



Project number: 027728

ARGUNAUT

An Intelligent Guide to Support Productive Online Dialogue

STREP

IST / Technology-enhanced learning

Addendum to D5.2 – A glossary of coding scheme terms.

Submission date: 12/10/08

Project start: December 1st, 2005

Duration: 33 months

Organization name of lead contractor for this deliverable: UNEXE (University of Exeter)

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)

Dissemination Level

PU Public

X

PP Restricted to other programme participants (including the Commission Services)

RE Restricted to a group specified by the consortium (including the Commission Services)

CO Confidential, only for members of the consortium (including the Commission Services)

A glossary of coding scheme terms

This glossary of terms will describe the relationships between the various inter-linked approaches to coding of online synchronous arguments. This coding framework consists of coding on *multiple levels* (contribution/shape, paired-shapes, sequence of contributions, entire discussion map) and *multiple dimensions* (group dynamics, critical reasoning, dialogic reasoning, dialogic engagement, and moderation).

In addition to that, coding of *clusters* of contributions was introduced to detect dialogically significant patterns of interaction that would inform the development of the Moderator Interface (MI).

As additional aids, various visual representations were used to create a more complete set of viewpoints on discussions. These include *sequence diagrams*, *participant engagement graphs* and *timelines* of group interactions.

In the following glossary of coding terms, the approach to coding will be explained in detail.

I. Multi-dimensional coding

In the coding approach, one strategy we have adopted is to code the texts of dialogues according to several different dimensions at once:

Pedagogical setting and group dynamics dimension is aimed at understanding the conditions and ways in which students are participating in their learning task. In some ways this dimension also serves as a precondition needed to contextualise the data. In order to do so we will use the ID card (see D6.1) that captures crucial information about the pedagogical design and nature of the task. When analysing student participation for example it is crucial to know whether or not the students were working in dyads or larger groups.

Critical reasoning is focused on the more argumentative dimension present in the maps. Based on the more structured or grammatical approach used in this tradition (see Argunaut public deliverable D5.1) we are concerned with how students develop the syntax of their arguments.

I.I Annotations

[Claim(Counter/Opposition)]

[Claim(Support)]

[Claim(Qualifier)]

[Question(Checking understanding)]
[Question(Request for more information)]
[Question(Challenging previous utterances)]

[Reason/Challenge(Evidence)]
[Reason/Challenge(Logical reasoning)]
[Reason/Challenge(Elaboration/unpacking)]
[Reason/Challenge(Suggestion)]

Creative reasoning and dialogical engagement dimension seeks to highlight the quality of student interaction. Creative or dialogic reasoning focuses on the emergence of new perspectives. Dialogical engagement on mutual engagement such as responding to each other.

I.II Annotations

Dialogic reasoning

[New perspective]
[Opening question/statement]
[Widening]
[Build on]

Dialogic engagement

[Expression of uncertainty]
[Empathy]
[Eliciting views]
[Addressivity]
[Ventriloquotation]
[Intertextuality]
[Affection]

Moderation dimension describes the impact of interventions made during the online discussion aimed at moderating and facilitating the quality of the discourse.

I.III Annotations

[Encourage participation]
[Affective instruction]
[Recapitulation]
[Summary]
[Evaluation]
[Seeking agreement/disagreement]
[Planning and regulation]

Coding language - Each shape can have a concatenation of more than one code. Subcategories of a code can be added in parentheses and the coding of a shape will be framed with box brackets (e.g. [Claim(counter)+Reason(evidence)]). This representation – or coding language - serves three purposes. First it allows us to back track the full complexity of

coding decisions made. Secondly it enables the continuing usage and refinement of "older" codes (based on earlier coding schemes): for example, a code such as 'chain of reasoning' can also be represented by [claim(..) + reason(..)]. Use of such a detailed coding language may also help in identifying and refining patterns for larger sequences.

II. Multi-level coding

Our approach to multi-level (shape, interaction pattern, and map level) annotation is derived from the point of view that information about interaction patterns can be looked at using different levels of granularity, and that each level has some unique characteristics. Various and often inter-related coding schemes have been developed for each of these levels. The three levels we include in our dataset are:

Shape level - A single contribution. At shape level, we limit our analysis to the content of 1 particular shape only. This includes the title and the message body of the shape.

