How and why we annotate: An annotation taxonomy

by

David Rowe

Submitted in partial fulfilment of the requirements
for the degree of Master of Applied Computer Science

at

Dalhousie University
Halifax, Nova Scotia
May 2011

DALHOUSIE UNIVERSITY

Computer Science

The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled "How and why we annotate: An annotation taxonomy" by David Rowe in partial fulfilment of the requirements for the degree of Master of Applied Computer Science.

Dated: May 31, 2011

Supervisor: _____

Readers: _____

_____

_____

DALHOUSIE UNIVERSITY

DATE: May 31, 2011

AUTHOR: David Rowe

TITLE: How and why we annotate: An annotation taxonomy

DEPARTMENT OR SCHOOL: Computer Science

DEGREE: Master of Applied Computer Science

CONVOCATION: October

YEAR: 2011

Permission is herewith granted to Dalhousie University to circulate and to have copied for non-commercial purposes, at its discretion, the above title upon the request of individuals or institutions. I understand that my thesis will be electronically available to the public.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

The author attests that permission has been obtained for the use of any copyrighted material appearing in the thesis (other than the brief excerpts requiring only proper acknowledgement in scholarly writing), and that all such use is clearly acknowledged.

iii

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

How and why users annotate was examined and an annotation taxonomy was developed and justified with a study of students annotations on research papers. In the study we found that most students used annotation to aid in reading and understanding the research papers. Further, highlighting and text-based annotations were the most commonly used types. The most common uses of annotation appears to be interpretation and place-marking and aiding memory. The results of the study will aid in the evolution from paper-based annotation to digital-based annotation. Research shows there has been little recent research in paper-based annotation and its application to digital based annotation technologies. This is important as there is evidence that current digital based annotation technologies are insufficient and deter users because of technological and functional limitations.

ACKNOWLEDGEMENTS

Note:

An article partly based on this research has been accepted for presentation at the International Conference on Theory and Practice in Digital Libraries 2011.

CHAPTER 1   INTRODUCTION

Although technology for computer-based reading does exist and is improving [Ovsiannikov, et al., 1999], there has not been a reduction in the use of printed materials [Liu & Stork, 2000]. The primary reason for this appears to be related to the limitations of computer-based reading technology. Screen technologies are becoming more and more paper like, for example e-ink, the screen technology used in the Amazon Kindle and the Sony Reader. However, other limitations, in particular annotation facilities, inhibit wide-spread application.

There do exist tools for annotation in computer-based reading; however, studies have shown that the way that these tools are used differs greatly from annotation of paper based materials [Marshall & Brush, 2004]. In addition, the computer-based annotation tools have also been shown to be less effective than paper-based annotations [Marshall & Brush, 2004]. Kawase, R., Herder, E., & Nejdl, W. [2009] also found limitations due to the problems of reading from the screen and the use of keyboards and mice for input. Suggestions have been made to improve online annotations, such as larger screen real estate and tablet based annotation (using a stylus and touchscreen to simulate actual writing) [O'Hara & Sellen, 1997]. An advantage to having a larger screen would be that users would have space in the margins to annotate. The advantage of tablet based annotation is that users would be able to write in a method similar to that of paper annotation which would aid in the transition from the paper world to the digital world. Further, technologies (such as updatable glossaries) have been suggested as methods to improve computer-based annotation facilities [Blustein & Noor, 2004].

The primary goal of this study is to survey current literature related to annotation and show why it is important that techniques used to annotate in the paper world need to be incorporated in the digital world. A secondary goal of this investigation is the generation of a taxonomy of annotation types. According to Marshall [1998] annotations can be

broken down into a "set of dimensions that reflect the forms annotations take, the functions of annotation from a reader's point of view; and, finally, the roles of annotations are they are used to communicate with others". The forms annotations take can be broken down into formal vs. informal and tacit vs. explicit [Marshall, 1998]. The difference between public and personal annotations should also be noted as studies have shown that annotations written for personal use in the assistance of active reading are very different from annotations intended for the general public [Obendorf, 2003] [Marshall & Brush, 2004]. A study involving university students annotations on research papers was used as the basis for verifying the annotation taxonomy.

CHAPTER 2   BACKGROUND

2.1 History

Annotation has existed almost as long as written text. Holtz [1984] in his book *Reading the Classic Jewish Texts* gave several examples of early annotation. Included were early printing of the Bible (Figure 1) and the Soncino Talmud (Figure 2).

Figure 1   From the Garden of Eden story, Bible manuscript with marginal decorations from Yemen, 15th Century [Holtz, 1984].

Figure 2   A portion of the first page of the early printed Soncino Talmud of 1483 [Holtz, 1984].

Additionally many historical authors were known for their annotations. Mark Twain, Samuel Coleridge, and Edgar Allan Poe were well known for their use of annotation [Carlson, 2011]. Coleridge alone has had six volumes of marginalia published [Princeton University Press, 2011]. In recent history Nelson Mandela annotated a copy of Shakespeare to pass along his teachings [Johnson, 2011].

2.2 Importance of Annotation

Understanding the reasons why we annotate in the first place is paramount. As an example, a recent article in the National Post [Carlson, 2011] discussed a situation where a family planning a funeral for a deceased relative used annotations from a hymn book where the deceased had indicated particular hymns that she wanted to be sung at her funeral. From an anthropological standpoint Johnson [2011] noted that both Mark Twain and Nelson Mandela annotated texts and that the historical significance was of great importance because it provided a greater understanding of how the authors thought.

Wolfe and Neuwirth [2001] determined in their study that readers annotated nearly 25% of the time while reading. With the evolution of technology towards digital texts and the frequency of annotation as previously indicated the necessity of digital annotation techniques is paramount.

2.3 Annotation on Paper

To fully understand annotation a taxonomy was derived from papers by Catherine C. Marshall and A.J. Bernheim Brush. According to Marshall [1998], "many personal annotations, by their nature, are telegraphic, incomplete, and tacit ... on the other hand, annotations intended for others to read tend toward the more explicit end of the spectrum." We see here the development of the idea of personal versus private and telegraphic versus explicit annotations.

The idea of form versus function was developed from Marshall's [1997] paper "Annotation: from paper books to the digital library". Her findings were "classified in two ways: first, by the form the annotations took in the textbooks, then by a reconstruction of the function of these markings derived from their form." [Marshall, 1997] Further, according to Marshall and Brush [2004] the form can be divided "into three broad categories: anchor-only, content-only, and compound. Compound annotations consist of more than one constituent type, for example an underline and note".

The function of annotations was derived from Marshall's work in her 1997 paper "Annotation: from paper books to the digital library". Annotations are procedural indicators, helping the student to determine what is or is not important and where an assignment starts [Marshall, 1997]. Next, annotations can also be used as placemarks which can indicate key definitions or ideas [Marshall, 1997]. Annotations can also be used for problem solving, for example working out a calculation. Next, annotations can

be used to "record interpretive activity, or … the result of careful reading (the student has interpreted it him or herself)" [Marshall, 1997]. Annotations can also "act as a visible trace of a reader's attention, a focus on the passing words, and a marker of all that has already been read (as if these words are now possessed)" [Marshall, 1997]. "Finally, the markings may just be incidental" [Marshall, 1997].

Using the preceding ideas an annotation taxonomy will be created. The end result of which will hopefully lead to the development of digital annotation methods that mirror those of the paper world.

2.4 Digital Annotation Technologies

"For the past 20 years, the evolution of the paperless office has been predicted as an inevitable result of technology advances—the fully electronic, high-tech office-of-the-future is just around the corner, according to this thinking." [Liu & Stork, 2000] The preceding statement draws attention to why the development of digital annotation techniques is so important.

According to Ovsiannikov, et al. [1999] "there has been a sharp increase in the volume and quality of electronic publishing on the web in the past few years. Many research journals are going on-line. The advantages of electronic publishing are obvious and enormous: instantaneous access to archives, paperless media and fast document search to name a few. However, annotation of documents in electronic form has been surprisingly underdeveloped." This statement clearly justifies the need for technology that supports digital annotation capabilities.

An example of the evolution towards digital-based annotation was brought forth by Anderson [2011] where it was indicated that Amazon was creating software that would allow users to share annotations. Anderson [2011] also noted that annotation "with its social thrill of shared immersion – is what the culture is moving towards, not away

from". Anderson [2011] categorized Twitter as a form of annotation.

In addition, Marshall [1997] noted that "much of the current research on the annotation of electronic texts has centered on facilities to support public (or work group) commentary or collaborative writing; personal annotations on digital materials – realized in products like ForComment, Acrobat, Lotus Notes, and others – are seen as a simpler, special case of the more general problem of commenting on documents".

It should be noted that there is other evidence of technologies that support basic annotation. According to Obendorf [2003], "annotations as an important human-readable kind of metadata have long been a feature of hypertext systems. There have also been a number of attempts to implement annotations for the World Wide Web (e.g. ThirdVoice, crit.org)."

CHAPTER 3   METHOD

3.1 Experimental Tasks

The purpose of this study is to determine if the aforementioned annotation taxonomy is appropriate and further to understand the most significant uses of annotation. With this understanding computer-based annotation technologies could be developed to best support the ways in which we annotation in the paper realm. For this study we collected two different research papers that were annotated by students. Students were engaged in scholarly activity intended to help them understand and they were not expected to share annotations with anyone else. The research papers were: The "Homeopathic Fallacy" in Learning from Hypertext [McKendree, et al. 1995] and Emotion and Reasoning, which contains excerpts from two sections, *Leaps and visions* and the *semiotic handle*, from H. Molotch's text *Where Stuff Comes From*. The papers were originally given to the students as part of an exercise in annotation. The research covers several years of classes. Once the papers were collected each paper was evaluated in turn. The

evaluation of the papers was done by the author of this report. Each annotation was labelled with a type (indicating physical appearance), supposed purpose/function according to the taxonomy that follows. The number of occurrences of each type and function were tallied. Note that some annotations were assigned multiple labels. For annotations that were hybrid types each component of the type was counted separately. For example, if an annotation was made up of an arrow and a box we would then add one to the occurrence count of the arrow and box types separately. The same procedure was used when tallying the annotation function.

