It is of interest in the context of new literacy practices because, like them, this dialogue is both participative and collaborative in nature.

In textual online environments, interaction takes place through typed dialogue rather than spoken talk. Analysis of interaction among learners in these environments has found many examples of cumulative discussion but few examples of exploratory dialogue. This suggests that exploratory dialogue may be too risky or too time consuming to be used by online groups of learners (Littleton & Whitelock, 2005; Wegerif, 1998). This is a potential problem, as this is a form of dialogue that is ‘essential for successful participation in “educated” communities of discourse’ (Littleton & Whitelock, 2005, p.152). Online learning environments may therefore be impoverished if they do not support the use of new literacies that extend the possibilities for thinking together through the use of participatory and collaborative dialogue.

Exploratory talk is also valuable because it supports the use of progressive discourse, a method of increasing group members’ understanding by developing thoughts through speech (Bereiter, 1994). Those engaged in progressive discourse must be prepared to work towards common understanding satisfactory to all, to frame questions and propositions in ways that allow evidence to be brought to bear on them, to expand the body of collectively valid propositions and to allow any belief to be subjected to criticism if this will advance the discourse (Wells, 1999). Progressive discourse necessitates the use of exploratory dialogue and, in turn, the use of exploratory dialogue signals that speakers are likely to be engaged in building understanding together through progressive discourse.

In face-to-face settings, progressive discourse has been associated with the sustained development of ideas through the use of improvable objects (Wells, 1999). Wells observed that teachers often encourage pupils to construct representations capturing something of what has been said. He suggested that these function as improvable objects, knowledge artefacts that participants work collaboratively to improve because they involve a problem that requires discussion. These are important resources because ‘a written text, unlike the text produced in speaking, is a permanent artefact, it can be reviewed, rethought and revised through a different form of dialogue, in which the text under construction plays a central role’ (Wells, 1999, p.115).

This might be taken to imply that learners interacting in asynchronous conferences and forums have less need for improvable objects because their postings endure and are visible to all. However, the needs to establish ‘common knowledge’ (Edwards & Mercer, 1989) and to preserve salient ideas are keenly felt in environments where there is a danger that learners will become overloaded with information because dialogue is automatically archived (Conole & Dyke, 2004). In such cases, learners need to employ literacy practices that allow them to review, rethink and revise their knowledge through dialogue. They also need literacy practices for identifying, augmenting and maintaining common ground as their work progresses (Baker, Hansen, Joiner, & Traum, 1999). Improvable objects offer a way of achieving this, and their use could also be associated with new literacy practices that extend the participative and collaborative potential of online learning.

The research reported here investigates whether online groups of learners make use of improvable objects, which literacy practices are associated with improvable objects, and whether they use such objects to support the development of exploratory dialogue. It

therefore begins by identifying improvable objects within an asynchronous learning environment. It goes on to investigate the discourse associated with these, and the new literacy practices necessary for learners to use improvable objects and exploratory dialogue in order to build knowledge together effectively in asynchronous environments.

Data collection

The data presented here are drawn from an extensive set of material in which groups of undergraduate students at The Open University collaborated online using FirstClass conferencing software. Although all these students had already completed courses at undergraduate level, many of them had never worked in online groups before. Within three separate conferences, small groups of psychology students developed and carried out research projects with the support of tutors. After six weeks, these groups presented their work to other tutors and students, and received feedback intended to support them in their subsequent individual coursework. Because group participation was assessed, learners could not pass the course without taking an active role within their conference.

With the informed consent of all participants, three six-week conferences were archived and analysed in their entirety for this research. The data samples presented below are typical, and are drawn from two of the groups, referred to here as Jet and Pearl. The archived material included the text and title of all messages posted in each conference, together with the names of their authors (presented here as pseudonyms) and the dates and times when they were posted. It also included any documents or icons attached to the postings and, in order to preserve visual elements, screen captures of all the messages. The history of each posting was also recorded, showing who had created it and when, who had opened it and when they had first done so, who had downloaded its attachments and when they had done this. These attached documents were of particular interest because they appeared to have the potential to be employed as improvable objects. Each group worked collectively on several of these documents. Three of these were assessed pieces of work, while the others were associated with research data collection and analysis.

To aid understanding of the analysis presented below, Figure 1 shows a view of a FirstClass forum. Within it, each posting is identified by its subject title and information is supplied about its size, author, date and time of posting, and whether any document is attached to it. Clicking on a subject title brings up a posting like the one shown in Figure 10 below. As with email, any attached document or file can be downloaded by clicking on the appropriate link within the posting. Figures 2 to 9 show sections of Word documents that were shared by students as attached files.