Paired-shapes/Sequence/cluster level - A group of inter-linked and/or related contributions varying from pairs to larger clusters of messages that form an interaction pattern. Eventually, we have reached the conclusion that the richest, most meaningful level of analysis is that of a sequence of shapes (a chain), or a cluster of interlinked shapes (similar, but with interlinking patterns that may be more complex than that of a simple chain).

Map level - Meta level, including the entire map. This approach helps to understand the extent of the discussion and it is at this stage that we re-visit the contextual and participant information. The aspects that we usually look for at this stage are, for instance, Space management – the use of map space and special directions of individual messages or threads.

II.I Coding labels used for shape and paired-shapes levels of coding

Shape level

Annotation-variable name	Description	Coding/Labels
TF- Topic focus	Focus on topic or task at hand. Note: on topic here is in a broad meaning, i.e. they can discuss *around* the question if it has a reasonable connection to the topic they're	0. Not focused on topic. 1. Focused on topic

	supposed to be discussing, even if the connection is not direct and immediate.	
TMF- Task- management focus	Focus on task-management.	0. No task management content 1. Task management content
CoR- Chain of reasoning (note: previously called "critical reasoning")	The shape contains a more or less explicit chain of reasoning and argumentation on the topic of discussion. Note: as long as there is some kind of claim+backing, even if it's not the one of the central claims, it should count.	0. No chain of reasoning 1. Use of reasoning expressions, where students provide a reason or explanation or some backing (e.g. evidence) to illustrate their position/opinion. This applies even if the "because" link is implicit and the title gives a claim while the reasons are specified within the shape. A qualifier or simple elaboration on the opinion does not count. Heuristic: if you can add "because" between the two parts, it might help determine if it's backing/ reason/ evidence.
Req_C/R- Request for clarification or reason	A request for clarification, a reason, an explanation, information, etc from someone else	0. No request for clarification, explanation, reason, etc. 1. An explicit request from another person for clarification, explanation, reason etc, when it's on topic
CEoO- Critical Evaluation of Opinions	Evaluation and/or judgment of another's opinion and/or one's own opinion, and/or the relationship between them	0 – No evidence of critical evaluation of opinions 1- Evidence for evaluation of another's opinion and/or one's own opinion, and/or the relationship between them (beyond merely saying " I agree")
Sum- Summary	Summarizing previous strands discussion or calling for such a summary	0- No summarizing 1- Explicit summarizing of previous strands of discussion or calling for such a summary.
IntText- Intertextuality	Explicit evidence for quoting or referring to external resources	0- No evidence of intertextuality 1- Explicit evidence of intertextuality, when one is sure, beyond doubt, that an external text/discussion is being quoted, or explicitly referred to. Note: personal experiences / anything others can't have access to don't count here.

Paired-shapes level

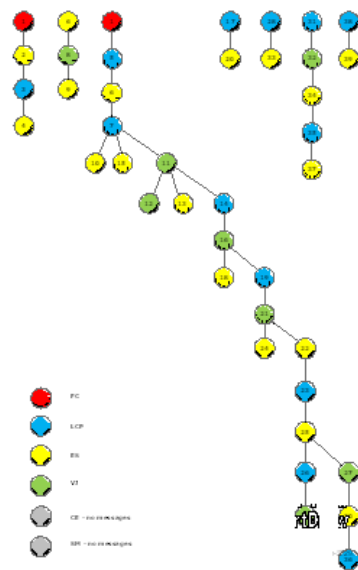
Variable	Explanation
Contribution-CounterArgument (CCA)	The 2 nd shape opposes the claim/argument raised in the previous one (the "1 st shape"), and provides

	<p>reasons or other type of backing for an opposing claim.</p> <p>Typically the type of link between the shapes would be "opposition".</p>
Contribution-Supporting Argument (CSA)	<p>The 2nd shape supports the claim/argument raised in the previous one, and provides reasons or other type of backing for that claim.</p> <p>Typically the type of link between the shapes would be "support".</p>
Question-Answer (QA)	<p>The 1st shape is a question, the 2nd shape is an answer to that question.</p> <p>I would expect the link type here to be "other", at least for most cases.</p>
Contribution followed by Question (CQ)	<p>The 2nd shape is a question related to the 1st shape.</p> <p>I would expect the links to be different, based on the role of the question. If it's a rhetorical question, odds are it will be an "opposition" link. If it's a genuine request for information etc., it will be "other".</p>
Qualifier/Compromise (QC)	<p>A relationship between two shapes in which the 2nd shape partially support and partially opposes the 1st shape, and/or offers some kind of compromise between the claim in the 1st shape and the counter-claim for it, and/or offers some sort of qualifier determining the circumstances in which each of the claims is more valid.</p> <p>Presumably the two shapes will be linked with an arrow of the "other" type, but it's conceivable that either "opposition" or "support" arrows will be used instead.</p>

III. Coding of clusters

In this section the more advanced approach of our coding framework will be described.