The components of each item in the taxonomy are detailed below. Components were formulated from articles by Marshall et al. [Marshall, 1997; Marshall, 1998; Marshall & Brush, 2004].

3.1.1 Annotation Category

We distinguish two broad types of categories of annotation: telegraphic and explicit. A telegraphic annotation is a non-text based marking. Underlining, highlighting, and asterisks are examples of telegraphic annotations (Figure 3). Explicit annotations are notes that are written somewhere within or external to the text. Explicit annotations can be single words, phrases, sentences or paragraphs (Figure 4).
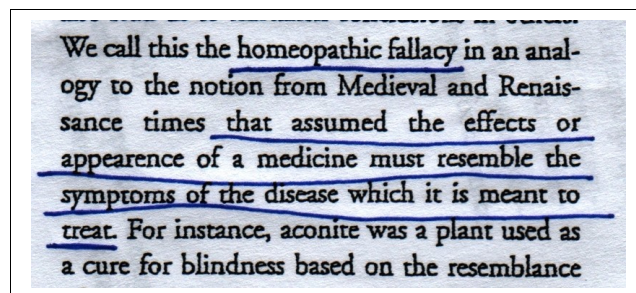
Figure 3   An example of a telegraphic annotation that is within-text. The annotation type category is an anchor; the type is underlining; and the function is place-marking and aiding memory.
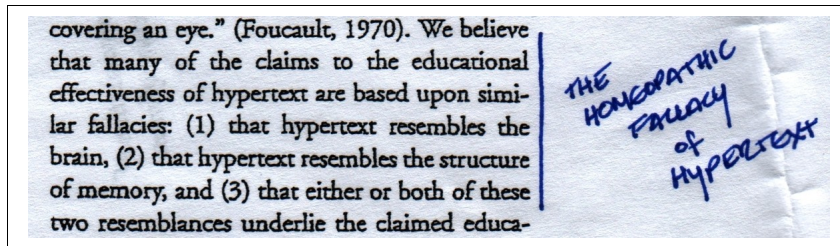
Figure 4   An example of an explicit annotation. The annotation type category is compound, containing both anchor and content; the type is compound as well, containing text and a bracket; and the function is, also compound, place-marking and aiding memory and interpretation.

3.1.2 Audience

The audience of an annotation can be public or private. That is to say that an annotation could be written for others or solely for personal use and not intended to be read by others. Annotations such as those examined in this study are most often private as they are used only by the reader. According to Marshall and Brush [2005] "only a small fraction of the personal annotations that people make while reading are shared with others". All of the annotations in this study were classified as private. Examples of public annotations include texts such as the *Commentator's Bible* (Figure 5) where the annotations are as important as the text itself and collaborative situations such as Power Point presentations.

NJPS ²⁴Speak to the Israelite people thus: In the seventh month, on the first day of the month, you shall observe complete rest, a sacred occasion commemorated with

OJPS saying: ²⁴Speak unto the children of Israel, saying: In the seventh month, in the first day of the month, shall be a solemn rest unto you, a memorial proclaimed with the blast of horns, a holy

אֶל־בְּנֵי יִשְׂרָאֵל לֵאמֹר בַּחֹדֶשׁ הַשְּׁבִיעִי בְּאֶחָד לַחֹדֶשׁ יִהְיֶה לָכֶם שַׁבָּתוֹן זִכְרוֹן

RASHI   24 Commemorated with loud blasts. More literally, "a memorial" along with "the blast of horns" (OJPS). This refers to the *zikhronot* and *shofarot* verses of the Rosh Hashanah liturgy. [O] When you mention the ram's horn, God will remember on your behalf the binding of Isaac, who was replaced as a sacrifice by "a ram, caught in the thicket by its horns" (Gen. 22:13).

[O] During the additional service on Rosh Hashanah, 10 verses invoking God's "remembering" (*zakhor*) are recited, followed by 10 verses mentioning the ram's horn (*shofar*). The section actually begins with 10 verses invoking God's "reigning" (*malakh*); see Nahmanides' comment.

NAHMANIDES   24 You shall observe complete rest. According to our Sages, this is a positive commandment. Therefore, one who works on the festival day violates both the prohibition of working and the positive commandment to rest, while one who abstains from work fulfills the positive commandment. They further say that this applies to all the festivals, though our chapter does not include it in the sections about the Feast of Un-

ABARBANEL'S QUESTIONS ♦ The rabbinic tradition that God sits in judgment "In the seventh month, on the first day of the month" (v. 24) and offers forgiveness on the 10ᵗʰ day would make sense for a human judge, whose capabilities are limited—but how can it apply to "the Judge of all the earth" (Gen. 18:25)? Indeed, this whole process of judgment and forgiveness raises many questions. ♦ Why are the Israelites told to mark the first day of the seventh month by observing "complete rest" and "a sacred occasion" (v. 24) and also not to work at their occupations (v. 25), all of which mean the same thing? ♦ Why does the Torah not explain the purpose of this festival? ♦ Why do the verses about this festival not include a phrase like "on that same day," as do the others? ♦ Why is this not "a law for all time, throughout the ages in all your settlements"?

RASHBAM   24 Commemorated with loud blasts. The loud blasts will remind God of you: "When you are at war in your land against an aggressor who attacks you, you shall sound short blasts on the trumpets, that you may be remembered before the LORD your God and be delivered from your enemies" (Num. 10:9).

IBN EZRA   24 The seventh month. Though this is the beginning of the year, the months are counted starting with Nisan, the month when we left Egypt. Agriculturally too, the year begins when barley is in the ear (at Passover), continues with "the Feast of Weeks, of the first fruits of the wheat harvest" (Exod. 34:22), and concludes with "the Feast of Ingathering at the end of the year, when you gather in the results of your work from the field" (Exod. 23:16). None-

Figure 5   The Commentator's Bible [Carasik, 2009]. We see several levels of annotation in this example. Surrounding the Hebrew text we see translations, questions, comments, and editors annotations.

3.1.3 Location

The location refers to the actual location of the annotation. Annotations can either be within-text or external to the text (marginal or blank space). Those within-text are annotations drawn or written within the actual text (Figure 3). Notes written between lines of text or circles around words are examples of within-text annotations. Marginal or blank space annotations are drawn or written outside of the actual text (Figure 4). Examples include writing in the margins of a text or extended notes on a separate page.
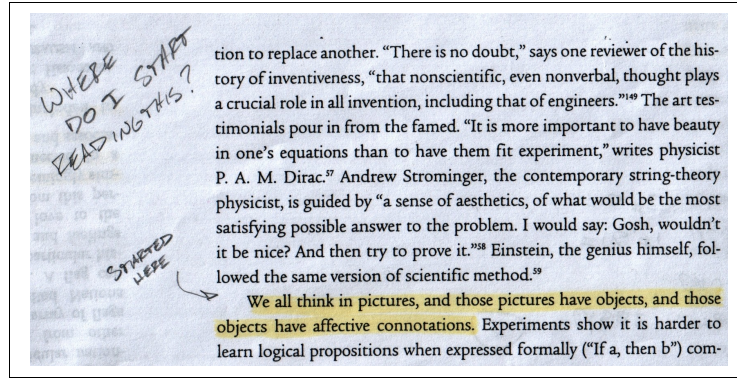
Figure 6   An example of an compound annotation (telegraphic and explicit). The annotation type category is compound, containing both anchor and content; the type is compound as well, containing highlighting, text, and an arrow; and the function is compound as well, containing place-marking and aiding memory and tracing progress through difficult narrative.

3.1.4 Type Category

The type category can be: anchor only, content only, or compound. Highlighting and underlines are examples of anchor only (Figure 3). Notes and stars are examples of content only. Compound annotations contain both an anchor and content (Figure 4).

3.1.5 Type

The type refers to the specific type of annotation. The following is a list of possible known types: underlining (Figure 3), highlighting (Figure 6), circles and boxes around text, brackets (Figure 4), asterisks, arrows and other deictic devices (Figure 6), and text (Figure 4).

3.1.6 Function

There are six different functions: procedural for future attention, place-marking and aiding memory (Figure 4), problem-working (Figure 7), interpretation (Figure 8), tracing progress through difficult narrative (Figure 4), and incidental markings. The function was not only the most important, "the why", but also the most difficult to discern. An

10

example of procedural for future attention would be an asterisk marking a particular sentence. Short highlighting and circled words are examples of place-marking and aiding memory. Notations near figures or equations are where the reader's annotation was clearly working towards solving a problem are examples of problem-working. An example of interpretation would be a short note in the margins that attempted to explain highlighted text (underlines, circles, highlighting). Definitions and translations fit into this category. Extended highlighting and underlining are examples of tracing progress. In addition when an annotation contained an obvious question and a deictic such as Figure 6 it was also considered tracing progress. Doodles are examples of incidental markings. These marks were in all cases outside the text and were neither text nor deictic devices.
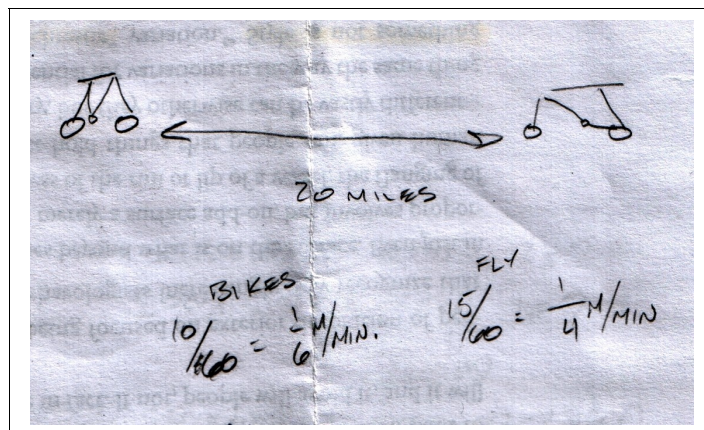
Figure 7   An example of a explicit annotation that is external to the text. The annotation type category is content only; the type text; and the function is problem-working.
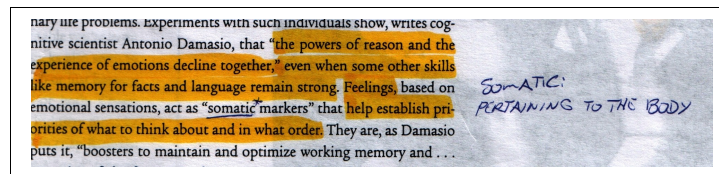
Figure 8   An example of an compound annotation (telegraphic and explicit). The annotation type category is compound, containing both anchor and content; the type is compound as well, containing highlighting and text; and the function is compound as well, place-marking and aiding memory and interpretation.