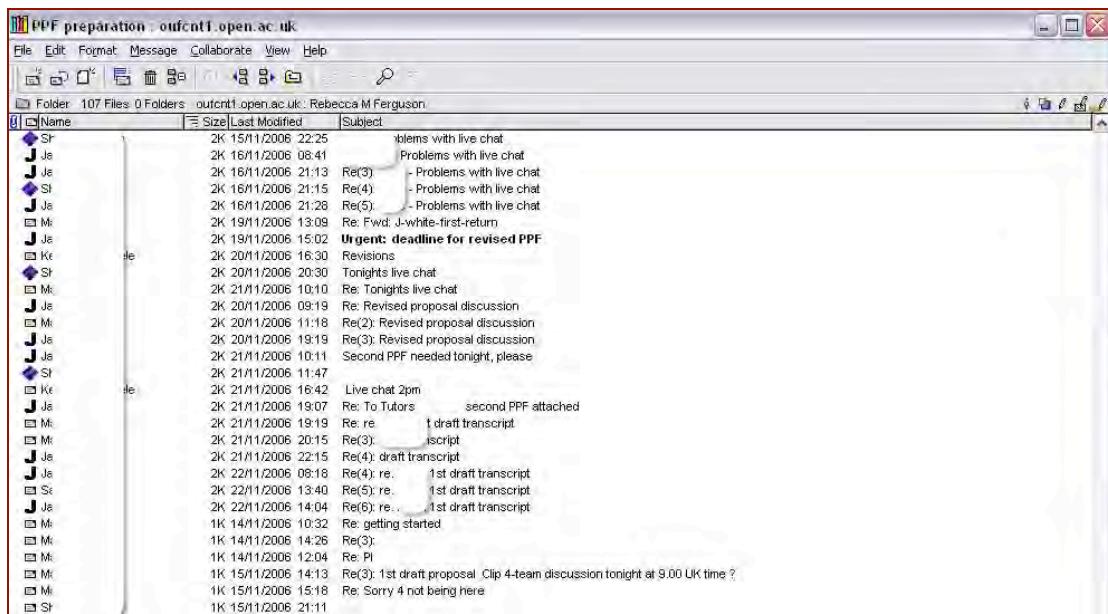


Figure 1: View of a FirstClass forum (student names have been whited out).

The online conferences were found to resemble icebergs, in that the bulk of each of them was hidden from the view of a researcher who studied only the conference postings. Pearl conference, for example, contained over 86,000 words, of which only 22% appeared in the postings. The other 78% were all in the associated attachments: documents produced in Microsoft Word, Microsoft PowerPoint, Adobe Acrobat and SPSS and then attached to conference postings for other group members to download, read and consider. In many cases, these attachments were different versions of the same document. Pearl group, for example, produced 17 iterations of their ‘video transcript’ document. Together, these versions of just one document had a word count greater than all Pearl conference postings combined. The group’s video transcripts had a total word count of 23,577 (compared to a total word count of 18,995 for their conference postings). Jet group video transcripts had a total word count of 12,925 (compared to a total word count of 84,530 for Jet conference postings).

When the groups began work on these video transcripts, members had already begun to establish working relationships and shared literacy practices during a week’s work in which they had collaborated on the development of their group’s project proposal. They were motivated to work together to develop these documents because their research project could not be completed until they had transcribed their data. In their research proposal, members of Pearl group had agreed to carry out thematic analysis of their video data to answer the question ‘Power and control within healthcare relationships – do physicians seek to control communication with their patients?’ Members of Jet group planned to analyse their video data to investigate how participants in a group use verbal and non-verbal communication to construct meaning.

The analysis presented here of the two groups’ interactions employs the video transcripts produced by Jet and Pearl as exemplifications of broader patterns in the data. Although few groups of online learners produce a video transcript together, most such groups can be expected to consider material in detail and to develop their understanding of that material together, so the development of these video transcripts can be considered as specific examples of a frequently enacted process and of the ways in which new literacies are employed by such groups to support meaning making.

The data was analysed using a combination of approaches to take into account its multimodal aspects (Ferguson, 2009). Sociocultural discourse analysis was used to examine the ways in which shared understanding is developed over time in a social context (Mercer, Littleton, & Wegerif, 2004). This form of analysis combines detailed examination of talk in specific events with comparative analysis of dialogue across a sample of cases. However, because it was developed for the analysis of talk, it does not take into account the visual elements of online dialogue, such as layout and typography. These aspects of conference data require analysis of the composition of dialogue alongside its content.

In the case of such composite texts, Kress and van Leeuwen (2006) demonstrated that visual and verbal elements interact, and should be analysed as an integrated whole. This led them to identify a set of structuring principles that enable viewers to make sense of the layout of text and images (Kress & van Leeuwen, 1990, 2006). Their work informed the development of visual analysis (van Leeuwen & Jewitt, 2001), which is employed here to examine the uses, meaning and significance of these within the dialogue. This makes use of the same set of structuring principles, including the salience ascribed to different elements of the text, and the frames that separate these elements.

Identifying improvable objects

The first task of the analysis was to investigate whether online groups of learners make use of improvable objects and, if so, what form they take. Wells (1999) identified six criteria for improvable objects that indicate their potential for supporting participative and collaborative literacy practices:

- participants work collaboratively to improve them
- they involve a real problem that requires discussion
- they provide a means to an end, rather than being an end in themselves
- they act as a focus for the application of experience
- they act as a focus for the application of information
- they inspire and focus a progressive discourse.

These features of improvable objects, when combined, establish them as a means of sharing and building ideas over time, making such objects sites for the display, comparison, negotiation and development of different understandings.

Conference postings were not, therefore, considered to be improvable objects because there was no evidence that participants worked collaboratively to improve any individual posting. Course materials such as books and CDs were not improvable objects because there was no opportunity to work collaboratively to improve them – and some shared documents, such as journal articles and examination guidelines, were excluded for the same reason.

Video transcripts, and other documents that were produced jointly by groups of learners, were found to meet the criteria for improvable objects. The video transcripts were typical of these in that they appeared in multiple versions, produced by the majority of students in the group, as part of a research project. Students planned, sometimes weeks in advance, to produce these documents; they asked their tutors to archive a copy of the agreed versions for easy access, and in some cases they returned to them after a period of weeks or even months.

In the case of the video transcripts, the documents prompted learners to comment explicitly on their experience of transcript production. Several shared effective methods of reviewing a video-clip and writing a transcript. These suggestions differed from those of tutors because they had a reflective element, and related to work on a specific video transcript rather than on transcripts in general. Other students drew on their experience of working on their video transcript in order to reflect on what had been done and what remained to do, thus linking personal experience to the development of this document. They also drew upon experience to improve their video transcript by sharing techniques and methods of carrying out the work.

