

Learning through online discussions: A focus on discourse analysis and language functions

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This paper examines how an online postgraduate program made use of a discussion forum to engage students in meaningful discussions. The authors aim to capture and extract elements of its success using detailed discourse analysis, informed by systemic functional linguistic (SFL) theory. This involves examining three domains: first, the ideational experience when students construct the content of postings in which they present their social and ideational positions, philosophical beliefs and ideas; second, the interpersonal experience when students construe their social relationship with their readers/audience; third, the textual organisation of their discussion texts in relation to the language patterns and linguistic resources that emerged when their texts unfold. Through detailed discourse analysis, the paper illustrates two examples of the use of hedging and metaphor to provide an insight into the good practice shared by students, and how text functions in online discussions. We find that students, by using various linguistic resources, such as hedging and metaphors, share their experience and pre-knowledge to develop solidarity and authorial voice. In conclusion, the SFL framework presented in this paper provides a valuable tool for the description and analysis of online discourse. However, at the social interpersonal level and the ideational level we need to develop a more comprehensive model for analysing texts generated in the highly complex process in online learning and discussions.

Keywords: online discourse analysis, hedging and metaphor, knowledge construction, epistemic games, epistemic activities, language skills, cognitive skills

Introduction

Learning through discussion is an important part of the design of many online programs (Goodyear, 2003; McConnell, 2000). Online discussions can occur in real-time – when they are usually known as online chats, or synchronous chats (Pilkington & Walker, 2003) – or they can extend over days, weeks and months. Online discussions are thought to mix some of the characteristics of speech and writing. In the case of extended asynchronous discussions, student postings can indeed take on the form of mini-essays, with little of the spontaneity or informality we find in real-time chat. But the emerging conventions of online discussion suggest that such contributions are rarely seen as the ideal or as completely legitimate. Even quite attenuated online discussions, in which students may be posting no more than once a week, turn out to have some of the characteristics we associate with face-to-face discourse. Since language plays a complex, subtle and often taken-for-granted role in online discussion, it seems to us to be worth close scrutiny. It is, after all, essential to processes of joint knowledge construction (Morrison & Collins, 1996; Ohlsson, 1996) as well as to processes that create and maintain the interpersonal relationships involved in collaborative learning. Students and teachers bring to online discussion a rich array of linguistic resources that can be deployed to achieve quite subtle effects (Goodyear, 2002a).

In this paper we aim to identify and represent some successful elements drawn from an online discussion, using a detailed discourse analysis informed by systemic functional linguistic (SFL) theory (Halliday, 1994; Martin, 1992; Martin & Rose, 2003). The data are drawn from a well-established online postgraduate program. The analysis of students' discussion texts focuses on three perspectives:

- 1 The ideational experience when students construct the content of postings in which they present their social and ideational positions, philosophical beliefs and ideas;
- 2 The interpersonal experience when students construe their social relationship with their readers/audience who in this context are their peers and tutors;
- 3 The textual organisation of their discussion texts in relation to the language patterns and specific linguistic resources emerging when their texts unfold.

We show how students, through the effective deployment of various linguistic resources, successfully negotiate their ideas and arguments by acknowledging the experience and pre-knowledge of the audience. Among other things, their texts also invite their peers/readers into a dialogue by using personal nouns, asking meaningful questions and through the use of subtle techniques like ‘hedging’ to negotiate personal stance and points of view.

Related work: Language and learning

From a socio-cultural perspective, academic learning involves apprenticeship in the construction of knowledge within a community of practice (Bereiter & Scardamalia, 2003; de Laat, 2006; Goodyear, 2002b; Lave & Wenger, 1991). Discourse is essential in such epistemic activity (Ohlsson, 1996). Ohlsson points out that different kinds of knowledge have to be acquired in different ways. Learning *how* to do things involves skills acquisition, practice with feedback, etc. Learning simple facts can similarly be achieved through repetition. Higher order learning, which is implicated in achieving understanding of ideas, concepts and principles, involves discourse. Ohlsson uses the construct of *epistemic activity*, linking abstract knowledge to discourse, as he argues that discourse is a cultural product that embodies abstract ideas when people talk and write. Discourse is the medium in which epistemic activities, such as describing, explaining, predicting, arguing, critiquing and defining, are carried out. In a similar vein, Allan Collins uses the constructs of epistemic forms, epistemic games and epistemic fluency in an attempt to combine sociocultural and constructivist perspectives on learning (Morrison & Collins, 1996). Epistemic forms are the ‘target knowledge-building structures’ used within a culture. Epistemic games are the culturally recognised ways of creating and improving such structures. Epistemic fluency is the ability to recognise and participate in a variety of epistemic games. Again, discourse is central to the playing of epistemic games. Bereiter and Scardamalia (2003) study the role of progressive discourse in producing, critiquing and improving conceptual artefacts. They usefully distinguish *belief mode* and *design mode* in the construction of knowledge. In belief mode, one focuses on the truth value of an idea. In design mode, one focuses on its use and improvability. A connecting thread in the work of Ohlsson, Collins, Bereiter & Scardamalia is the notion that coming to understand involves participation in epistemic activity, mediated by discourse.

