

"WHAT'S IN A GLOSS?"

A commentary on Lara L. Lomicka's "To gloss or not to gloss": An investigation of reading comprehension online. *Language Learning & Technology*, Vol. 1, No. 2

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The editors of *Language Learning & Technology* are to be commended for including "To gloss or not to gloss" in the January 1998 issue of the journal. In the article, Lara L. Lomicka definitively answers her research question in the affirmative: the subject of glossing merits serious attention in the foreign language teaching community in its own right, but especially because of its potential within online learning environments. This argument will hopefully help spur serious research in the future.

Lomicka adapted a question from the Bard to title her excellent work, so it is only appropriate that a friendly response do likewise. The comments offered here serve to amplify certain points that the author has made. Terminology will be discussed, studies not cited by Lomicka will be described, and methodological issues will be raised in the hopes of facilitating a continuation of this line of investigation.

REFINING THE NOTION OF GLOSS

In the Background section of her paper, Lomicka refers to the origins of glossing. Cited are studies that deal primarily with teacher-developed glosses, the subject of Lomicka's own study. To fully understand the origin of this technique, however, one should refer to an article by lexicographer Werner Hüllen (1989). Several points from his version of history can be drawn. First of all, early glosses, interlinear or marginal scribbles, were learner-generated. Medieval students struggling with a foreign text (usually Latin) produced them as they worked along. Glosses as teaching aids came later, followed by their eventual codification into word lists (glossaries) and then dictionaries.

In light of this historical setting, the field must also consider what learners gloss for their own benefit. This is consonant with all pedagogies that promote learner autonomy and cooperative learning, and takes advantage of the fact that learners can now easily annotate electronic (hyper)text. In fact, most commercial programs contain "notebook" features and some even allow users to mark words and automatically compile them into printable lists. These new capabilities are serving the universal, established practice of learners marking up their own readings. Since e-mail facilitates the sharing of notes with peers, teachers who encourage such gloss-swapping would be implementing the "co-construction" of comprehension that Lomicka advocates on page 49. This would allow researchers to compare what students gloss in a given text to what teachers gloss with a view to identifying mismatches.

According to Hüllen, glosses were once of three types: synonyms, encyclopedic comments, and grammatical notes. Thus, Lomicka's operational definition of "traditional" glosses on page 46 as definitions and translations is historically incorrect in that she only includes lexical information. However, this in no way impairs her research design. I raise this point not to quibble but because it is crucial to operationally define what is meant by glosses for the sake of future studies. Both explicit descriptions and vague usages found in the literature will be listed and described below.

Widdowson (1978) has proposed that glosses written by teachers or materials developers, and meant to precede a reading passage, be termed *priming glossaries* (p. 82). These serve as advance organizers. He labels glosses that the reader consults in the course of reading *prompting glossaries* (p. 86), and it is these that were used in Lomicka's study. Widdowson makes a further distinction: *signification glosses* give the "definition" of an item whereas *value glosses* give the meaning of an item in a particular context. Signification glosses are essentially dictionary definitions; therefore, readers may have to do some

processing to fit this "generic" definition into the text at hand. This work has been done for them in the case of value glosses. Priming glossaries can be of either type, but prompting glossaries are almost always made up of value glosses. Widdowson cogently summarizes the pros and cons of both. Of relevance to researchers and teachers alike are his comments about the learner's perception of such glosses.

If he assumes that a certain gloss represents signification when it in fact represents value, then he will have problems when he encounters the same word in a different context. [. . .] If on the other hand, he assumes that a signification gloss represents value, he will have difficulty reconciling this with the meaning required by the context of the passage for which the glossary has been devised. If the learner does not understand just what status the gloss has, it might well create more difficulties than it resolves. (1978, p. 86)

As Lomicka noted, online glosses can be in the form of video, sound, or pictures. Icons, a type of picture, have also been used as glosses. For example, the *Macintosh Bible* put images of lit matches in the margins next to its "hot tips." Reading strategy suggestions and interspersed questions (Otto & White, 1982), too, have been called glosses. It should be noted that there is some disagreement on the last item. Stewart and Cross (1991) strongly maintain that glosses "should not be confused with embedded or inserted questions. . . since marginal glosses represent a markedly different treatment of text" (p. 5). Blohm (1982) coined the term *gloss paraphrase* which he defined as "a type of reader-activated superimposed intratext notation that replaces abstractly-composed text content with concrete referents to promote readers' cognition" (p. 24). More examples of a gloss "by any other name" are: *adjunct aids* (Otto & White, 1982), *metanotes* (Wolfe, 1990), *metatext* (Lantolf, Labarca, & den Tuinder, 1985), and *paratext* (Genette, 1987). Oxford (1995) provides many possibilities under the rubric of *assistance*: "error correction. . . a useful learning strategy. . . a full explanation, a schematic/partial explanation. . . a leading question. . . a pictorial representation of a verbal expression. . . a cooperative learning activity. . . an encouraging word at just the right moment" (p. 366).

