TL Forum 1999: Stapleton et al - analysing hypertextual discussion for connected knowing

Teaching and Learning Forum 99 [ Contents ]

Analysing hypertextual discussion for connected knowing: Units of analysis

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This paper identifies possible units of analysis when examining connected knowing in an online hypertextual environment. The units examined are the individual, the thread, and the group. Each is discussed, and the possible positives and negatives of each is cited in relation to the goal of analysing the hypertextual environment for evidence of connected knowing. As a result, a particular unit is suggested as being the most suited for examining connected knowing in hypertextual discussion, that of the group. Although intra-group analysis dominates this form of analysis, it does not discount the important role of inter-group hypertextual interactions. Supplementing the intra-group analysis with the units of thread and individual, identifies the group in relation to other groups and therefore places the group in context. Along with this is a brief examination of power relationships in a hypertextual environment specifically in relation to the goal of connected knowing.

Overview of SMEC 612 Online

SMEC 612 provides participants with a number of web pages, each hyperlinked to the other via a textual menu. A metaphor of 'room' has been used to distinguish virtual spaces where participants can asynchronously 'meet' or access communal information; the 'discussion room' is a text based message board where users can post messages to the board and allow others to respond, and the 'resource room' is a communal space akin to a library where communal resources are placed. This differs from activities ('things to be done') and instructional information ('things to be read') which are listed explicitly and typically not grouped under a common metaphor. A key task from the facilitator's perspective was to analyse the discussion room for evidence of connected knowing. In doing so a unit of analysis needed to be defined.

SMEC 612 Discussion Room

The figure on the following page (Figure 1) is a screen shot of the SMEC 612 discussion room. In terms of computer-mediated communication (CMC), the SMEC 612 discussion room is a form of asynchronous computer conferencing which Santoro (1995) describes as involving direct human-to-human communication, with the computer acting simply in transaction, or storage and retrieval roles. The figure illustrates the primary mode of data organisation, namely subject matter or 'context' of discussion. Each posting to the board by a participant relates to a particular context or 'thread'. As more participants contribute the thread gets longer. Eventually the context of discussion differs enough that a new thread is created and so the process continues. Therefore when a participant 'enters' the discussion room they have the ability post to several threads in short succession. This non-linearity is reflective of one of the three revolutions of cyberspatial environments as outlined by Kitchin (1998). In addition, when each participant interacts with the discussion room, they leave detailed information about who they are, when they posted the message at the server (date and time), and how many other participants responded to their message (follow-up).
Units of analysis

After examining the functionality of the SMEC 612 discussion room, three (3) units were identified as possible units of analysis of hypertextual discussion; individual (examines the interaction and discussion of an individual), thread (examines the evolution of subject context) and group (examines the content of a social group discussion).

Individual

In this case the individual becomes the focus of investigation. Effectively both the interaction (where the person goes, at what time and with whom) and the resultant content (i.e. text, HTML code, graphics etc.) are under scrutiny. This, therefore, involves both qualitative and quantitative information, some of which is highly specific and, possibly, dubious e.g. statistical evidence. Because of the high degree of specificity on the individual, it may not be possible under this framework to truly examine the nature of connected knowing in this cyberspatial domain.

The figure below (Figure 2) identifies a particular individual and highlights their online interactivity. Notice that the user interacts at different thread depths while online (e.g. 6-Nov-98 at 1:19 PM and 1:49 PM). The next figure (Figure 3) illustrates their online activity against the backdrop of all other participants.

Figure 1: SMEC 612 Discussion Room
Table 1 provides a summary of the positives and negatives of the individual as the primary unit of analysis.

Table 1: Positives and negatives of the individual as the unit of analysis

<table>
<thead>
<tr>
<th>POSITIVES</th>
<th>NEGATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>detailed events (highly defined)</td>
<td>detail may lack context (around a single interactor)</td>
</tr>
<tr>
<td>interaction (temporal, position)</td>
<td>interaction (statistics may be misleading)</td>
</tr>
<tr>
<td>content (highly specific)</td>
<td>content does not consider group/social effects; fragmented and non-linear, difficult to analyse); may be difficult to analyse connected knowing because of limited others and focus on only one individuals perspective</td>
</tr>
</tbody>
</table>

Figure 2: An individual's hypertextual interaction

Figure 3: An individual in the context of all hypertextual discussion
Thread

When the thread itself becomes the focus it is the context, or subject(s) of discussion, that plays the major role. Within this analysis, the subject matter, rather than the individuals interaction, has pride of place; its about the evolution of content and the interactions with others when interacting. Like the individual as a unit of analysis, its nature is fragmented; not with content, but with events and individuals. For the same reason this may make the social component difficult to analyse. Nevertheless it is deeply contextualised and may bring some important data to the study of individual and connected knowing.