Working on the video transcript provoked a return to and re-evaluation of information sources already accessed by the group as they searched for ways of representing a variety of different elements in a sequential text. This led to practical exchanges of information as the groups struggled to align various sets of information using the software available to them.

It was clear that the video transcripts and other documents developed collaboratively by the learners met the first five criteria for improvable objects: participants worked collaboratively to improve them, they involved real problems that involved discussion, they provided a means to an end and acted as a focus for the application of experience and information. The following section considers these documents as improvable objects and shows the new literacy practices involved in using them to inspire and focus a progressive discourse.

Improvable objects and progressive discourse

Jet group's first attempts at representing their video data in the form of text are shown in Figures 2 and 3. Each of these versions was produced without reference to the other and they therefore represent the two authors' different understandings as they began work on their agreed project. Olivia (all names are pseudonyms) described her transcript as a 'first attempt and very basic, prime for you to write over and change'. When Heather posted her version the next day she wrote, 'Hope it is of some use, interesting to compare mine with Olivia's?' From the start, the practice was to privilege collaboration over individuated authorship, these transcripts were treated as group property and as part of a continuing dialogue.

Video Clip 2
Transcript

Girl A "The...are, coz you know my cousin, she's from Bradford now when she starts talking I start copy, imitating what she's saying and she gets really angry she goes you can't talk proper, what you can't talk proper, I, it don't really mean anything, you just don't talk like me" *Leaning forward into the table, using hands animatedly, moving around in chair*

Girl B "We're forever taking the mikey out of peoples accents and what you think about it though, aren't you" *Out of view*

Figure 2: Start of Jet Transcript 1, posted by Olivia.

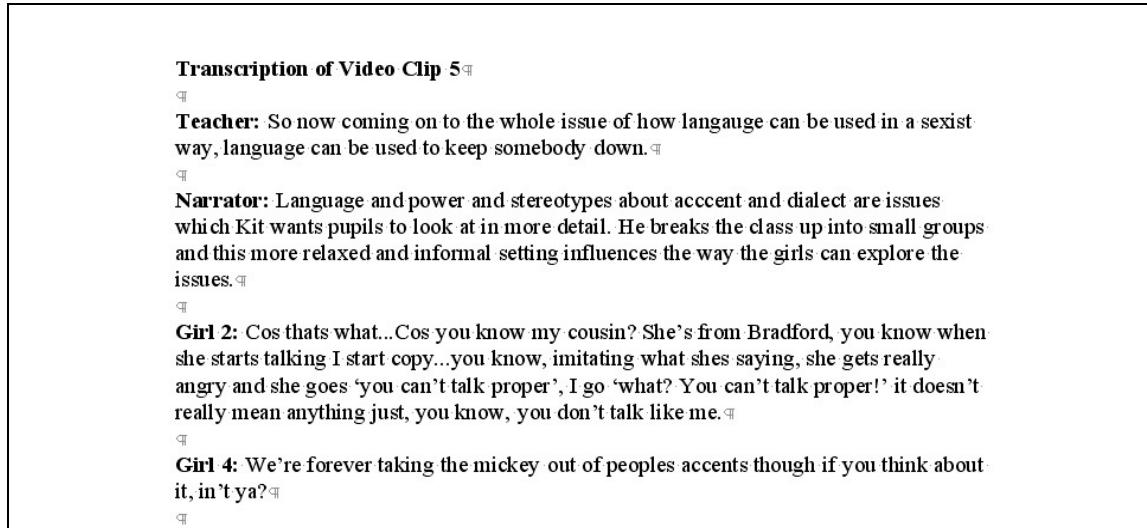


Figure 3: Start of Jet Transcript 2, posted by Heather.

Olivia and Heather's proposals included ideas about the content, terminology and format of the transcripts. Although both transcripts dealt with the same video data, the two authors proposed different ways of approaching these three areas. Heather's content included both the voice of the teacher in the classroom, and that of the narrator who provided voice-over commentary on the video-clip. Olivia omitted both these, but picked up on some of the non-verbal elements of the conversation.

The two authors also varied in the terminology they used. Olivia considered she was analysing Video clip 2, while Heather described the same data as Video clip 5. Heather described Olivia's 'Girl A' and 'Girl B' as 'Girl 2' and 'Girl 4'. Such seemingly minor discrepancies impacted on the acceptability and clarity of the transcript and these propositions were subjected to criticism as group members spent ten days discussing whether the young women in the clip should be referred to by number, letter, name or description. The initial propositions set out in Transcripts 1 and 2 thus provoked group members to discuss how to make their transcript clear and comprehensible.

From the point of view of formatting, there were both similarities and differences between the two versions. Both divided separate turns of speech by spacing, identified the speaker at the start of turns of speech and attempted to use standard punctuation. They differed in their use of bold and italic, use of colons and speech marks, and punctuation of the dialogue. Heather gave weight to the contributions of teacher and narrator, while Olivia took readers straight to the girls' conversation. Unlike Heather, she separated the girls' conversational turns, framing them within descriptions of posture, gesture and camera angle. The group therefore had to work together to decide which elements of these approaches they considered most relevant.

Individual group members thus began their research project with different understandings, both of their data and of the project they had designed. Olivia's transcript appears less detailed than Heather's, because it omits the speech of the teacher and of the narrator, but it was more directly relevant to the group's previously agreed focus on the verbal and non-verbal interaction of young women.