Related work: Analytic methods

Research into online discussions has grown steadily over the last 15 years, with a main stream of work being focussed on the analysis of online transcripts (Fahy, 2002, 2003; Hara, Bonk, & Angeli, 2000; Henri, 1992; Howell-Richardson & Mellor, 1996; Oriogun 2003, 2006; Schrire, 2006) and a subsidiary stream using interview and survey methods to research students’ experiences and learning outcomes (Ellis, Goodyear, Prosser, & H’Hara, 2006; Goodyear et al., 2003, 2005). There is still only a very modest amount of research that combines analysis of the transcripts students produce and what students say about their production (de Laat, 2006). There is, however, a growing awareness of the need for better analytic approaches and techniques (Booth & Hulten, 2003; de Laat & Lally, 2003; Felton & Evans, 2004; Schrire, 2006) as well as better theoretical frameworks for understanding the complexities of online interaction, student experience, language and learning (Fahy, 2002, 2003; Oriogun 2003, 2006). A common critique has been of approaches which stop short at analysis of the *quantity* of student postings, word counts, etc. Though qualitative studies may be more time consuming, they are necessary for an in-depth understanding of the essence of the learning experience (Booth & Hulten, 2003; de Laat, 2006; Schrire, 2006).

There is no single research method capable of providing a holistic account of the complexity of the online discussion process. Work by de Laat (2006), and de Laat and Lally (2003) stands out as an example of a multi- method approach, using content analysis, critical event recall interviews and social network analysis. Booth & Hulten (2003), in a different way, stands out as an exemplary approach to identifying critical learning moments in online transcripts. By applying methods of Practical Inquiry (PI) and a Transcript Analysis Tool (TAT), Fahy (2002, 2005) shows how one can identify different levels of critical thinking in transcripts. Oriogun (2003, 2006) provides an example of how one can measure online learning levels of engagement, with a focus on interaction, participation and cognitive engagement. While each of these open up possibilities for obtaining a deeper understanding of how online learning has taken

place, we would argue that methodological developments in this area are still at an early stage. Our own work is, in part, a contribution to methodology as well as to substantive issues in the field.

The systemic functional linguistics (SFL) framework

SFL was developed drawing on the early work by Halliday (1974), Halliday and Hasan (1976) and Martin (1992). It is concerned with three social functions of social experience (ideational meaning), social relationship (interpersonal meaning) and textual representations (textual organisation) (Halliday, 1994; Martin, 1992; Martin & Rose, 2003). As we argue, the quality of student written texts contributes greatly to the quality of their discussion contents; we need ways of describing and analysing these texts to capture good practices. The main contribution of the study is the modeling of the SFL framework for explaining how students use text as a key medium to develop their capacities to share new ideas, concepts and values in their discussions.

The discourse analysis examines three domains of texts. The first domain is how students construe their social experience and conceptual understanding in the subject being discussed - for example, how they represent their philosophical beliefs and arguments. The second domain is the social functions of student texts - how they affect readers' feelings in order to influence acceptance, build solidarity and a constructive relationship in a dynamic group. The third domain is the textual organization of student texts. What are the emerging language features and patterns used by students? What language choices have they made in order to argue and clarify a philosophical position or elaborate an incident?