![Figure 4: The thread as a unit of analysis (multiple threads shown)](image)

**Table 2: Positives and negatives of the thread as the unit of analysis**

<table>
<thead>
<tr>
<th>POSITIVES</th>
<th>NEGATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>detailed context</td>
<td>specific to only a single thread</td>
</tr>
<tr>
<td>detailed content</td>
<td>interaction fragmented (individual contributors and events)</td>
</tr>
<tr>
<td></td>
<td>lacks detailed social elements</td>
</tr>
</tbody>
</table>

Group

From a group perspective, the social dynamics of interaction are the driving force of analysis. Under such a situation these interactors (i.e. the group) are the primary contributors of content; thus content is created within the social context of the group (Figure 5). This would allow for interaction both within and between threads of a (mostly) related nature. In addition to this intra-group interaction, is the interaction between groups, i.e. inter-group interaction (Figure 6).
The primary concern here would be the duration and intensity of group interaction. If it were not sufficiently detailed it would limit the study from both an individual and thread perspective.

Table 3: Positives and negatives of the group as the unit of analysis

<table>
<thead>
<tr>
<th>POSITIVES</th>
<th>NEGATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>social (exemplifies social dynamics)</td>
<td>context (threads need to be sufficiently deep and numerous)</td>
</tr>
<tr>
<td>content</td>
<td>content (discussion must be rich)</td>
</tr>
<tr>
<td>interaction</td>
<td>interaction (must be rich in number and in quality)</td>
</tr>
<tr>
<td>allows for both thread and individual analysis if adequate data collected</td>
<td></td>
</tr>
</tbody>
</table>

Recommendations

As a result of embarking on defining possible units of analysis, and combining this with the knowledge of the group activity structure of SMEC 612, the unit recommended for analysing connected knowing within cyberspace was that of the group. The assumption was that due to the nature of the SMEC 612 curriculum, group units would be relatively...
intact for the duration of the course and therefore not only the social interaction of the group would be traced but also the context (threads) and content (discussion) could be analysed. If interaction can be sufficiently rich and deep such that an entwining of these elements occurs, then fruitful analysis would be possible. In light of this, it is important to add that that the group as a unit of analysis would correlate well with the investigation of connected knowing for a number of reasons.

Firstly, the group analysis is of a social dynamic with a communal purpose (learning about a particular topic of study). As such it provides a platform for analysing some factors that enhance connected knowing (Dawson, 1998):

- a spirit of cooperation
- a circle of community
- a shift of power to the learner

In addition it allows for the development of voice which is seen as crucial in connected teaching (Dawson, 1998). Therefore, when investigating the effectively 'closed' social community of a group in discourse, we should be able to generate viable data on connected knowing and find evidence of critical-reflective thinking.

This recommendation, however, does not warrant the complete rejection of the other two units of analysis. Rather, they simply play a less prominent role. With the social dynamic of the group as a primary focus, intra-group discussion dominates. However, with the added units of analysis of thread and individual, inter-group discussion can also be analysed, therefore placing the group itself in relation to other groups.

Within this recommendation it has been an implicitly assumed that the participants/interactors are of equal status as learners. Effectively their status will arise through social discourse, however this is not completely true. In fact two groups of contributors have well defined status even before learner participation begins; the instructional designers and facilitators of the course. The instructional designers have effectively created the environment within which the learners must operate. In their design they have full control over what is said and how it is said (from a graphical and textual perspective in the case of SMEC 612), what the learners must do (tasks), and how they must do it (functionality). The environment is completely under the control of the designers who, at any time, have the ability to change it.

On another level, the facilitators of the course also have control, albeit more explicit and directly. Here the facilitators guide discussion but also produce status in dialogue (red, blue and green coloured messages). Students however, firstly do not invoke the status of a message and, furthermore, are typically unable to invoke it. Despite this, for the most part, the facilitators constrained their contributions within the functionality of the discussion room.

**Some preliminary results**

The group as a unit of analysis seemed quite reasonable under the assumption of discussion primarily being intra-group rather than inter-group. However, the expected social dynamic was markedly different from what was typically observed in the discussion room. The figure below (Figure 7) illustrates the participation generated by individuals in the course. It can be easily seen that one participant contributed approximately 20% of the almost 500 posts to the discussion room. As a result, their associated group tended to dominate group contributions (Figure 8).
This domination appeared in numerous forms and emphasises the role of power in domains of hypertextual discussion. Domination occurred in:
- interaction (i.e. the number of posts)
- voice (i.e. dialogue used within discussion)
- media proficiency (i.e. proficiency with the medium)

Rather than discussion tending towards a model similar to a fluid flow where the central stream is guided by the facilitators, and the swirling eddies represent group dynamics primarily extending from the main path, it appeared that a single student dominated the direction of the path. As a result an analogy something like a speedboat, with the individual in control of the path, the facilitators as skiers trying to direct the boat, and the other participants caught in the wake, might be better suited. Issues such as these have been recognised by others involved in online learning (Harasim et. al., 1995) and allow for the adoption and modification of various techniques and strategies to overcome such problems.

These results beg questions not only of moderation, but also of instructional goals and, possibly, choice of medium related to these goals. For example, how does the online interactivity (re)present the course curriculum? Knowing this, what strategies can be used to better mediate online interaction? Additionally, how can metaphors be better used in online design to engender a sense of community? What metaphors should be chosen? What other forms of CMC could be adopted to enhance connected knowing online? Further analysis should allow for detailed investigation into the structure of the course and the online (re)presentation of this structure. This will allow for improvements in course structure, (re)evaluation of the discussion room as a major source of CMC, and strategies to improve connected knowing in a cyberspatial environment.

References