As discussion of the transcripts proceeded, comparison of understandings became more explicit. Both Pearl and Jet groups found it useful to set out the propositions put forward by group members, in order to subject these to criticism and bring evidence to bear on them. Once aware of different points of view, they were also able to bring personal experience to bear on the development of joint understanding.

This was evident when Jet group had agreed on their transcript and used it to focus their analysis. Eileen identified three different understandings of the word ‘posh’ displayed by members of Jet. Having drawn attention to these, she moved on: ‘I was going to try to defend my analysis but actually I think we are all seeing the same thing which is that she is “set apart”’. She thus advanced the discourse by critiquing her original belief and making it clear that, in the light of the contributions of others, she had refined her understanding.

Pearl group also worked hard to frame questions and propositions in ways that allowed evidence to be brought to bear on them. One student, Charlene, noted that ‘It has taken me 6 hours to compile a table and document that links up, line by line, all of our comments’. Her 15-page document was a detailed comparison of the understandings expressed by each student in the group about their data. In it, she employed a series of new literacy practices that would support participation and collaboration by allowing direct comparison of related propositions. She used layout and colour to distinguish the voices of different students, and she added a table in which she marked whether students had agreed or disagreed on various points and interpretations. She also framed the opinions of each individual in ways that gave them equal weight.

Charlene’s 9000-word comparison of questions and propositions was too long and detailed to be possible in speech. It would also have overwhelmed a conference posting, as these were typically less than one screen in length. It is thus an example of a new literacy practice that supports collaborative development of ideas. Although individuals’ views of their analysis differed, the extract in Figure 5 (discussing the data in Figure 4) shows that group members were in the process of developing a sophisticated understanding of their transcript.

14→(Doctor looks over glasses, closes notes, makes eye contact with patient), ↵
15→Dr: Well... do you remember, I guess you don't remember too much about what I ↵
16→told you (Dr takes his glasses off)way back (Dr smiling)then about the operation ... ↵
17→what we actually... (Doctor opens notes) ↵

Figure 4: Lines 14-17 of the agreed version of Pearl’s video transcript.

Consolidation of our analysis

To make it easier I have coloured coded our results, and put our names in front of it.

Charlene, Ethan, Andrea, Rita.

Lines we all commented on and our comments

15

→ Charlene: The Doctor is very patronising, and casting doubt in the confidence of the patient straight away, by saying that he guesses the patient doesn't remember too much about what he has told him.

Ethan: Doctor's tone indicates a slight disinterest in the notes and desire to move onto finding out information from the patient about what he remembers of the procedure. He also assumes the patient does not remember a lot. He is making a negative assumption about the patient, which may be interpreted as a desire to be seen as the knowledgeable party. This could be seen as an attempt at power.

Andrea: The doctor in a show of confidence and authority makes direct eye contact with the patient and tells him in a patronising way (as if to imply he would not be able to remember what he had previously been told in earlier conversations) about what he had been told before.

Rita: The use at times of almost childish language by the doctor looks to be belittling of the patient and the communication of the patient becomes more and more quiet, with only softly spoken, (yeah) which becomes more prominent when the doctor talks about the possible consequences of the operation.

Figure 5: Charlene's 15-page consolidation document: section considering the data in Figure 4.

Pearl Transcript 1, produced by Rita, had focused on the words spoken by doctor and patient. Since then, repeated refinement of this transcript by group members had proposed the consideration of gaze, overlapping speech, volume, actions and camera angles. By the time Charlene composed her consolidation document, all group members were referencing these as important aspects of the video data. Elsewhere in Charlene's consolidation document, the students drew attention to other aspects of the data of which some individuals had shown no awareness when they began work on the transcript, including posture, gesture, manner, non-verbal sounds and display of emotions.

Working on documents authored by group members involved the students employing a new literacy that enables distance learners to work towards a shared understanding by framing questions and propositions in ways that allowed evidence to be brought to bear on them, expanding the body of collectively valid propositions, and allowing beliefs to be subjected to criticism in order to advance the discourse. The work achieved by the Jet and Pearl groups in relation to their video transcripts demonstrated the characteristics of a progressive discourse inspired by and focused upon improvable objects and provided evidence of the new literacy practices involved in generating, communicating and negotiating meaning through this discourse. The next section of this paper examines where and how the students made use of the exploratory dialogue that could be expected to form a part of progressive discourse in a face-to-face context. Improvable objects and exploratory dialogue.

The first versions of Jet's video-data transcript were developed in parallel, which resulted in the display of a number of different understandings simultaneously. Heather made it clear that she had produced Transcript 2 without reference to Olivia's Transcript 1 when she posted 'should have looked at board first but I went ahead and did a transcript too so thought I may as well post it up. Hope it is of some use, interesting to compare mine with Olivia's?' This suggests that she was encouraging the use of a cumulative approach in which students would build on each other's

contributions. Maggie appeared to take this approach when she shared her version (Figure 6) and stated that she had produced it in response to previous versions: ‘Heather and Olivia well done on your transcripts. I was going to wait till I got home but as you guys are already on the go I thought I too would have a go [...] I have worked from your two transcripts too.’