Stewart and Cross (1991) have also studied the effect of glossing on reading comprehension and retention. Their findings will be summarized later, but at this point their definition of glosses will be presented as it helps to catalog all the possible forms of glossing. According to them, *elaboration glosses* "clarified the texts with statements, questions, or both," while *bridging glosses* "combined a statement and a question and acted as a bridge between prior learning and new information" (p. 5). These first two types of glosses are designed to help the reader process the propositions of a text. As such they relate to the situation model advocated by Lomicka (p. 44), and are what she loosely termed "informational glosses" (p. 50). The third type of gloss used by Stewart and Cross, *key point and vocabulary glosses* (p. 6), underscore important statements or provided brief definitions of words.

In the taxonomy of glosses which I am attempting to outline here I will recast what Stewart and Cross have proffered. Their bridging and elaboration glosses get readers to "take an active stance" which leads to "comprehension monitoring, a metacognitive behavior" (p. 5). I propose that glosses which promote the reader's monitoring of the process be termed *metacognitive glosses*. I propose that key point glosses be renamed *highlighting glosses* and that Blohm's gloss paraphrases be called *clarifying glosses*.

I group the three preceding glosses under the category of *procedural glosses* in keeping with a key distinction made in cognitive psychology between procedural (skill) knowledge and declarative (factual) knowledge. These categories are not airtight as can be seen in the sometimes blurry distinction between knowing a language and knowing about a language. Examples of *declarative glosses* are given below. I group procedural and declarative glosses under the rubric of *gloss function*.

Glosses can also be characterized by their focus. Some point the reader back to the text, whereas others bring new information to it. Glosses can be written in the reader's first language, the target language, or a third language. The last possibility is perhaps rare, but I can cite a ready example from my current

situation: At Dokkyo University some German textbooks published in the U.S. are used, and the glosses are, of course, written in English. Finally, glosses can be described according their form.

So what is in a gloss? Glosses are many kinds of attempts to supply what is perceived to be deficient in a reader's procedural or declarative knowledge.

Taxonomy of Glosses

- I. Gloss authorship
 - A. Learners
 - B. Professionals
 - 1. Instructors
 - 2. Materials developers
 - II. Gloss presentation
 - A. Priming
 - B. Prompting
 - III. Gloss functions
 - A. Procedural
 - 1. Metacognitive
 - 2. Highlighting
 - 3. Clarifying
 - B. Declarative
 - 1. Encyclopedic
 - 2. Linguistic
 - a. Lexical
 - i. Signification
 - ii. Value
 - b. Syntactical
- IV. Gloss focus
 - A. Textual
 - B. Extratextual
- V. Gloss language
 - A. L1
 - B. L2
 - C. L3
- VI. Gloss form
 - A. Verbal
 - B. Visual
 - 1. Image
 - 2. Icon
 - 3. Video
 - a. With sound
 - b. Without sound
 - C. Audio (only)

It is not claimed that these arrangements are definitive. An important point is that glosses can be much more than just translations or explanations of "hard words." Lomicka recognized this, and the GALT (Glossing Authentic Language Texts) shell that she described (p. 43) and used in her study allows these gloss features to be programmed. Moreover, it should be noted that (a) these are criteria and not discrete categories, (b) many of the distinctions are binary, and (c) any gloss can be described using these descriptors. For example, the French word *aigle* (p. 47) from Lomicka's study in the "extended glosses"

(p. 45) condition could be characterized thusly: it was written by a materials developer (I.B.2.), was presented during the reading process (II.B.), and it functioned to provide factual information (III.B.1.) internal to the text (IV.A.) in English (V.A.) and in visual form (VI.B.1.).

It is hoped that others will contribute to this initial effort and that a consensus can be reached so that researchers can begin to systematically study the relative contributions of each gloss type to comprehension and learning.

OTHER STUDIES

Although Lomicka did demonstrate a good familiarity with the theories and methodology of L1 reading research (pp. 44-45), she did not cite any studies of L1 reading and gloss usage. The studies by Blohm (1982) and Stewart and Cross (1991), already cited in the terminology section above, offer additional insights into this area.