Study approach

In performing the discourse analysis for this paper, we have taken sample messages from selected threads rather than sampling across all threads. We are not aiming to characterize all of the discourse in the course we were investigating. Rather, we want to use selected examples to illustrate some of what can be gained from this analytic approach. This allows us to look at key evidence in the use of cognitive skills and languages functions in some key moments in the discussion, demonstrating how important these key moments are in shaping the dynamic of the discussion group. The detailed discourse analysis approach enables us to describe how texts play an important part in the discussion process and how students use different language choices to convey meanings and construct their group interaction. Due to the limited space available, the analysis will use two examples from the data collection. One example focuses on how *hedging* is used to acknowledge audience and provide space for negotiation. The other example follows the evolution of a metaphor thread in a key passage in the online discussions.

Data source: An established online postgraduate program

The postgraduate program providing data for this study has been making extensive use of online discussions since it began in 1989/90. Most of the students on the program work in the field of learning technology, working as educational designers, online course consultants or online professional trainers. They are part-time students, spending a small number of hours each week engaged in online study activities. The course design gives them a clear mandate to draw on their work experience in the learning activities.

We explore the following questions:

- 1 What are the distinctive language skills being used by students in their forum discussion?
- 2 How do these skills help students better interact with their fellow students?
- 3 How different language resources are deployed to help student develop ideas, concepts and knowledge in an online discussion environment?

The data come from the first four weeks of a course unit concerned with the psychology of learning. Most of the students have studied other units on this program prior to their involvement in the unit we analysed. Students were set the task of making four postings to the discussion in the first four weeks. They were asked to post (i) a personal definition of learning; (ii) a description of ways in which it can be determined whether learning has or has not taken place; (iii) a description of their current job, tasks/projects they

typically undertake at work; (iv) a description of a specific job they have to do that is directly concerned with supporting other people’s learning (ALT01, 2003).

There were nineteen students on the class list and the following table shows how the students’ postings are distributed over the first four weeks.

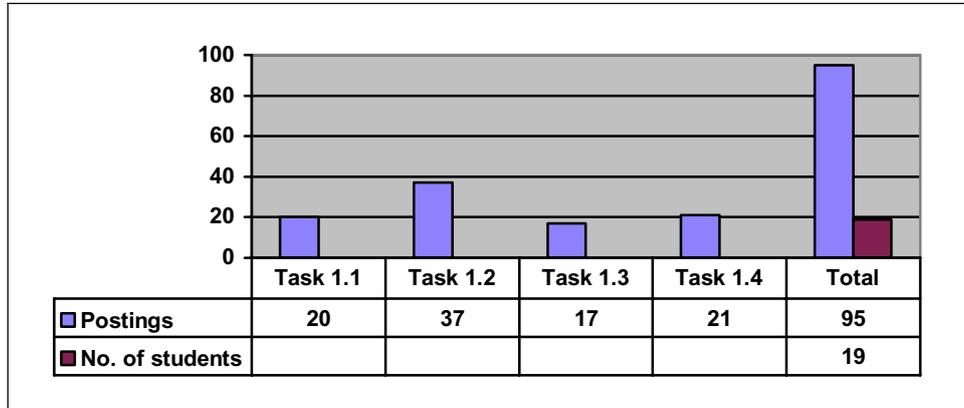


Figure 1: Student posting distribution among different activities

Figure 1 above shows that postings are quite equally distributed among the four tasks except for task 1.2 which has almost twice as much as the other tasks.