Transcription of Video Clip 2	
¶	
Class Setting	¶
¶	
Teacher:	→ 1 So now coming on to the whole issue of how langauge can be used in a sexist way, language can be used to 2 keep somebody down. ¶
¶	
Narrator:	→ 3 Language and power and stereotypes about accent and dialect are issues which Kit wants pupils to look at 4 in more detail. He breaks the class up into small groups and this more relaxed and informal setting influences 5 the way the girls can explore the issues. ¶
¶	
Girl 2:	→ 6 Cos thats what...Cos you know my cousin? She's from Bradford... ¶
¶	
Girl 3:	→ 7 Yeh ¶
¶	
Girl 2:	→ 8you know when she starts talking I start copy... ¶
¶	
Girl 4:	→ 9 Yeh ¶
¶	
Girl 2:	→ 10you know, imitating what shes saying, she gets really angry and she goes 'you can't talk proper', I go 11 'what? You can't talk proper!' ¶
¶	
Collective laughing ¶	
¶	
Girl 3:	→ 12 echo you cant talk proper ¶
¶	
Girl 2:	→ 13it doesn't really mean anything just, you know, you don't talk like me. ¶
¶	
Girl 1:	→ 14 Taps pencil on table ¶
¶	
Girl 4:	→ 15 We're forever taking the mickey out of peoples accents though if you think about it, in't you? ¶

Figure 6: Start of Jet Transcript 3, posted by Maggie.

Maggie’s misspelling of the word ‘language’ in the first line of dialogue (Figure 6) suggests that she had cut-and-pasted this part of the text from Transcript 2, which contained the same error. She also incorporated italicised descriptions of non-verbal actions as in Transcript 1. Because she accepted and used Heather’s version of the dialogue, she was able to concentrate on new elements. She included laughter, interjections, echoes and the contributions of two more participants in the dialogue, while her format involved the use of tabulation and line numbers.

Up to the point at which Maggie produced Transcript 4 (an accidental duplicate of Transcript 3), learners’ contributions to dialogue concerning the transcript appear to be easily separable from their associated actions. Individuals developed the improvable object by producing and attaching versions of the transcript. They discussed and described these actions in a series of postings that formed an ongoing dialogue. The postings related to the first three versions of the transcript were typical of cumulative dialogue: group members built positively on each other’s contributions, adding their own information and constructing a body of shared knowledge without challenge or criticism. The emphasis was on normalization, rather than upon experimentation – and

digital affordances were used to speed up, rather than to extend, familiar literacy practices.

When Hannah introduced Transcript 5 (Figure 7) she represented her production of a transcript as part of this cumulative process. However, her version of the transcript did not build on all that had gone before because, according to the message histories, she had not at that point downloaded Transcripts 2, 3 or 4 and so she could not build on the work of Heather or Maggie. Her interpretation of the video data therefore unwittingly challenged theirs because she followed Olivia in omitting the contributions of teacher and narrator, and referring to the speakers as Girl A and Girl B.

At this point the students were engaging simultaneously in two forms of asynchronous dialogue, identified here as ‘posting dialogue’ and ‘attached dialogue’. These forms have different characteristics, but may be so intertwined that it is initially difficult to distinguish them.

‘Posting dialogue’ consists of immediately apparent exchanges in the conference postings. It frequently consists of a series of conversational turns, and can thus be considered as a digital version of face-to-face or written dialogue. Sharing attachments initially appears to be an activity that resources the posting dialogue. This view is reinforced because many attached documents are used as resources rather than as turns in a dialogue. Nevertheless, the exchange of attached documents becomes a form of asynchronous dialogue in its own right whenever it forms a sustained discussion involving two or more people, who are not expected to be in temporal proximity, in which language is used to convey meaning. ‘Attached dialogue’ takes place through the medium of documents attached to postings. It is a new literacy practice that enables the clear and explicit presentation of ideas, together with challenges, counter-challenges, analysis, evaluation and explanation.

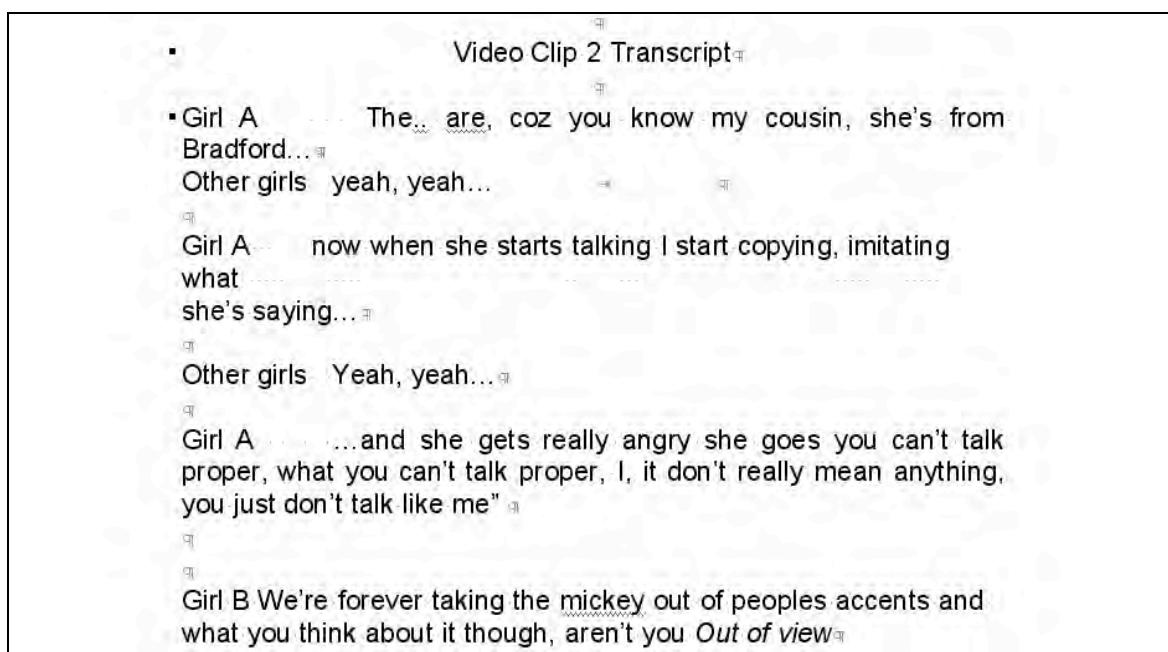


Figure 7: Start of Jet Transcript 5, posted by Hannah.