3.2 Participants

The students were from various educational backgrounds including: Computer Science, Library Studies, and English. The students were enrolled at either Dalhousie University in Halifax, Nova Scotia or Nipissing University in North Bay, Ontario. Students were also of various ethnic backgrounds. For some of the students English was not their first language. A total of fifteen students were involved in the study.

CHAPTER 4   RESULTS AND DISCUSSION

Our two main reasons for this study, as previously mentioned, were to measure the appropriateness of the developed annotation taxonomy and to understand the most significant uses of annotation. Certain categories such as annotation category and annotation location obviously fit the taxonomy. For annotation category there could not be any other option but text or non-text. The same is true for location since annotations could not exist anywhere but within-text or external to the text. In terms of audience, due to the type data used, the annotations were all private. The test subjects were aware that the annotations they created were not intended for collaborative purposes. Through observation of raw data it was determined that type category options of anchor-only, content-only, or compound fit well as all annotations observed fit within these categories.

As for annotation type (Figure 9) shows that the annotations all fell within the predefined annotation type categories. There was no need for another category as all annotation types could be easily identified. It should also be noted that (Figure 10) also shows that annotations types did not vary significantly by paper. It is important to note that certain annotation types we used with greater frequency than others such as highlighting, text and underlining. The importance of this observation relates to our second reason for this study: the uses of annotation. When developing tools for annotation in the digital realm we may only need to create functionally for the most common annotation types.
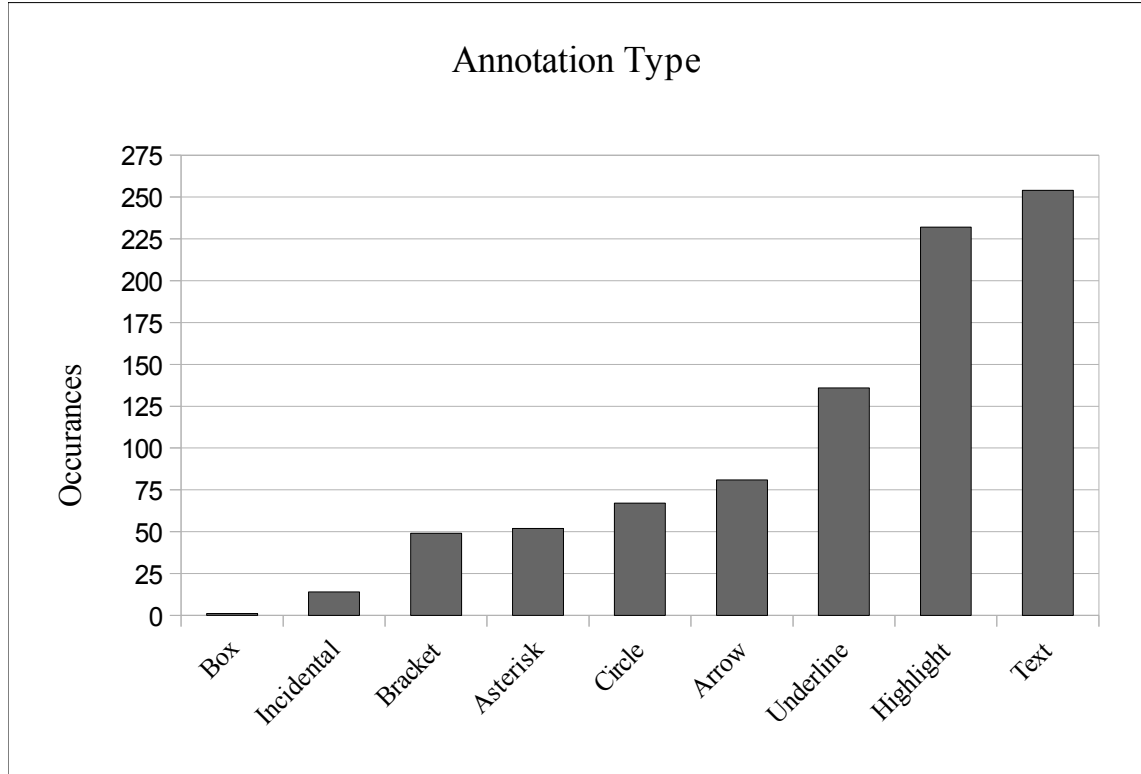
Figure 9   Annotation type.

Kawase, R., Herder, E., & Nejdl, W. [2009] had similar findings in their comparative study of paper-based and online annotations. The authors found that 73% of annotations were highlighting and mark text. Mark text was defined by the authors as underlining, circles, and other notations that in effect highlighted text. The authors also found that 18.3% of annotations were general notes or text in the study presented in this paper. To compare in our study 57.2% of annotations were highlighting and mark text (as defined by Kawase, R., Herder, E., & Nejdl, W. [2009] and 28.6% were text.
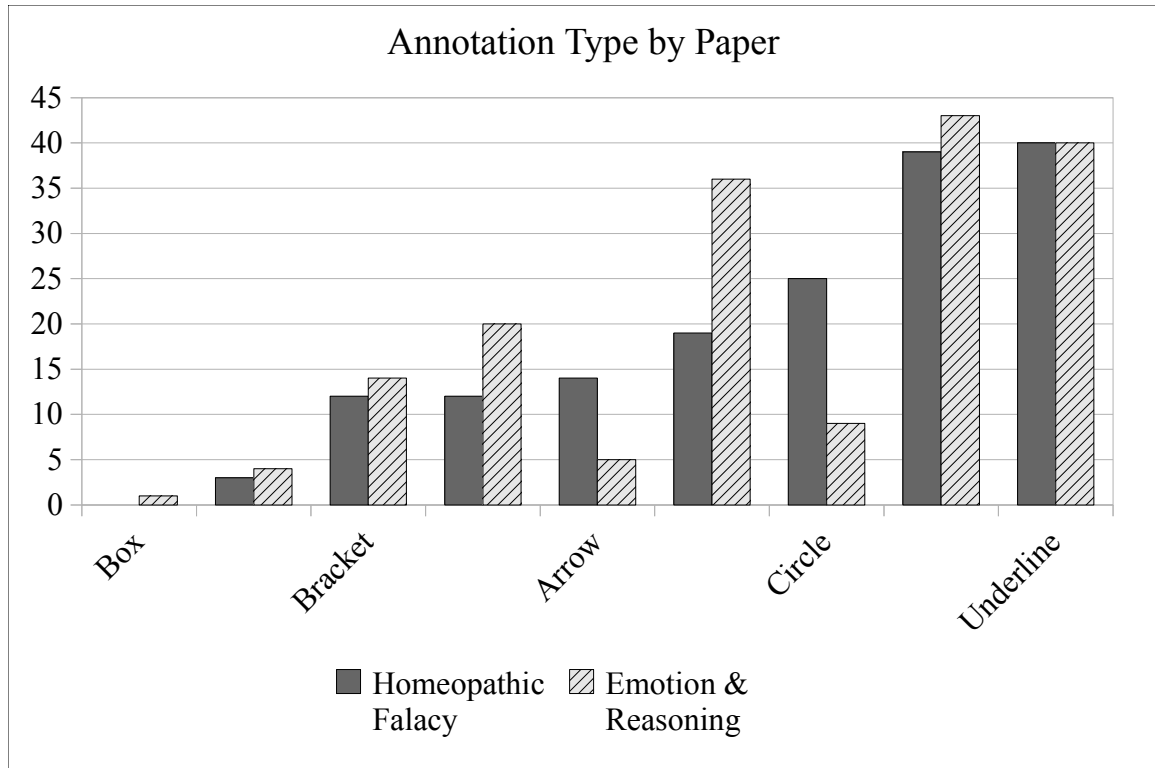
Figure 10   Annotation type by paper.

Next, we consider annotation function. The annotation function is very significant to this study as it is the reason why we annotate. As can be seen in (Figure 11) the Interpretation and Place-marking and Aiding Memory functions are used significantly more the the other annotation functions. We should, as a result, focus our attention on these two functions when developing digital annotation technologies. We do however see occurrences of each of functions detailed in the annotation taxonomy developed in this paper. This suggests that the taxonomy is reasonable.
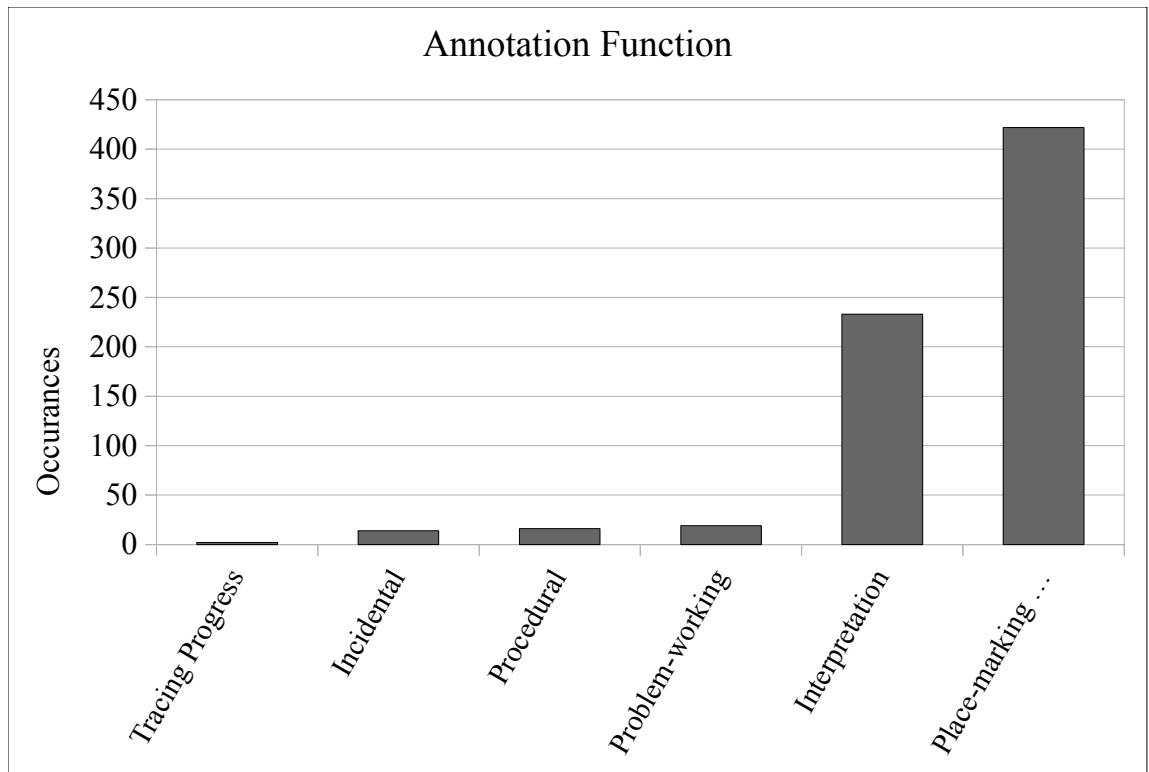
Figure 11   Annotation function frequency of use. Interpretation is generally defined as notes attached to placemarking that are used to explain highlighted passages/words in the user's own words. Place marking refers to highlighting (including underlining) that identifies passages and words without any interpretation.