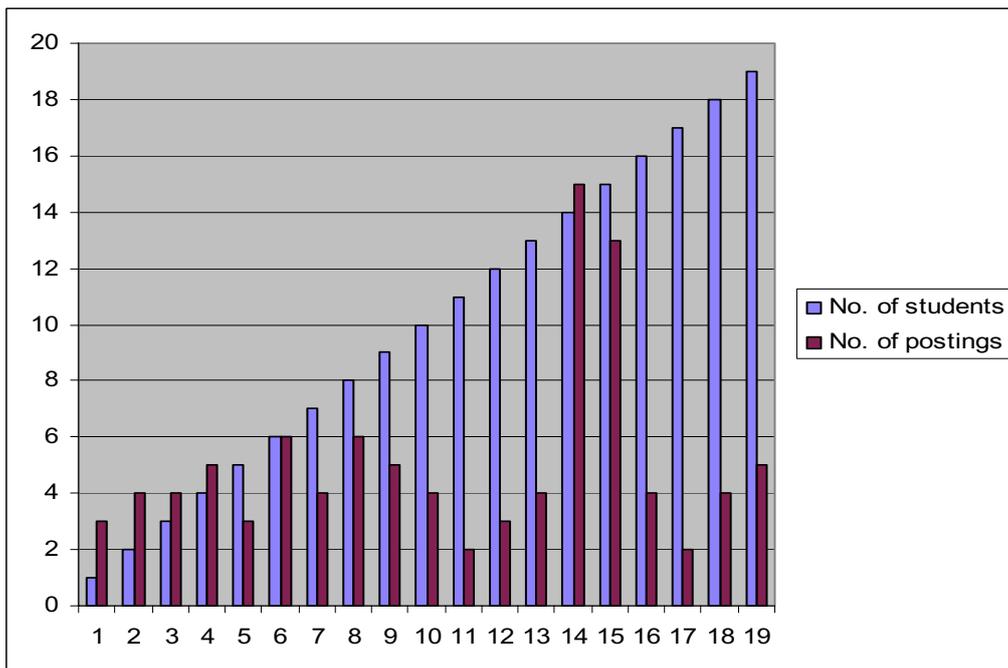


Figure 2: Individual student postings

Figure 2 shows that the number of postings varies significantly between students. It ranges from the most active student who posted 15 messages to the least active student with 2 postings. But counts of postings are not an adequate way of evaluating students’ level of participation. In the following we aim to use detailed discourse analysis, guided by SFL, to reveal the content contribution of selected student texts. Our first example looks at metaphor.

The use of metaphor

Table 1: Example of metaphor entries (pseudonyms are used)

Student	Xing (Starter of metaphor)	Hana to Xing	Paul to Xing & Hana	Ann to Hana	Hana to Ann & Paul	Peter to Hana	Paul to Ann
Subject heading	Definition of learning	Metaphor	Re: Definition of learning	Re: Definition of learning	Re: Metaphor	Re: Re: metaphor	Re: Metaphor
Idea being discussed	Propose metaphor: Learning is like a city and it is lifetime.	Compliment of Xing's city metaphor. Propose learning as water, liquid, fluid and messy	Compliment of Xing and Hana's city and water metaphors. Extend water metaphor: water moves around, may not flow where it does us most good, so education is channelling and shaping.	Compliment of Hana's water metaphor. Propose learning as jigsaw puzzle without a blueprint. It is about fits of shape, size and colour	Compliment of Ann's jigsaw puzzle. Link Ohlsson's abstract knowledge. Responds to Paul's previous idea of learning and chaotic.	Compliment of water metaphor, and proposed water with different qualities	Compliment of Jigsaw metaphor. Extends concept of collective learning within the community
Language Skills/functions	Presenting and describing new idea	Complimenting and extending idea to a new form	Complimenting/ extending idea	Complimenting & proposing new metaphor	Complimenting & making connection of idea	Complimenting/ extending idea	Complimenting/ extending idea

From Table 1, we can see the pattern of turn-taking in part of the metaphor discussion. The discussion is non linear and has some of the multi-directional interaction we find in face to face discussions.

Xing's metaphor of *City* generates an active discussion in the group. She has received direct and indirect responses from her peers, complimenting her use of the metaphor. Also her metaphor has encouraged her group members to generate alternative metaphors of *Water* and *Jigsaw puzzle* in their discussion. This in turn has created an in-depth elaboration of 'learning', with vivid descriptions and the forging of connections with real life. For example, water is liquid, fluid, can overflow, can be channelled and has different qualities. This is contrasted with the image of a city as strong, solid and lifelong. Jigsaw puzzles consist of many different shapes, colours and they need collaborative work to put them together to form meaningful pictures.

The deployment of such metaphors has enhanced the description of learning which also demonstrates students' in depth conceptual understanding and their ability to apply their cognitive and language skills to illustrate a highly abstract concept. Another effective use of their metaphor is the students' skills in contextualisation. They are able to place these metaphors within the context of learning and how learning takes place, which is within the set scope of the discussion topic.

Sample of text analysis

The following looks more closely at Hana's text:

Learning is to do with bringing about an 'improved' (now there's a piece of string to follow!) changed state in one – or a combination of – the following:

Understanding, Familiarity with something (incl. Remembering), an ability to do something. It may be conscious or unconscious. It may not be tangible. It is not static. It is not stable. As such, determining if learning has taken place, is an approximate game. Probably the most telling way is first to ask the student, then to ask the student's peers and tutor.