Because Hannah’s interpretation of the video data challenged that of Heather and Maggie, the attached dialogue became exploratory. Although individual authors were

not at this point aware that they were producing challenges and counter-challenges, the content of their attached documents fulfilled these functions and thus prompted the development of exploratory dialogue. Olivia and Hannah saw the words of teacher and narrator as irrelevant to the task in hand and omitted these from their documents, while Maggie and Heather made some effort to include them. These two viewpoints were clearly expressed, developed in some detail and supported by group members. The differences in content, terminology and format suggested a number of areas of contention that needed to be resolved before a final version of the transcript could be produced. Although the dialogue at this point could be interpreted as disputational, in that students were making assertions and counter assertions without attending to each other in the short term, their subsequent behaviour in developing agreed understandings about their data and their project marks this as part of an extended sequence of exploratory dialogue.

When Hannah posted her transcript, the message histories show that she had already opened all previous postings and can therefore be considered to have been completely up to date with the posting dialogue. However, the areas of disagreement about the content, terminology and format of the transcript had not surfaced in conference postings, which had been cumulative in nature. These significant differences of opinion had not been explored, or even mentioned, outside the attached documents. Because Hannah treated the posting dialogue and attached dialogue in different ways, she opened all postings but delayed downloading the most recent attachments. Due to this separation of the different types of dialogue, she was unaware of Heather and Maggie's views until after she had unintentionally presented a detailed challenge to them.

The affordances of the online environment thus supported a new literacy practice because the asynchronous nature of the conferences allowed challenges and counter-challenges to be mounted accidentally. To avoid engaging in these characteristic elements of exploratory dialogue would have involved extra work for Hannah. Heather and Maggie's transcripts were attached to postings on the evening of 22 November, with the last of these appearing at 22:52. Hannah attached Transcript 5 to a posting early the next morning. The timing of these attachments suggests that Hannah had been working on, or had completed, her transcript before Heather and Maggie attached their versions.

Turns in the attached dialogue tended to be both more widely spaced and more carefully considered than those in the posting dialogue. This resulted in learners working on turns in the dialogue at the same time as each other. The asynchronous nature of the attached dialogue thus prompted the development of exploratory dialogue. In order to avoid presenting a challenge at this point, Hannah would have had to download and consider two additional documents and give extra thought to her own transcript. Mounting the challenge involved less work than avoiding it.

The transcript's status as an improvable object made it difficult for Hannah's unintended challenge to be ignored. The group could not develop multiple versions, so members had to agree on one representation of their video data. The textual nature of the challenge meant that it could not easily be overlooked. All aspects of it could be retained and considered; message histories show that students frequently downloaded transcript versions several times.

Exploratory exchanges were also evident in the attached dialogue of Pearl group. Three days after Pearl group members had agreed their transcript, Charlene posted a new version. Andrea then posted an analysis based on the original version, while Rita posted an analysis based on the revised version. The group spent three days working out which comments related to which version, and this discussion had the positive effect of prompting both Rita and Andrea to consider new ideas before posting revised analyses. Pearl group made use of typographical devices and comments within their attached dialogue to distinguish areas of agreement from those that remained problematic. Figures 8 and 9 show them foregrounding the use of exploratory dialogue in their attached documents. Because the response time within attached dialogue is often considerable, Ethan's Transcript 8 (Figure 9) was a response to Transcript 4 (Figure 8), contributed by Rita a week earlier, rather than to the transcripts that made up the intervening turns in the dialogue.

In Transcript 4, Rita had introduced body language. She drew attention to this in the posting dialogue with a statement that formed part of the ongoing cumulative dialogue: 'I have added as much body language as I could find. Could someone please check, as I am sure I have missed some.' At this point, the attached dialogue also appeared to be cumulative. By highlighting her additions in red, Rita drew attention to the ways in which her version developed the previous version. A week later, Ethan's attached document built on Rita's work, but was more exploratory in nature. He used colour not only to frame and distinguish different elements of the transcript, but also to distinguish the different voices of its authors. He preserved Rita's text in black and red and added his own material and comments in blue. This allowed him to engage in exploratory dialogue. In most cases, he amended Rita's version without comment. However, when he removed the word 'authoritatively' from Rita's version, he presented this as a challenge to her interpretation because he not only drew attention to its removal, he also provided an explanation (in blue) for what he had done (Figure 9).

Transcript of Video Clip 4 (White team J)

Doctor Patient Communication

Pre operative visit

1 → (Patient sits next to bed in hospital room. Doctor enters room)

2 → Dr. Mr. Gaylard How are you?

3 → (Doctor sits opposite patient, nearby making eye contact, Patient speaks very softly)

4 → softly,

5 → Dr. speaks authoritatively louder)

6 → Dr. Nice to see you again.

7 → P: Nice to see you sir. (P leans forward almost like a bow, sits with hands folded)

8 → Dr. How have you been since I last saw you

9 → P. Well since I last saw you... (Patient has head tilted throughout the conversation)

Commentary: We are going to show you a pre-operative consultation between vascular surgeon Professor Peter Morris and his patient Mr. Gaylard. The patient has been admitted for an operation to reduce the likelihood of him suffering a stroke. Then you will see the same patient the morning after surgery at the post operative ward round.