From (Figure 12) we can see that the annotation function by paper was very similar. This is important because it shows the the test subjects annotation methods did not seem to evolve over time. This could indicate that annotation techniques are developed early and do not develop significantly over time.
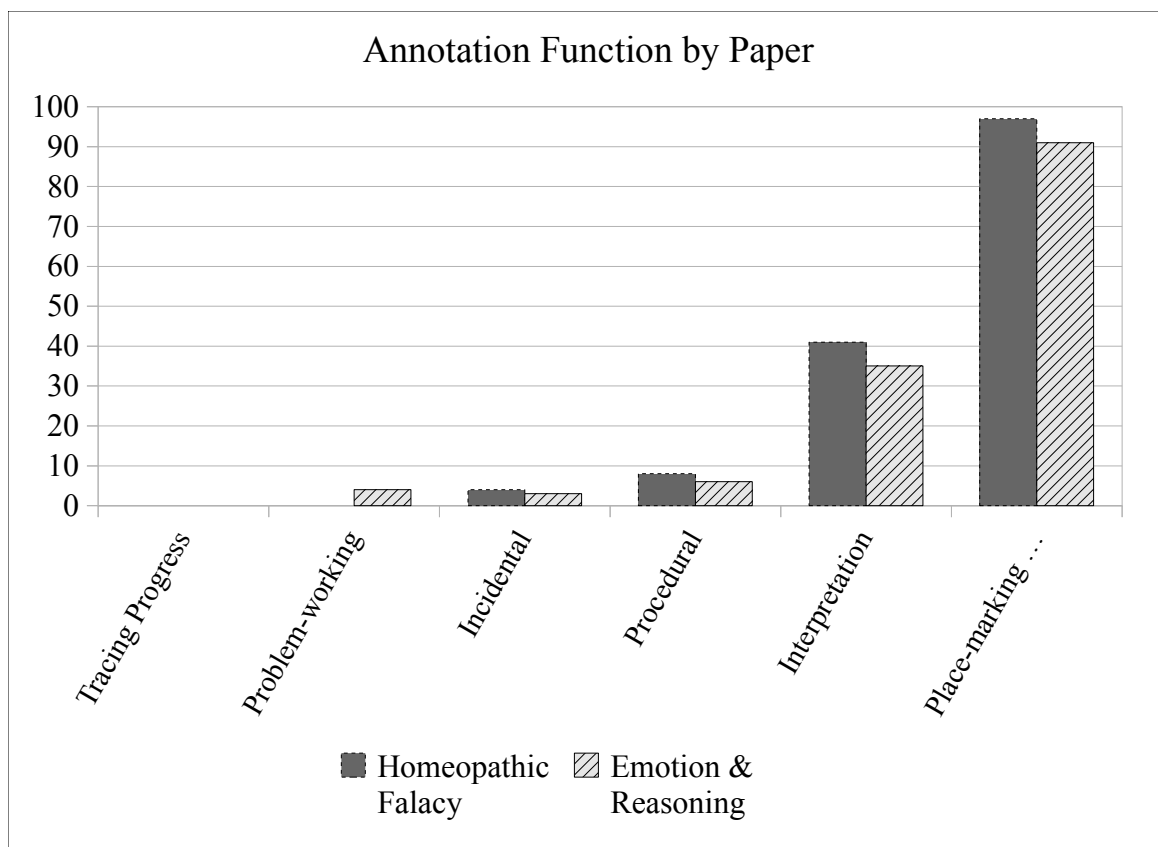
Figure 12   Annotation function by paper.

CHAPTER 5   CONCLUSION

It appears that the annotation taxonomy described in the early sections of this paper are reasonable as the data gathered fits well within it. A next step would be to have independent assessors categorize the original annotations and to use inter-rater reliability measures to validate the conclusions of the study. One difficulty encountered was that gathering data was difficult as the submission of annotated papers was optional. However, optionality is a must a forced submission would likely skew the results.

The cited evidence has shown the importance of paper-based annotation and the limitations of current digital-based annotation software. This would indicate a need for the development of annotation software. Using the results of the study we see areas where focus would best be placed. Software that supports text based annotations, highlighting, and underlines to support interpretation and place-marking and aiding memory functions would be extremely useful.

CHAPTER 6   ACCOMPLISHMENTS

For this paper, I reviewed existing material on annotation and created a annotation
taxonomy which I verified using a study. I developed the taxonomy using existing
frameworks detailed in a number of the research papers I reviewed. The study
successfully validated the annotation taxonomy and the results of the study extended
what we know about annotation. From this experience I learned how important
annotation is and how vital the need to replicate paper-based annotation functionality in
the digital realm. Using the results of the study future researchers or software developers
have clearly defined areas to focus on.

BIBLIOGRAPHY

Anderson, S. (2011, March 6). 'What I Really Want Is Someone Rolling Around in the Text'. *The New York Times*, p. MM46.

Blustein, J. & Noor, M. (2004). Personal glossaries on the WWW: an exploratory study. *Proceedings of the 2004 ACM symposium on Document engineering (pp. 54-56)*. New York, NY, USA.

Carlson, B. C. (2011, March 5). From the sidelines. *National Post*. Retrieved March 8, 2011, from http://nationalpost.com/todays-paper/From+sidelines/4388509/story.html.

Carasik, M. (2009). *The Commentators Bible*. Philadelphia: The Jewish Publication Society.

Johnson, D. (2011, February 21). Book Lovers Fear Dim Future for Notes in the Margins. *The New York Times*, p. A10.

Kawase, R., Herder, E., & Nejdl, W. (2009). A Comparison of Paper-Based and Online Annotations in the Workplace. *Proceedings of the 4th European Conference on Technology Enhanced Learning: Learning in the Synergy of Multiple Disciplines* (pp. 240-253). Berlin, Heidelberg, Germany.

Liu, Z. & Stork, D. G. (2000). Is paperless really more?. *Communications of the ACM*, 43 (11), 94-97.

Marshall, C. C. (1997). Annotation: from paper books to the digital library. *Proceedings of the Second ACM international Conference on Digital Libraries* (pp. 131-140). Philadelphia, PA, USA.

Marshall, C. C. (1998). Toward an ecology of hypertext annotation. *Proceedings of the ninth ACM conference on Hypertext and hypermedia : links, objects, time and space—structure in hypermedia systems: links, objects, time and space—structure in hypermedia systems* (pp. 40-49). Pittsburgh, PA, USA.

Marshall, C. C. & Brush, A. B. (2004). Exploring the relationship between personal and public annotations. *Proceedings of the 4th ACM/IEEE-CS Joint Conference on Digital Libraries* (pp. 349-357). Tuscon, AZ, USA.

Marshall, C. C. & Neuwirth, C. M. (2001). From the Margins to the Center: The Future of Annotation. *Journal of Business and Technical Communication*, 15, 333.

McKendree, J., Reader, W., & Hammon, N. (1995). The "Homeopathic Fallacy" in Learning from Hypertext. *interactions,* 2(3), 74-82.

Mototch, H. (2003). *Where Stuff Comes From: How Toasters, Toilets, Cars, Computers and Many Other Things Come to Be as They Are*. New York and London: Routledge.

Obendorf, H. (2003). Simplifying annotation support for real-world-settings: a comparative study of active reading. *Proceedings of the Fourteenth ACM Conference on Hypertext and Hypermedia* (pp. 120-121). Nottingham, UK.

O'Hara, K. & Sellen, A. (1997). A comparison of reading paper and on-line documents. *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 335-342). New York, NY, USA.

Ovsiannikov, I. A., Arbib, M. A., & McNeill, T. H. (1999). Annotation technology. *International Journal of Human-Computer Studies*, 50(4), 329-362.

Princeton University Press. (2011, April 21). A Book I Value: Selected Marginalia. *Princeton University Press*. Retrieved May 1, 2011, from http://press.princeton.edu /titles/7451.html.

Qayyum, A. (2008). Analysing Markings Made on E-Documents. *The Canadian Journal of Information and Library Sciences.* 32(1/2), 35-53.

Steimle, J., Brdiczka, O., & Muhlhauser, M. (2009). Collaborative Paper-based Annotation of Lecture Slides. *Educational Technology & Society.* 12(4), 125-137.

Wolfe, J. (2002). Annotation technologies: A software and research review. *Computers and Composition*. 19, 471–497.

Wolfe, J. (2008). Annotations and the collaborative digital library: Effects of an aligned annotation interface on student argumentation and reading strategies. *Computer-Supported Collaborative Learning*. 3, 141-164.