Sequence diagram – a visual representation of an online discussion that serves the purpose of having an instant abstracted overview of different aspects of a discussion. Once all the contributions are coded individually, these sequence diagrams can be used to visualise the multiple dimensions of our analytical framework (*group dynamics, critical reasoning, dialogic reasoning, dialogic engagement, and moderation*). The tree can for example be used to visualise group dynamics properties of the discussion showing student engagement with the dialogues. This is shown in figure 2, which presents the interaction patterns between the students. Here each dot (signifying discussion contributions) in the tree is coloured to represent contributions made by each student. The blue dots represent student A, the yellow dots student B, etc. From this diagram it is instantly clear who is talking to whom.



Group interaction patterns shown by a discussion tree-based visualisation of the Digalo map

Cluster of contributions - A cluster (critical moment in a discussion) typically includes 3-7 and a minimum of 2 branches. A cluster is a set of shapes that are linked together and form a part of sequence(s). It is essential to identify the triggering message that causes the sequence to branch. The following describes our approach to this new focus:

III.1 Coding of clusters procedure

Stage 1. From the sequence diagrams, we identify all branching moments and re-read the surrounding conversations again to see whether there is triggering message that could be flagged up. The triggering message, according to shape-level coding, has so far been identified as an opposition, new perspective, and a question (request for new information).

Stage 2. Since we are focusing on branching events at this stage, dialogically significant messages that can be found in a line are not part of this exercise because they are seen as not having enough impact on the discussion.

Stage 3. Each cluster is coded – characteristics identified, as well as each triggering shape is coded/commented on.

Bottom-up approach

The second approach to identifying significant phenomena in the discussion was primarily a **bottom-up** process. Within a set of existing Digalo maps, we worked to locate groupings of shapes which could be considered as representing interesting, important or problematic phenomena, and then attempted to name and characterize these recurring patterns.

This pool of cluster types was refined as more instances of similar phenomena were found and examples were added. After the first round was complete, all maps were examined a second time, with the full set of cluster types in mind, to make sure no examples were missed.

The initial search for cluster types yielded six types of relevant clusters:

Type 1: Shared reasoning including argument and counter-argument

Clusters of this type involve three or more users and must contain both an argument and a counter-argument. Furthermore, there should be some indication that this reasoning is shared, that the discussants are listening to each other and building on each other's arguments, not just stating their own opinions or dismissing those of others with counter-arguments.

Type 2: Clarification of opinion following feedback

These are typically small clusters, usually simple tri-shape chains where two of the shapes are by the same user. The repeated pattern for this type of cluster is a discussion contribution (shape) by person A, followed by a contribution by person B (linked to the first contribution from person A by an arrow) and then a third shape with a reply from person A (either linked to the first contribution or to person B's contribution). This reply has some sort of clarification of person A's opinion, what he or she tried to express in the previous contribution, etcetera.

Type 3: Different backings for the same claim

Clusters of this type must contain at least two different backings for the same claim, opinion or argument, given by two different people who link their contributions to each other either by a direct or indirect arrow, or by specific reference to each other in the text of their contributions. This could be a sub-cluster in a larger cluster of shared reasoning, for example.

Type 4: Chain of opposition

Typically these are linear chains (sequences), smaller than "shared reasoning" clusters (can be sub-clusters inside them), with two people "ping-ponging", arguing back and forth, each time raising counter-arguments to each other's opinion.

Type 5: Argument + evaluation

This type of cluster must include fairly strong and explicit evidence of a discussant evaluating the argument of another discussant. It should be noted that it is relatively hard to make the judgment in this case, and that many "borderline" cases were found.

Type 6: Summary, conclusions and/or decisions

This type of cluster contains contributions in which the discussants are trying to summarize the discussion, check which of them are for/against a certain solution, reach conclusions, etc.