Figure 8: Start of Pearl Transcript 4, posted by Rita.

Transcript of Video Clip 4 (White team J) ↗

Doctor Patient Communication ↗

▪ Pre operative visit ↗

1 → (Patient sits on bed in hospital room. Doctor enters room) ↗

2 → Dr. Mr. Gaylard How are you? ↗

3 → (Doctor sits opposite patient, nearby making eye contact, Patient speaks very ↗

4 → softly. ↗

5 → Dr. speaks louder) (removed authoratively – subjective) ↗

6 → Dr. Nice to see you again. ((Dr smiles and extends hand- patient shakes)) ↗

7 → P: Nice to see you sir.(P leans forward almost like a bow, sits with hands folded) ↗

8 → Dr: How have you been since I last saw you ((Dr looks at notes)) ↗

9 → P. Well since I last saw you... (Patient has head tilted throughout the ↗

10 → conversation) ↗

Commentary: We are going to show you a pre-operative consultation between vascular surgeon Professor Peter Morris and his patient Mr. Gaylard. The patient has been admitted for an operation to reduce the likelihood of him suffering a stroke. Then you will see the same patient the morning after surgery at the post operative ward round. ↗

Figure 9: Start of Pearl Transcript 8, posted by Ethan.

Such exploratory exchanges, containing challenges and worked-through responses, typically took place within the attached dialogue. Only rarely did they prompt a move towards exploratory exchanges within Jet's posting dialogue, and there were no exploratory exchanges within Pearl's posting dialogue. On the few occasions that exploratory dialogue did appear in the postings, quotation and variations in point size, colour and shading were used to develop it in some detail, as in Figure 10. The typographic variation available in this online setting allowed the characteristic elements of exploratory dialogue – active participation, justifications, alternative views and visible reasoning – to be interwoven in one posting and used to inform future versions of the improvable object.

In Jet, the posting of Transcript 5 provoked exploratory exchanges in both posted and attached dialogue. Once this challenge had appeared in the attached dialogue, Eileen posted a detailed evaluation of the different perspectives on content, terminology and format of which the different transcripts had made her aware. For example, she asked:

Is it ok to call them “girls”? Wouldn’t the title of the clip be: “Young Girls Talking” if so? I feel that there may be an issue we should discuss – though I would agree that the transcripts will be more wordy. Can we work out their names from the way they address each other? and anyone we don’t know we could call “3rd person” or something?

Olivia responded: ‘I wondered about naming the girls but couldn’t do all of them so thought it might be more consistent to letter them instead?’ Half an hour later, Hannah suggested, ‘Or call them participants?’ (Figure 10). Subsequently, the group explored these perspectives in more depth, returned to the literature to investigate how other

researchers had dealt with format, and considered why elements of the transcript should be included or excluded.

From: Hannah Pseudonym
Subject: Re(2): Transcripts
To: DZX999 Jet
Date: Friday 24 November, 2006 10:14 AM [Message history](#)

Olivia Pseudonym writes:
Eileen Pseudonym writes:

A few things occurred to me as I read them:

1. My personal preference would be to follow the conventions in Methods Booklet 4, i.e. in pages 49 on. There are square brackets and italics used for descriptions of non-verbal behaviour. The line numbers are at the right hand margin. It may be better to number the lines later after we have added all the non-verbal stuff. It is called "Transcript" and there are full stops at the end of lines.
I agree, I put the non verbal bits in italics but not the brackets ... forgot the line numbers but they need to be put in. Yes, I forgot line numbers too! I agree re non verbal stuff too

2. Is it ok to call them "girls"? Wouldn't the title of the clip be: "Young Girls Talking" if so? I feel that there may be an issue we should discuss - though I would agree that the transcripts will be more wordy. Can we work out their names from the way they address each other? and anyone we don't know, we could call "3rd person" or something?
I wondered about naming the girls but couldn't do all of them so thought it might be more consistent to letter them instead? Or call them participants?

3. Do we leave the narrator in? Will we be analysing that part? (presumably not because it is scripted). Does it add anything to the Transcript? (I don't think so).
Personally, don't think the narrative was relevant. Neither did I but I guess as it's been done would it hurt to leave it in?

Hannah

[Reply](#) [Reply with quote](#) [Forward](#)

Figure 10: Discussion about Jet transcripts. Different contributions distinguished by size and colour.

The typographic affordances of the online environment resourced the new literacy practice of discussing several different issues at one time without losing track of the debate and without confusing the input of different participants. Olivia, Eileen and Hannah were all actively involved in the developing conversation, and their contributions could be distinguished due to the use of colour, point size and formatting (Figure 10). When Eileen asked (larger shaded text) whether participants could be named, Olivia justified her position (smaller shaded text) and Hannah added her opinion (unshaded). Thus the reasoning of all was visible at the same time and the numbering of points allowed discussion of three different issues to continue at the same time.

Discussion

Exploratory dialogue in an online environment can be characterised as a new literacy practice that makes use of the affordances of the asynchronous setting and privileges

participation, collaboration, distributed expertise, collective intelligence, experimentation and innovation. Previous examination of asynchronous dialogue between learners has found only limited use of exploratory exchanges. Making use of multimodal analysis and of improvable objects – an analytic tool developed in the context of face-to-face education – revealed a previously unexplored, and highly exploratory, element to conference dialogue.