APPENDIX A   List of Annotations

Part 1

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
1	1	1	Compound	Private	Compound
1	1	2	Compound	Private	External
1	1	3	Compound	Private	External
1	1	4	Telegraphic	Private	Internal
1	1	5	Telegraphic	Private	Internal
1	1	6	Telegraphic	Private	Internal
1	1	7	Telegraphic	Private	Internal
1	1	8	Telegraphic	Private	Internal
1	1	9	Telegraphic	Private	Internal
1	1	10	Telegraphic	Private	Internal
1	1	11	Telegraphic	Private	Internal
1	1	12	Telegraphic	Private	Internal
1	1	13	Compound	Private	Compound
1	1	14	Telegraphic	Private	Internal
1	1	15	Telegraphic	Private	Internal
1	1	16	Compound	Private	Compound
1	1	17	Compound	Private	Compound
1	1	18	Telegraphic	Private	Internal
1	1	19	Telegraphic	Private	Internal
1	1	20	Telegraphic	Private	External
1	1	21	Telegraphic	Private	Internal
1	1	22	Compound	Private	Compound
1	2	1	Compound	Private	Compound
1	2	2	Compound	Private	Compound
1	2	3	Explicit	Private	External
1	2	4	Telegraphic	Private	Internal
1	2	5	Telegraphic	Private	Internal
1	2	6	Explicit	Private	External
1	2	7	Telegraphic	Private	Internal
1	2	8	Compound	Private	Compound
1	2	9	Telegraphic	Private	Internal
1	2	10	Telegraphic	Private	Internal
1	2	11	Telegraphic	Private	Internal
1	2	12	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
1	2	13	Telegraphic	Private	Internal
1	2	14	Explicit	Private	External
1	2	15	Compound	Private	Compound
1	2	16	Compound	Private	Compound
1	2	17	Telegraphic	Private	Internal
1	2	18	Compound	Private	Compound
1	2	19	Telegraphic	Private	Internal
1	2	20	Compound	Private	Compound
1	2	21	Compound	Private	Compound
1	2	22	Telegraphic	Private	Internal
2	2	1	Telegraphic	Private	Internal
2	2	2	Telegraphic	Private	Internal
2	2	3	Compound	Private	Compound
2	2	4	Telegraphic	Private	External
2	1	1	Telegraphic	Private	Internal
2	1	2	Telegraphic	Private	Internal
2	1	3	Telegraphic	Private	Internal
2	1	4	Telegraphic	Private	Internal
2	1	5	Telegraphic	Private	Internal
2	1	6	Telegraphic	Private	Internal
3	2	1	Telegraphic	Private	Internal
3	2	2	Telegraphic	Private	Internal
3	2	3	Telegraphic	Private	Internal
3	2	4	Telegraphic	Private	Internal
3	2	5	Compound	Private	Compound
3	2	6	Telegraphic	Private	Internal
3	2	7	Telegraphic	Private	Internal
3	2	8	Compound	Private	Compound
3	2	9	Compound	Private	Compound
3	2	10	Compound	Private	Compound
3	2	11	Telegraphic	Private	Internal
3	2	12	Telegraphic	Private	Internal
3	2	13	Telegraphic	Private	Internal
3	2	14	Telegraphic	Private	Internal
3	2	15	Compound	Private	Compound
3	2	16	Telegraphic	Private	Internal
3	2	17	Compound	Private	Compound
3	2	18	Telegraphic	Private	Internal
3	2	19	Compound	Private	Compound
3	2	20	Telegraphic	Private	Internal
3	2	21	Compound	Private	Compound
3	2	22	Compound	Private	External

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
3	2	23	Telegraphic	Private	Internal
3	2	24	Explicit	Private	External
3	2	25	Telegraphic	Private	Internal
3	2	26	Telegraphic	Private	Internal
3	2	27	Telegraphic	Private	Internal
3	2	28	Telegraphic	Private	Internal
3	2	29	Compound	Private	Compound
3	2	30	Telegraphic	Private	Internal
3	2	31	Telegraphic	Private	Internal
3	2	32	Telegraphic	Private	Internal
3	2	33	Telegraphic	Private	Internal
3	2	34	Telegraphic	Private	Internal
3	2	35	Telegraphic	Private	Internal
3	2	36	Telegraphic	Private	Internal
3	2	37	Compound	Private	Compound
3	2	38	Telegraphic	Private	Internal
3	2	39	Telegraphic	Private	Internal
3	2	40	Compound	Private	Compound
3	2	41	Telegraphic	Private	Internal
3	2	42	Explicit	Private	External
3	1	1	Explicit	Private	External
3	1	2	Compound	Private	Compound
3	1	3	Telegraphic	Private	Internal
3	1	4	Telegraphic	Private	Internal
3	1	5	Telegraphic	Private	Internal
3	1	6	Telegraphic	Private	Internal
3	1	7	Telegraphic	Private	Internal
3	1	8	Compound	Private	Compound
3	1	9	Telegraphic	Private	Internal
3	1	10	Telegraphic	Private	Internal
3	1	11	Telegraphic	Private	Internal
3	1	12	Explicit	Private	External
3	1	13	Compound	Private	Compound
3	1	14	Compound	Private	Compound
3	1	15	Telegraphic	Private	Internal
3	1	16	Telegraphic	Private	Internal
3	1	17	Explicit	Private	External
3	1	18	Telegraphic	Private	Internal
3	1	19	Explicit	Private	External
3	1	20	Telegraphic	Private	Internal
3	1	21	Telegraphic	Private	Internal
3	1	22	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
3	1	23	Telegraphic	Private	Internal
3	1	24	Compound	Private	Compound
4	1	1	Explicit	Private	External
4	1	2	Explicit	Private	External
4	1	3	Telegraphic	Private	Internal
4	1	4	Compound	Private	External
4	1	5	Compound	Private	Compound
4	1	6	Telegraphic	Private	Internal
4	1	7	Telegraphic	Private	Internal
4	1	8	Telegraphic	Private	Internal
4	1	9	Telegraphic	Private	Internal
4	1	10	Telegraphic	Private	Internal
4	1	11	Telegraphic	Private	Internal
4	1	12	Telegraphic	Private	Internal
4	1	13	Telegraphic	Private	Internal
4	1	14	Compound	Private	External
4	1	15	Telegraphic	Private	Internal
4	1	16	Telegraphic	Private	Internal
4	1	17	Telegraphic	Private	Internal
4	1	18	Telegraphic	Private	Internal
4	1	19	Telegraphic	Private	Internal
4	1	20	Explicit	Private	External
5	1	1	Compound	Private	External
5	1	2	Compound	Private	Compound
5	1	3	Compound	Private	Compound
5	1	4	Compound	Private	Compound
5	1	5	Compound	Private	Compound
5	1	6	Telegraphic	Private	Internal
5	1	6	Telegraphic	Private	Internal
5	1	6	Telegraphic	Private	Internal
5	1	7	Compound	Private	Compound
5	1	8	Compound	Private	Compound
5	1	9	Explicit	Private	Internal
5	1	10	Telegraphic	Private	Internal
5	1	11	Telegraphic	Private	Internal
5	1	12	Explicit	Private	External
5	1	13	Compound	Private	Compound
6	1	1	Compound	Private	External
6	1	2	Compound	Private	Compound
6	1	3	Telegraphic	Private	Internal
6	1	4	Compound	Private	Compound
6	1	5	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
6	1	6	Telegraphic	Private	Internal
6	1	7	Compound	Private	Compound
6	1	8	Telegraphic	Private	Internal
6	1	9	Telegraphic	Private	Internal
6	1	10	Telegraphic	Private	Internal
6	1	11	Telegraphic	Private	Internal
6	1	12	Compound	Private	Compound
6	1	13	Telegraphic	Private	Internal
6	1	14	Explicit	Private	Internal
6	1	15	Compound	Private	External
6	1	16	Telegraphic	Private	Internal
6	1	17	Compound	Private	External
6	1	18	Telegraphic	Private	Internal
6	1	19	Telegraphic	Private	Internal
6	1	20	Compound	Private	External
6	1	21	Explicit	Private	External
6	1	22	Compound	Private	External
6	1	23	Compound	Private	External
6	1	24	Telegraphic	Private	Internal
6	1	25	Telegraphic	Private	Internal
6	1	26	Telegraphic	Private	Internal
6	1	27	Compound	Private	Compound
6	1	28	Compound	Private	Compound
6	1	29	Telegraphic	Private	Internal
6	1	30	Telegraphic	Private	Internal
6	1	31	Compound	Private	Compound
6	1	32	Explicit	Private	Internal
6	1	33	Telegraphic	Private	Internal
6	1	34	Compound	Private	Compound
6	1	35	Telegraphic	Private	Internal
6	1	36	Compound	Private	Compound
6	1	37	Telegraphic	Private	Internal
6	1	38	Telegraphic	Private	Internal
6	1	38	Telegraphic	Private	Internal
6	1	39	Compound	Private	Compound
6	1	39	Compound	Private	Compound
6	1	40	Compound	Private	Compound
6	1	41	Explicit	Private	External
6	1	42	Explicit	Private	External
6	1	43	Explicit	Private	Internal
6	1	44	Explicit	Private	Internal
7	2	1	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
7	2	2	Compound	Private	External
7	2	3	Telegraphic	Private	Internal
7	2	4	Telegraphic	Private	Internal
7	2	5	Telegraphic	Private	Internal
7	2	6	Telegraphic	Private	Internal
7	2	7	Explicit	Private	External
7	2	8	Telegraphic	Private	Internal
7	2	9	Compound	Private	External
7	2	10	Explicit	Private	External
7	2	11	Compound	Private	External
7	2	12	Compound	Private	External
7	2	13	Explicit	Private	External
7	2	14	Telegraphic	Private	Internal
7	1	1	Explicit	Private	External
7	1	2	Telegraphic	Private	Internal
7	1	3	Telegraphic	Private	External
7	1	4	Compound	Private	Compound
7	1	5	Telegraphic	Private	Internal
7	1	6	Telegraphic	Private	External
7	1	7	Telegraphic	Private	External
7	1	8	Compound	Private	Compound
7	1	9	Telegraphic	Private	Internal
7	1	10	Telegraphic	Private	Internal
7	1	11	Telegraphic	Private	External
7	1	12	Explicit	Private	External
7	1	13	Compound	Private	External
7	1	14	Compound	Private	External
7	1	15	Compound	Private	Compound
7	1	16	Compound	Private	Internal
7	1	17	Explicit	Private	External
7	1	18	Explicit	Private	External
7	1	19	Telegraphic	Private	External
7	1	20	Explicit	Private	External
7	1	21	Telegraphic	Private	Internal
7	1	22	Explicit	Private	External
7	1	23	Telegraphic	Private	Internal
7	1	24	Explicit	Private	External
7	1	25	Explicit	Private	External
7	1	26	Telegraphic	Private	External
7	1	27	Explicit	Private	External
7	1	28	Explicit	Private	External
7	1	29	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
7	1	30	Telegraphic	Private	External
8	2	1	Telegraphic	Private	Internal
8	2	2	Telegraphic	Private	Internal
8	2	3	Telegraphic	Private	Internal
8	2	4	Telegraphic	Private	Internal
8	2	5	Telegraphic	Private	Internal
8	2	6	Telegraphic	Private	External
8	2	7	Explicit	Private	External
8	2	8	Telegraphic	Private	Internal
8	2	9	Telegraphic	Private	Internal
8	2	10	Telegraphic	Private	Internal
8	2	11	Explicit	Private	External
8	2	12	Telegraphic	Private	Internal
8	2	13	Telegraphic	Private	Internal
8	2	14	Telegraphic	Private	Internal
8	2	15	Telegraphic	Private	Internal
8	2	16	Compound	Private	Compound
8	2	17	Compound	Private	Compound
8	2	18	Explicit	Private	External
8	2	19	Telegraphic	Private	Internal
8	2	20	Telegraphic	Private	Internal
8	2	21	Compound	Private	Compound
8	2	22	Compound	Private	Compound
8	2	23	Explicit	Private	External
8	2	23	Explicit	Private	External
8	2	24	Compound	Private	Compound
8	2	25	Telegraphic	Private	External
8	2	25	Telegraphic	Private	Compound
8	2	26	Telegraphic	Private	Internal
8	2	27	Telegraphic	Private	Internal
8	2	28	Compound	Private	Compound
8	2	29	Telegraphic	Private	External
8	2	30	Compound	Private	Compound
8	1	1	Compound	Private	External
8	1	2	Telegraphic	Private	Internal
8	1	3	Telegraphic	Private	Internal
8	1	4	Compound	Private	Compound
8	1	5	Telegraphic	Private	Internal
8	1	6	Telegraphic	Private	External
8	1	7	Compound	Private	External
8	1	8	Compound	Private	External
8	1	9	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
8	1	10	Telegraphic	Private	Internal
8	1	11	Telegraphic	Private	Internal
8	1	12	Telegraphic	Private	Internal
8	1	13	Telegraphic	Private	Internal
8	1	14	Compound	Private	Compound
8	1	15	Telegraphic	Private	Internal
8	1	16	Telegraphic	Private	Internal
8	1	17	Telegraphic	Private	Internal
8	1	18	Explicit	Private	External
8	1	19	Telegraphic	Private	Internal
8	1	20	Telegraphic	Private	Internal
8	1	21	Telegraphic	Private	Internal
8	1	22	Telegraphic	Private	Internal
8	1	23	Telegraphic	Private	Internal
8	1	24	Telegraphic	Private	Internal
8	1	25	Telegraphic	Private	Internal
8	1	26	Telegraphic	Private	Internal
8	1	27	Telegraphic	Private	Internal
8	1	28	Explicit	Private	External
8	1	29	Telegraphic	Private	Internal
8	1	30	Telegraphic	Private	Internal
8	1	31	Telegraphic	Private	Internal
8	1	32	Telegraphic	Private	Internal
8	1	33	Telegraphic	Private	Internal
8	1	34	Telegraphic	Private	Internal
8	1	35	Telegraphic	Private	Internal
8	1	36	Telegraphic	Private	Internal
8	1	37	Telegraphic	Private	Internal
8	1	38	Telegraphic	Private	Internal
8	1	39	Explicit	Private	External
8	1	40	Telegraphic	Private	Internal
9	1	1	Telegraphic	Private	Compound
9	1	2	Telegraphic	Private	Internal
9	1	3	Telegraphic	Private	Internal
9	1	4	Compound	Private	External
9	1	5	Compound	Private	Compound
9	1	6	Compound	Private	Compound
9	1	7	Telegraphic	Private	Internal
9	1	8	Telegraphic	Private	Internal
9	1	9	Telegraphic	Private	Internal
9	1	10	Telegraphic	Private	Internal
9	1	11	Compound	Private	Compound