Blohm (1982) conducted an early study of online glosses. He set out to discover whether gloss paraphrases (see above) could help students understand a passage that they were reading on a computer. He also sought to determine whether the number of glosses activated would influence the amount of recall. He found that subjects in the gloss conditions recalled significantly more than subjects in the control treatments who had no access to glosses.

There is an important methodological question to raise about Blohm's study: he did not report any reading times. It may have been possible, therefore, that the subjects in the gloss conditions spent significantly more time reading than those in the no-gloss condition. In fact, it is well established that time-on-task is a predictor of learning success (Wittrock, 1986). If, on the other hand, the subjects in the gloss condition read the passage in approximately the same amount of time, then Blohm could have made an even stronger claim for the benefit of computerized glosses. Knight (1994) may be consulted for a good example of reading time factored into the consideration of results obtained in an online reading and dictionary consultation study.

Besides the terminology it contributed, the report by Stewart and Cross (1991) is important for the interesting topics it raised. They noted that with annotated texts "three voices become involved in the reading: the inner voice of the reader, the voice of the author, and the voice of the teacher manifested in the gloss" (p. 5). Moreover, they maintained that "the purpose of glossing is to produce independent readers" (p. 11). Such comments are a reminder of what the ultimate goal of teaching should be. They also argued that glosses have a "focusing effect" (p. 10). This touches on the areas of arousal and selective attention which have been extensively researched within cognitive science. Good summaries of what is known on these subjects can be found in Beneli (1997) and in the [entries](#) from the TIP database put together by Kearsley (1998).

Lomicka cited most of the research done on glosses in the L2 field. She did not mention my own study (Roby, 1991), however, so I will present my findings here. I conducted an empirical examination of dictionary and gloss use by American university students of Spanish. Their task was to read a biographical sketch taken from a Spanish language feature magazine. A 2 (presentation mode) x 2 (semantic support) experimental design was used. The presentation modes were paper and computer. The two types of semantic support were dictionary alone and dictionary + glosses. The four treatment groups were (a) paper dictionary, (b) paper dictionary and glosses, (c) computer dictionary, and (d) computer dictionary and glosses. The computer dictionary contained entries taken from the paper dictionary. The glosses were written by me for the purpose of the study. The online groups accessed the semantic support(s) by mouse clicks. The dependent measures were reading time, number of queries (i.e., lookups), and comprehension. The subjects also completed a brief questionnaire concerning their normal reading and dictionary practices, and they were asked to express their opinions about the presentation modes and comprehension aids they used in this study.

I found that subjects in dictionary + gloss conditions read the passage in significantly less time than those in the dictionary-alone treatments. I also found that subjects in the computer conditions looked up significantly more words than subjects in the paper conditions. There were no differences detected between the groups on the comprehension measure. Qualitative data from a post-experimental questionnaire indicated that subjects in the computer treatments were more satisfied with the semantic support available to them than were subjects in the paper conditions.

There are two important implications to my findings. First of all, that subjects were able to read passages much quicker with the help of glosses is strong support for their inclusion in both print and online materials. The second matter is the ease-of-access afforded by online annotations. In a companion study, my colleagues and I (Aust, Kelley, & Roby, 1993) coined the term "consultation trigger point" to refer to the finding that the subjects looked up significantly more words in electronic conditions. However, in both studies there were probably novelty effects operating. Pedagogically, "click happy" behavior should be discouraged, but the online provision of comprehension aids would appear to lessen the disruption of the reading process caused by conventional dictionary look-ups. This tension should perhaps be examined in future research.

METHODOLOGICAL ISSUES

On page 2 Lomicka suggests that the inconsistent results obtained in previous studies of glosses can be attributed to three kinds of variables: (a) text type, (b) learner level, and (c) outcome measures. These are certainly factors to consider. Starting on page 3 she then argues in favor of the use of "online measures" such as the think-aloud protocol. I find this discussion generally convincing. However, I would think it unwise for the use of recall procedures to be totally abandoned. Whereas think-aloud protocols do allow researchers to monitor comprehension *in situ* and as it develops, in the real world we are of course concerned with long-term retention and recall measures. Fortunately, it is possible to use both in any investigation, and that is what I am advocating.