Analysis showed that active development of improvable objects in an asynchronous environment necessitates the use of some features of exploratory dialogue. Although posting dialogue is largely cumulative, the new literacy practice of attached dialogue supports and promotes the use of exploratory exchanges because detailed challenges can be easily, even accidentally, mounted and, once mounted, they are automatically retained for consideration. The imperative to end up with a single version of the improvable object on which discussion is focused means that challenges must be resolved. Versions of the same document produced by different authors require active participation by others, they offer statements and suggestions for joint consideration, put forward different approaches, present challenges and are likely to take other opinions into account.

Attached dialogue is a new literacy practice that makes use of affordances of its online environment. The need to relate discussion to specific versions of improvable objects results in repeated use of evaluation, decision-making and compromise. Sometimes these are explicitly mentioned in postings, but many, particularly small issues such as point size, spacing and minor corrections, are presented in the different versions of the improvable object. The text-based nature of the dialogue supports collation of work and also the direct and detailed comparison of different understandings. These features can be supplemented with use of typographical devices and comments that distinguish areas of agreement from those that remain problematic.

In addition, improvable objects provide learners with the time to develop challenges, evaluate evidence and consider options. Exploratory talk in a synchronous setting requires learners to do these things quickly, producing immediate responses in a continuous conversation that may last for only a short time. In asynchronous settings, exploratory dialogue is more extensive and the improvable objects that act as the focus for these new literacy practices are often the product of many hours of work by learners. Two members of Pearl referred to spending six hours working on a document before submitting it to the group for consideration. Learners set aside time to download, read, consider and work on these documents, and the message histories show that they returned to them over periods of days, weeks or even months. They had to work with these documents for extended periods and could not easily choose to ignore them as they could postings. This added to the documents' importance, encouraging learners to devote time to improving them.

Because improvable objects demand time commitment from learners, their text is likely to be denser and to require more thought than that of conference postings. They also require new literacy practices in order to use them effectively to generate, communicate and negotiate meaning. Each group as a whole had to learn to manage attachments, to post them in forms that were accessible to other group members, to pass control of the document from one to another, and to avoid creating multiple working versions of the same document.

Online learners may be expected to have extensive experience of employing various forms of dialogue in face-to-face educational settings. However, the use of improvable objects and typographic elements to structure, develop and make sense of academic dialogue requires new literacy practices. In the case of the groups studied here, developing these practices was not a learning objective of the course, so tutors were not encouraged to support the development of these. In a course context, attached dialogue is associated with improvable objects, and students are typically required to submit the final versions of these for assessment. For this reason, tutors on the course considered here worked on the production of these improvable objects only in an advisory capacity and had no opportunity to support the development of new literacy practices by modelling the practices developed by other groups.

This course may have been unusual in that project groups were excluded from each other's conferences, but groups of learners often work separately on projects, sharing outcomes without discussing their working processes, so they have limited opportunity to develop their understanding of the new literacy practices associated with effective use of improvable objects and attached dialogue. The requirements of a formally assessed course thus appear to limit opportunities for the development and employment of these new literacy practices. Further research is therefore needed to investigate whether the new literacy practices associated with improvable objects and attached dialogue are developed further and used more effectively in informal learning environments. It will also be important to investigate how students and teachers can develop their understandings of and skill in using these new literacies to support learning.

Conclusion

This study has identified two distinct types of dialogue engaged in by learners in asynchronous conferences: posting dialogue and attached dialogue. Posting dialogue consists of a series of conversational turns, and can be considered as a digital version of face-to-face or written dialogue. Attached dialogue takes place through the medium of documents attached to postings. Employing attachments as turns in a dialogue is a new literacy practice that makes use of the affordances of online environments to resource the collaborative development of knowledge over time. The asynchronous nature of attached dialogue has been shown here to prompt progressive discourse and exploratory exchanges, including elements such as challenges, counter challenges and critical evaluation of different perspectives, which have rarely been observed in posting dialogue.

Attached dialogue is not a feature of all conference exchanges. The development of improvable objects by groups of learners was found to be key to this new literacy. Where tutors are involved in learners' development of improvable objects in asynchronous settings, they have opportunities to model exploratory dialogue and to develop learners' awareness of how typographical tools – such as use of colour, point size and numbering – can be employed effectively as elements of these literacy practices. In asynchronous conferences, these practices are difficult for non-participants to observe. Those learners who do engage in them are likely to have had little or no previous experience of attached dialogue and of collaborating with an online group on the development of improvable objects. In posting dialogue, tutors have opportunities to model good practice and can serve as bridges between groups that are otherwise isolated from each other. However, improvable objects on formal courses are typically elements of coursework that will be assessed. Learners rather than tutors collaborate on

the development of these pieces of work, so tutors have very limited opportunities to engage in or model these literacy practices.

If students are to become proficient in the use of attached dialogue and improvable objects in formal educational settings, it is important that educators are aware of the existence, possibilities and value of these new literacies. This awareness enables them to help groups of learners to develop these by modeling appropriate practices and by adding them to the learning outcomes of courses. In the longer term, it facilitates the design of courses that support the development of these literacies, allowing groups to share good practice, encouraging educators to model good practice and providing both students and educators with the tools to develop good practice. This will enable future learners to make confident use of improvable objects and attached dialogue for knowledge building, to compare understandings with confidence, to share documents without dispute, to collaborate clearly and efficiently, and to make use of typographical tools to support meaning making.

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Biographical Statement

Rebecca Ferguson is currently a research fellow studying and developing the use of social learning at The Open University in the UK. Her overarching research interest is in how people learn together online, making use of different tools and literacies. This has included investigation of learning in online conferences, in virtual worlds, through blogs and through the use of other social media.

Email: r.m.ferguson@open.ac.uk