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
9	1	12	Compound	Private	Compound
9	1	13	Telegraphic	Private	Internal
9	1	14	Compound	Private	Compound
9	1	15	Telegraphic	Private	Internal
9	1	16	Telegraphic	Private	Compound
9	1	17	Compound	Private	Compound
9	1	18	Telegraphic	Private	Internal
9	1	19	Telegraphic	Private	Compound
9	1	20	Telegraphic	Private	Internal
9	1	21	Telegraphic	Private	Compound
9	1	22	Telegraphic	Private	Internal
9	1	23	Telegraphic	Private	Internal
9	1	24	Telegraphic	Private	Internal
9	1	25	Telegraphic	Private	Internal
9	1	26	Telegraphic	Private	Internal
9	1	27	Compound	Private	Compound
9	1	28	Compound	Private	Compound
9	1	29	Compound	Private	Compound
9	1	30	Telegraphic	Private	Internal
9	1	32	Compound	Private	External
9	1	32	Telegraphic	Private	Internal
9	1	33	Telegraphic	Private	Internal
9	1	33	Telegraphic	Private	Internal
9	1	33	Telegraphic	Private	Internal
9	1	34	Compound	Private	Compound
9	1	34	Compound	Private	Compound
9	1	35	Telegraphic	Private	Internal
9	1	36	Telegraphic	Private	Internal
9	1	37	Compound	Private	Compound
9	1	39	Telegraphic	Private	Internal
9	1	40	Compound	Private	External
9	1	41	Telegraphic	Private	Internal
9	1	42	Telegraphic	Private	Internal
9	1	43	Telegraphic	Private	Internal
9	1	44	Telegraphic	Private	Internal
9	1	45	Telegraphic	Private	Internal
9	1	46	Compound	Private	Compound
9	1	47	Compound	Private	Compound
9	1	48	Compound	Private	Compound
9	1	49	Telegraphic	Private	External
9	1	50	Telegraphic	Private	Internal
9	1	51	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
10	1	1	Telegraphic	Private	Internal
10	1	2	Compound	Private	Compound
10	1	3	Telegraphic	Private	Internal
10	1	4	Telegraphic	Private	Internal
10	1	5	Compound	Private	Compound
10	1	6	Telegraphic	Private	Internal
10	1	7	Telegraphic	Private	Internal
10	1	8	Telegraphic	Private	Internal
10	1	9	Telegraphic	Private	External
10	1	10	Telegraphic	Private	External
10	1	11	Compound	Private	External
10	1	12	Compound	Private	External
10	1	13	Compound	Private	External
10	1	14	Compound	Private	Compound
10	1	15	Telegraphic	Private	Internal
10	1	16	Compound	Private	Compound
10	1	17	Compound	Private	Compound
10	1	18	Telegraphic	Private	External
10	1	19	Telegraphic	Private	Internal
10	1	20	Telegraphic	Private	Internal
10	1	21	Compound	Private	Compound
10	1	22	Telegraphic	Private	Internal
10	1	23	Explicit	Private	External
10	1	24	Compound	Private	Compound
10	1	25	Compound	Private	Compound
10	1	26	Explicit	Private	External
10	1	27	Explicit	Private	External
11	2	1	Telegraphic	Private	Internal
11	2	2	Telegraphic	Private	Internal
11	2	3	Explicit	Private	External
11	2	4	Explicit	Private	External
11	2	5	Explicit	Private	Internal
11	2	6	Telegraphic	Private	Internal
11	2	7	Telegraphic	Private	Internal
11	2	8	Telegraphic	Private	Internal
11	2	9	Telegraphic	Private	Internal
11	2	10	Telegraphic	Private	Internal
11	2	11	Compound	Private	Compound
11	2	12	Telegraphic	Private	Internal
11	2	13	Telegraphic	Private	Internal
11	2	14	Telegraphic	Private	Internal
11	2	15	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
11	2	16	Compound	Private	Compound
11	2	17	Telegraphic	Private	Internal
11	2	18	Telegraphic	Private	Internal
11	2	19	Telegraphic	Private	Internal
11	2	20	Compound	Private	Internal
11	2	21	Compound	Private	Compound
11	2	22	Telegraphic	Private	Internal
11	2	23	Telegraphic	Private	Internal
11	2	24	Telegraphic	Private	Internal
11	2	25	Telegraphic	Private	Internal
11	2	26	Compound	Private	Compound
11	2	27	Telegraphic	Private	Internal
11	2	28	Telegraphic	Private	Internal
11	2	29	Telegraphic	Private	Internal
11	2	30	Telegraphic	Private	Internal
11	2	31	Telegraphic	Private	Internal
12	2	1	Telegraphic	Private	Internal
12	2	2	Telegraphic	Private	Internal
12	2	3	Telegraphic	Private	Internal
12	2	4	Compound	Private	Compound
12	2	5	Compound	Private	Compound
12	2	6	Telegraphic	Private	Compound
12	2	7	Telegraphic	Private	Internal
12	2	8	Telegraphic	Private	Internal
12	2	9	Compound	Private	Compound
12	2	10	Telegraphic	Private	Internal
12	2	11	Compound	Private	Compound
12	2	12	Compound	Private	Compound
12	2	13	Compound	Private	Compound
12	2	14	Compound	Private	Compound
12	2	15	Telegraphic	Private	Internal
12	2	16	Telegraphic	Private	Internal
12	2	17	Telegraphic	Private	Internal
12	2	18	Compound	Private	Compound
12	2	19	Compound	Private	Compound
12	2	20	Explicit	Private	External
12	2	21	Compound	Private	Compound
12	2	22	Telegraphic	Private	Internal
12	2	24	Telegraphic	Private	Internal
12	2	25	Compound	Private	Compound
12	2	26	Compound	Private	Compound
12	2	27	Compound	Private	Compound