'Assessment' MAY reveal if learning has taken place, but (by definition) reveals what is measurable within its prescribed format and is more often concerned with measurement against a standard, not against the point from where the student began.

Hana uses different strategies in developing her arguments when constructing the text. When defining learning, she uses a statement: ***learning is about changes*** to preface the remainder of the text. She then uses elaboration strategies with a list format to extend her concept of changes in the cognitive domain of learning: ***understanding, familiarity and ability***. She then further explains the different forms of changes, using the technique of repetition and contrast, for example, ***It may be ... It may not be. It is not... It is not***

Similarly, she skillfully applies metaphor to describe ***determining if learning has taken place*** as an approximate ***game***. By using such a metaphor she indicates her position and concerns about any standard measurable form of assessment. She then proposes an alternative approach to assessment and in the meantime takes the opportunity of evaluating the disadvantage of standard assessment methods. She argues that it ignores the crucial consideration of where the student *began* in reaching the point where they are now. In the second activity, her approaches are much more strategic, with well sequenced arguments and logical organisation.

Here we also see that Hana makes a semantic link of the *approximate game* metaphor to the practice of peer review and more formal assessments. It is an approximate game therefore it is more appropriate and reasonable to ask students, peers and tutors. However, in contrast to the metaphor she raises her concern of formal assessment in determining if learning has taken place. Such a multidimensional approach in presenting arguments requires a much higher order of language skills in developing this non-linear meaning making and textual organisation in the critique process.

Another strong feature in Hana's text is her use of *hedging* in presenting her arguments. According to White (1998) a writer uses hedging (e.g., maybe, I think that...) to indicate a lack of commitment to its proposed content. It allows the writer to negotiate the true value of the content at an interpersonal level with the readers. For example, Hana proposes that *learning maybe conscious or unconscious*, as she is not committed to either. She presents the concept for negotiation to allow the flexibility to suit different learning contexts and experience. By using the modality of *probably* and *may*, she also indicates her non committal position towards using formal assessment to determine if learning has taken place. The modal word *may* is written in upper case (*MAY*) to highlight her doubt and unwillingness to commit to prescribed assessment. In the meantime, while expressing her non committal attitudes she proposes an alternative - using measurement *against the point from where the student began*.

When negotiating her authorial position, Hana has skillfully used both stance and engagement. In her first sentence she uses a statement of approximate game to assert her position that assessment in learning comes with a variety of methods depending on what is being assessed. Then, she proposes two possibilities to allow her fellow students (audience) to make their own judgment and interpretations. By acknowledging her readers' (fellow students) presence, instead of making a firm statement of her position like her first sentence, she reserves her authorial position by using modality *may* to indicate her willingness to hear other students voice. It is an invitation for other students to confirm or rebuff.

Table 2: Summary of analysis of Hana's text within the SFL framework

Ideational meanings (Field)	Subject contents: Learning is about an improved changed state, a combination of understanding, familiarity and an ability to do something
Interpersonal meanings (Tenor)	Authorial voice: Hedging & modality to allow engagement and negotiation by using probably, may, may not.
Textual meanings (Mode)	Sentence patterns: <i>Learning is It may be ..., It may not be ...</i> Conjunctive link: <i>but</i> . Nominalisation: <i>combination, familiarity, ability, assessment, measurement</i> Contrast: <i>It may... it may not ... conscious/unconscious, static/stable</i> Other features: <i>first ... then Probably, often, may</i>

Implication and conclusion

The paper has presented both the results of counting of student individual postings and detailed discourse analysis of student texts. The later is necessary for an in-depth understanding of how the rich language repertoire underpinning students' texts enables them to deploy different strategies and resources in their interaction and knowledge construction. The multi-dimensional construction of meanings demonstrated in students' texts, such as hedging and effective use of metaphors, has contributed to the high quality of discussion and the complexities of ideas and concepts being discussed. The understanding of such language apprenticeship is essential in educational design in order to better support students' learning experience in online discussions.

In conclusion, detailed discourse analysis informed by SFL is valuable approach to online texts analysis. However, the SFL framework presented in this paper needs further development in order to provide a powerful tool for the description and analysis of online discourse. In particular, at the social interpersonal level and the ideational level we need to develop a more comprehensive model in analysing how social functions are realised by making language choices in the highly complex process in online learning and discussions. The work presented in the paper has made a key contribution to this area in providing future researchers with a new direction and theoretical framework.

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