I raised the issue of time-on-task in my summary of Blohm's study and I cited my own measuring of this variable. Lomicka did keep track of the amount of time the subjects spent reading glosses, but she did not report overall reading times. I believe her study would have been strengthened by the inclusion of such data, and I believe all studies should do so. If future research demonstrates that learners can read passages containing electronic annotations significantly faster than they can read non-enhanced versions of the same passages, then it can be stated that reading efficiency is increased. I maintain that efficiency is a worthy outcome of pedagogical intervention that should be measured in studies as regularly as comprehension is.

Another dependent variable to consider is continuing motivation (Kinzie & Sullivan, 1989). This is a measure of ongoing interest in a particular subject matter. Does one glossing configuration (see below) promote further language or literature study better than others? To complete the list of dependent variables, Lomicka and others have tested for incidental learning and this should continue to be considered.

There are many implementation issues to weigh in the building of experimental (and ultimately, pedagogical) materials. The taxonomy I have proposed applies to the kinds of information that is provided. Other parts of the "how" question are interface design and screen layout. How can readers be signaled that glosses are available? Boldface type can be used to indicate that certain words have been glossed. Where should the glosses be displayed? In my programs I have used pop-up windows which are positioned so that they do not cover up the portion of the text in which a glossed word is found. In this way users can read the gloss and the glossed word's context together. Another possibility is to dedicate a portion of the screen as a gloss space. For example, all glosses could appear in the lower right corner in a box. I propose that this factor be called *gloss presentation*. It is a crucial matter because cluttered screens

will hinder rather than help readers. How much one glosses is a related consideration. I call this factor *gloss density*. While it is technically possible to attach a wealth of information to a text, this does not mean that it is prudent to do so. A well-known commercial program, for example, provides word-for-word translations and grammatical notes for each sentence. Some instructors may consider this an instance of excessive glossing, however, since there is a danger of overwhelming learners. In cases such as this, priorities should be set so that decisions about what to gloss are made by pedagogues, not programmers.

To conclude this section on methodology, I will state that it would behoove researchers to agree on certain glossing configurations. These configurations would differ from one another as to how much glossing is done (gloss density), what information is provided (gloss taxonomy), and how the information is displayed (gloss presentation).

ONLINE READING

What is online reading? To answer this fundamental question, researchers must first consider the psychophysical factors involved. A good summary of these complex issues, and a digest of the vast research to date, has been given by Muter (1996). He highlights the problems associated with the important independent variable of color. For example, the overuse of color, which he calls "the 'fruit salad' approach" (p. 4), can be confusing since in many studies brightness and contrast are not controlled, and individuals vary greatly in their perception of color. Muter also points out that generalizability across studies is a problem since "different products, e.g., with different phosphors, produce different colors" (p. 4). I would add that the monitors on the market today are much better than those of even a few years ago. The current applicability of studies done with older equipment is thus suspect.

On page 42 Lomicka follows one of her sources in suggesting that with hypermedia-annotated text, readers may proceed "globally, rather than linearly." This raises the issue of the dimensions of text. Lomicka is implying that electronic text is not a flat line along which one moves, but a space in which one can roam. This is hypertext. Keep and McLaughlin (1995) have created the [Electronic Labryinth](#) site in which they discuss the shape of hyperfiction from both the readers' and the writers' perspectives:

Where should the story begin? How will it end? These are two of the primary questions an author must answer when creating any fiction. Hypertext foregrounds these questions of boundaries; in this non-linear environment, the author has the freedom to discard old structural conventions and traditional ideas of closure.

I propose that the processing of multimedia text can be conceived of as taking place in a curvilinear fashion. Readers wind their way through texts accessing those supplements they choose. O'Malley, Chamot, Stewner-Manzanares, Kupper, and Russo (1985) have coined the term "resourcing" to refer to the use of reference materials to obtain target language information. Chappelle (1996) cites studies of her own and those done by others which examine resourcing in online environments. This points to the vast body of literature on learner strategies, which certainly should be considered in gloss usage research.

CONCLUSION

Electronic glosses can take many forms. This piece has attempted to categorize them, summarize some studies of their effectiveness, and point to ways in which further research concerning them might be conducted. Disciplines which might make contributions to this research and pertinent issues have been identified. Given the steady increase of electronic texts on the World Wide Web and in the new handheld e-books, it is imperative that online reading with annotations be investigated. It is hoped that future studies will be of the caliber of Lara L. Lomicka's pilot study. As she stated, what has been done to date has "only scratched the surface of research involving computer-assisted reading comprehension and multimedia annotations" (p. 43). To conclude, I will modify a phrase from Shakespeare that comes a few

lines later in the portion of Hamlet from which Lomicka adapted her article's title: "To gloss, perhaps to teach: ay, there's the rub!"

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