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
12	2	28	Telegraphic	Private	Internal
12	2	29	Compound	Private	Compound
12	2	30	Compound	Private	Compound
12	2	31	Compound	Private	Compound
12	2	32	Telegraphic	Private	Internal
12	2	33	Compound	Private	Compound
12	2	34	Explicit	Private	External
12	2	35	Telegraphic	Private	Internal
12	2	36	Compound	Private	Compound
12	2	37	Telegraphic	Private	Internal
12	2	38	Compound	Private	Compound
12	2	39	Telegraphic	Private	Internal
12	2	40	Telegraphic	Private	Internal
12	2	41	Telegraphic	Private	Internal
12	2	42	Telegraphic	Private	External
12	2	43	Telegraphic	Private	Internal
12	2	44	Telegraphic	Private	Internal
12	2	45	Telegraphic	Private	Internal
12	2	46	Compound	Private	Compound
12	2	47	Telegraphic	Private	Internal
12	2	48	Telegraphic	Private	Internal
12	2	49	Compound	Private	Compound
12	2	50	Compound	Private	Compound
12	2	51	Telegraphic	Private	Internal
12	2	52	Compound	Private	Compound
12	2	53	Telegraphic	Private	Internal
12	2	54	Telegraphic	Private	Internal
12	2	55	Telegraphic	Private	External
12	2	56	Telegraphic	Private	External
12	2	57	Telegraphic	Private	Internal
12	2	58	Telegraphic	Private	Internal
12	2	59	Telegraphic	Private	Internal
12	2	60	Telegraphic	Private	Internal
12	2	61	Explicit	Private	External
12	2	62	Compound	Private	Compound
12	2	63	Telegraphic	Private	Internal
12	2	64	Telegraphic	Private	Internal
13	2	1	Compound	Private	Compound
13	2	2	Telegraphic	Private	Internal
13	2	3	Compound	Private	Compound
13	2	4	Compound	Private	Compound
13	2	5	Telegraphic	Private	Internal

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
13	2	6	Compound	Private	Compound
13	2	7	Compound	Private	Compound
13	2	8	Telegraphic	Private	Internal
13	2	9	Compound	Private	Compound
13	2	10	Compound	Private	Compound
13	2	11	Compound	Private	Compound
13	2	12	Telegraphic	Private	Internal
13	2	13	Compound	Private	Compound
13	2	14	Compound	Private	Compound
13	2	15	Compound	Private	Compound
13	2	16	Compound	Private	Compound
13	2	17	Telegraphic	Private	Internal
13	2	18	Compound	Private	Compound
14	1	1	Compound	Private	Compound
14	1	2	Telegraphic	Private	Internal
14	1	3	Telegraphic	Private	Internal
14	1	4	Telegraphic	Private	Internal
14	1	5	Telegraphic	Private	Internal
14	1	6	Telegraphic	Private	Internal
14	1	7	Compound	Private	External
14	1	8	Telegraphic	Private	Internal
14	1	9	Telegraphic	Private	Internal
14	1	10	Compound	Private	External
14	1	11	Telegraphic	Private	Internal
15	1	1	Compound	Private	Compound
15	1	2	Telegraphic	Private	Internal
15	1	3	Compound	Private	Compound
15	1	4	Compound	Private	External
15	1	5	Compound	Private	Compound
15	1	6	Compound	Private	External
15	1	7	Compound	Private	Internal
15	1	8	Explicit	Private	External
15	1	9	Explicit	Private	Internal
15	1	10	Explicit	Private	Internal
15	1	11	Explicit	Private	Internal
15	1	12	Explicit	Private	Internal
15	1	13	Explicit	Private	External
15	1	14	Compound	Private	Internal
15	1	15	Compound	Private	Internal
15	1	16	Explicit	Private	External
15	1	17	Compound	Private	Compound
15	1	18	Compound	Private	Compound

Participant #	Session #	Annotation #	Annotation Category	Audience	Location
15	1	19	Compound	Private	Compound
15	1	20	Explicit	Private	External
15	1	21	Explicit	Private	External
15	1	22	Compound	Private	Internal
15	1	23	Compound	Private	Internal
15	1	24	Compound	Private	Internal
15	1	25	Compound	Private	Internal
15	1	26	Compound	Private	Internal
15	1	27	Telegraphic	Private	Internal
15	1	28	Telegraphic	Private	Internal
15	1	29	Compound	Private	Internal
15	1	30	Telegraphic	Private	Internal
15	1	31	Compound	Private	Internal
15	1	32	Telegraphic	Private	External
15	1	33	Explicit	Private	External
15	1	34	Telegraphic	Private	Internal
15	1	35	Explicit	Private	Internal
15	1	36	Telegraphic	Private	Internal
15	1	37	Telegraphic	Private	Internal
15	1	38	Compound	Private	Compound
15	1	39	Compound	Private	Internal
15	1	40	Explicit	Private	External
15	1	41	Explicit	Private	External
15	1	42	Explicit	Private	External
15	1	43	Explicit	Private	External
15	1	44	Explicit	Private	External
15	1	45	Explicit	Private	Internal
15	1	46	Compound	Private	Compound
15	1	47	Compound	Private	Compound
15	1	48	Telegraphic	Private	Internal
15	1	49	Telegraphic	Private	External
15	1	50	Compound	Private	Compound
15	1	51	Compound	Private	Compound
15	1	52	Explicit	Private	External

Part 2

Participant #	Session #	Annotation Type	Annotation Function
1	1	Circle:Arrow:Text	
1	1	Arrow:Text:Interpretation	Interpretation

34

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
1	1	Arrow:Text	Interpretation
1	1	Underlining	Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Circle:Asterisk	Procedural:Place-marking and Aiding Memory
1	1	Circle	Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Circle	Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Underlining:Arrow:Text	Interpretation
1	1	Circle	Place-marking and Aiding Memory
1	1	Circle	Place-marking and Aiding Memory
1	1	Underlining:Arrow:Text	Interpretation
1	1	Asterisk:Underlining	Procedural:Place-marking and Aiding Memory
1	1	Underlining	Place-marking and Aiding Memory
1	1	Text	Incidental
1	1	Bracket	Procedural
1	1	Underlining	Place-marking and Aiding Memory
1	1	Underlining:Arrow:Asterisk	Procedural:Place-marking and Aiding Memory
1	2	Underlining:Arrow:Text	Interpretation
1	2	Asterisk:Underlining	Procedural:Place-marking and Aiding Memory
1	2	Text	Procedural
1	2	Underlining	Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Text	Interpretation
1	2	Underlining	Place-marking and Aiding Memory
1	2	Asterisk:Bracket	Procedural:Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory
1	2	Text	Interpretation
1	2	Bracket:Arrow:Text	Interpretation:Place-marking and Aiding Memory
1	2	Circle:Arrow:Text	Interpretation:Place-marking and Aiding Memory
1	2	Underlining	Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
1	2	Asterisk:Underlining:Text	Procedural:Place-marking and Aiding Memory:Interpretation
1	2	Underlining	Place-marking and Aiding Memory
1	2	Asterisk:Underlining:Text	Procedural:Place-marking and Aiding Memory:Interpretation
1	2	Asterisk:Underlining:Text	Procedural:Place-marking and Aiding Memory:Interpretation
1	2	Underlining	Place-marking and Aiding Memory
2	2	Underlining	Place-marking and Aiding Memory
2	2	Underlining	Place-marking and Aiding Memory
2	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
2	2	Incidental	Incidental Marking
2	1	Underlining	Place-marking and Aiding Memory
2	1	Underlining	Place-marking and Aiding Memory
2	1	Underlining	Place-marking and Aiding Memory
2	1	Bracket	Place-marking and Aiding Memory
2	1	Underlining	Place-marking and Aiding Memory
2	1	Bracket	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Underlining:Bracket:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Asterisk:Text:Bracket	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Asterisk:Text	Interpretation
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Asterisk:Text:Circle	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting:Underlining	Place-marking and Aiding Memory
3	2	Highlighting:Underlining	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Underlining	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	2	Highlighting	Place-marking and Aiding Memory
3	2	Asterisk:Text	Interpretation
3	1	Asterisk:Text	Procedural

37

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
3	1	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Underlining	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting:Circle	Place-marking and Aiding Memory
3	1	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Asterisk:Text	Interpretation
3	1	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
3	1	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Text	Interpretation
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Asterisk:Text	Interpretation
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting	Place-marking and Aiding Memory
3	1	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
4	1	Text	Tracing Progress
4	1	Text	Tracing Progress
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Text:Arrow	Interpretation:Place-marking and Aiding Memory
4	1	Text:Arrow	Interpretation
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Asterisk:Text	Interpretation:Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Highlighting	Place-marking and Aiding Memory
4	1	Text	Problem-working
5	1	Text:Arrow	Interpretation
5	1	Underlining:Text:Arrow	Interpretation:Place-marking and Aiding Memory
5	1	Highlighting:Underlining: Asterisk:Text	Interpretation:Place-marking and Aiding Memory
5	1	Underlining:Text	Interpretation
5	1	Underlining:Text	Interpretation
5	1	Underlining	Place-marking and Aiding Memory
5	1	Highlighting	Place-marking and Aiding Memory
5	1	Highlighting	Place-marking and Aiding Memory
5	1	Highlighting:Arrow:Circle :Text	Problem-working
5	1	Highlighting:Arrow:Circle :Text	Problem-working
5	1	Text	Interpretation:Problem-working
5	1	Highlighting	Place-marking and Aiding Memory
5	1	Highlighting	Place-marking and Aiding Memory
5	1	Text	Interpretation:Problem-working
5	1	Circle:Arrow:Text	Interpretation
6	1	Text:Arrow	Interpretation
6	1	Highlighting:Text:Arrow	Interpretation:Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Circle:Arrow:Text	Interpretation
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
6	1	Circle:Arrow:Text	Interpretation
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Circle	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Circle:Arrow:Text	Interpretation
6	1	Circle	Place-marking and Aiding Memory
6	1	Incidental	Incidental
6	1	Bracket:Text	Interpretation:Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Arrow:Text	Interpretation:Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Bracket:Text	Interpretation:Place-marking and Aiding Memory
6	1	Text	Interpretation:Problem-working
6	1	Arrow:Text	Interpretation
6	1	Arrow:Text	Interpretation
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining:Arrow:Text	Interpretation
6	1	Circle:Arrow:Text	Interpretation
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining:Arrow:Text	Interpretation
6	1	Incidental	Incidental
6	1	Underlining	Place-marking and Aiding Memory
6	1	Circle:Arrow:Text	Interpretation
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining:Arrow:Text	Interpretation:Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining	Place-marking and Aiding Memory
6	1	Underlining:Arrow:Text	Interpretation
6	1	Circle:Arrow:Text	Interpretation

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
6	1	Circle:Arrow:Text	Interpretation
6	1	Text	Interpretation
6	1	Text	Interpretation:Problem-working
6	1	Text	Interpretation
6	1	Incidental	Incidental
7	2	Underlining	Place-marking and Aiding Memory
7	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
7	2	Underlining	Place-marking and Aiding Memory
7	2	Underlining	Place-marking and Aiding Memory
7	2	Bracket	Place-marking and Aiding Memory
7	2	Bracket	Place-marking and Aiding Memory
7	2	Text	Interpretation
7	2	Bracket	Place-marking and Aiding Memory
7	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
7	2	Text	Interpretation
7	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
7	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
7	2	Text	Interpretation
7	2	Bracket	Place-marking and Aiding Memory
7	1	Text	Interpretation
7	1	Underlining	Place-marking and Aiding Memory
7	1	Bracket	Place-marking and Aiding Memory
7	1	Bracket:Text	Interpretation:Place-marking and Aiding Memory
7	1	Underlining	Place-marking and Aiding Memory
7	1	Bracket	Place-marking and Aiding Memory
7	1	Bracket	Place-marking and Aiding Memory
7	1	Bracket:Text	Procedural:Place-marking and Aiding Memory
7	1	Underlining	Place-marking and Aiding Memory
7	1	Underlining	Place-marking and Aiding Memory
7	1	Bracket	Place-marking and Aiding Memory
7	1	Text	Interpretation
7	1	Arrow:Text	Interpretation:Problem-working
7	1	Arrow:Text	Interpretation:Problem-working
7	1	Arrow:Text	Interpretation:Problem-working

41

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
7	1	Arrow:Text	Interpretation:Problem-working
7	1	Text	Interpretation
7	1	Text	Interpretation
7	1	Bracket	Place-marking and Aiding Memory
7	1	Text	Interpretation
7	1	Underlining	Place-marking and Aiding Memory
7	1	Asterisk:Text	Interpretation:Place-marking and Aiding Memory
7	1	Underlining	Place-marking and Aiding Memory
7	1	Text	Interpretation
7	1	Text	Interpretation
7	1	Bracket	Place-marking and Aiding Memory
7	1	Text	Incidental
7	1	Text	Interpretation
7	1	Underlining	Place-marking and Aiding Memory
7	1	Bracket	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Underlining	Place-marking and Aiding Memory
8	2	Underlining	Place-marking and Aiding Memory
8	2	Bracket	Procedural:Place-marking and Aiding Memory
8	2	Text	Incidental
8	2	Underlining	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Underlining	Place-marking and Aiding Memory
8	2	Text	Interpretation
8	2	Underlining	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Underlining	Place-marking and Aiding Memory
8	2	Underlining:Text	Interpretation:Place-marking and Aiding Memory
8	2	Underlining:Text	Interpretation:Place-marking and Aiding Memory
8	2	Text	Interpretation
8	2	Box	Place-marking and Aiding Memory
8	2	Circle	Place-marking and Aiding Memory
8	2	Underlining:Text	Interpretation:Place-marking and Aiding

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
8	2	Underlining:Text	Memory Interpretation:Place-marking and Aiding Memory
8	2	Text	Interpretation
8	2	Text	Interpretation
8	2	Underlining:Text	Interpretation:Place-marking and Aiding Memory
8	2	Arrow	Incidental
8	2	Arrow	Incidental
8	2	Underlining	Place-marking and Aiding Memory
8	2	Underlining	Place-marking and Aiding Memory
8	2	Underlining:Text	Interpretation:Place-marking and Aiding Memory
8	2	Asterisk	Procedural:Place-marking and Aiding Memory
8	2	Underlining:Text	Interpretation:Place-marking and Aiding Memory
8	1	Arrow:Text	Interpretation
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Underlining:Arrow:Text	Interpretation:Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Incidental	Incidental
8	1	Arrow:Text	Interpretation
8	1	Arrow:Text	Interpretation
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Text	Interpretation
8	1	Underlining	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
8	1	Underlining	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle:Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Text	Interpretation
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Circle	Place-marking and Aiding Memory
8	1	Underlining	Place-marking and Aiding Memory
8	1	Text	Interpretation
8	1	Circle	Place-marking and Aiding Memory
9	1	Incidental	Incidental
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Circle	Interpretation
9	1	Highlighting:Underlining	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Underlining: Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
9	1	Highlighting	Memory Place-marking and Aiding Memory
9	1	Circle:Text	Interpretation
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Circle:Text	Interpretation
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Circle	Place-marking and Aiding Memory
9	1	Circle	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Circle:Text	Interpretation
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Circle	Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Arrow:Text	Interpretation

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
9	1	Circle	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
9	1	Circle:Arrow:Text	Interpretation:Problem-working
9	1	Arrow:Text	Interpretation:Problem-working
9	1	Incidental	Incidental
9	1	Highlighting	Place-marking and Aiding Memory
9	1	Circle:Asterisk:Text	Interpretation
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Circle:Arrow:Text	Procedural
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Circle:Arrow:Text	Interpretation
10	1	Underlining	Place-marking and Aiding Memory
10	1	Asterisk:Highlighting	Place-marking and Aiding Memory
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Bracket:Arrow	Place-marking and Aiding Memory
10	1	Bracket:Arrow	Place-marking and Aiding Memory
10	1	Arrow:Text	Interpretation
10	1	Arrow:Text	Interpretation
10	1	Bracket:Text	Interpretation
10	1	Circle:Arrow:Text	Interpretation
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
10	1	Circle:Arrow:Text	Interpretation
10	1	Incidental	Incidental
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Circle:Arrow:Text	Interpretation
10	1	Highlighting	Place-marking and Aiding Memory
10	1	Text	Interpretation:Problem-working
10	1	Bracket:Arrow:Text	Interpretation:Problem-working
10	1	Arrow:Text	Interpretation:Problem-working
10	1	Text	Interpretation:Problem-working
10	1	Text	Interpretation

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Text	Interpretation
11	2	Text	Interpretation
11	2	Text	Interpretation:Problem-working
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Underlining	Place-marking and Aiding Memory
11	2	Circle	Place-marking and Aiding Memory
11	2	Circle:Arrow:Text	Intepetation
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting:Arrow:Text	Interpretation:Place-marking and Aiding Memory
11	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
11	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Underlining	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
12	2	Highlighting:Text	Memory Interpretation:Place-marking and Aiding
12	2	Highlighting:Text	Memory Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Circle	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Text	Interpretation
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Bracket:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
12	2	Text	Interpretation
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Bracket:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Arrow:Text	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Arrow:Text	Place-marking and Aiding Memory
12	2	Arrow:Text:Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Text	Interpretation
12	2	Highlighting:Asterisk:Text	Interpretation:Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
12	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Bracket:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Text	Interpretation:Place-marking and Aiding

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
13	2	Highlighting:Bracket:Text	Memory Interpretation:Place-marking and Aiding Memory
13	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
13	2	Highlighting	Place-marking and Aiding Memory
13	2	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
14	1	Circle:Arrow:Text	Interpretation
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Text	Incidental
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Bracket:Text	Interpretation
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Highlighting	Place-marking and Aiding Memory
14	1	Bracket:Text	Interpretation
14	1	Highlighting	Place-marking and Aiding Memory
15	1	Asterisk:Underlining:Text	Interpretation
15	1	Asterisk:Highlighting	Place-marking and Aiding Memory
15	1	Asterisk:Underlining:Text	Interpretation
15	1	Arrow:Text	Interpretation
15	1	Asterisk:Underlining:Text	Interpretation
15	1	Arrow:Text	Interpretation
15	1	Asterisk:Text	Interpretation
15	1	Text	Interpretation
15	1	Asterisk:Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Highlighting:Text	Interpretation:Place-marking and Aiding Memory
15	1	Underlining:Text	Interpretation
15	1	Text	Interpretation
15	1	Asterisk:Bracket:Arrow:Text	Interpretation:Place-marking and Aiding Memory
15	1	Underlining:Asterisk:Text	Interpretation

Parti-cipant #	Sess-ion #	Annotation Type	Annotation Function
15	1	Underlining:Arrow:Text	Interpretation:Place-marking and Aiding Memory
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Highlighting	Place-marking and Aiding Memory
15	1	Underlining	Place-marking and Aiding Memory
15	1	Underlining:Text	Interpretation
15	1	Underlining	Place-marking and Aiding Memory
15	1	Underlining:Text	Interpretation
15	1	Bracket:Asterisk	Place-marking and Aiding Memory
15	1	Text	Interpretation
15	1	Underlining	Place-marking and Aiding Memory
15	1	Text	Interpretation
15	1	Circle	Place-marking and Aiding Memory
15	1	Underlining	Place-marking and Aiding Memory
15	1	Underlining:Text	Interpretation
15	1	Underlining:Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation:Problem-working
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Text	Interpretation
15	1	Text:Underlining:Asterisk	Place-marking and Aiding Memory
15	1	Text:Underlining:Asterisk	Place-marking and Aiding Memory
15	1	Circle	Place-marking and Aiding Memory
15	1	Asterisk	Place-marking and Aiding Memory
15	1	Text:Underlining:Asterisk	Place-marking and Aiding Memory
15	1	Text:Underlining:Asterisk	Place-marking and Aiding Memory
15	1	Text	Procedural