Verbal Reports as a Method to Elicit Lexical Processing Strategies

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Abstract: *The present paper addresses the advantages and the limitations of using verbal reports in a study on the lexical processing strategies of learners' reading in English as a Foreign Language (EFL) in Indonesia. While verbal reports offer invaluable data in exploring mental processing, caution should be applied in its use; consequently, a number of actions need to be taken to minimize the limitations to obtain more valid data.*

Keywords: *research methods, verbal report, think aloud, verbal protocol, protocol analysis, reading, vocabulary, strategies.*

Introspection has been one of the methods which is very frequently used in researching cognitive domains to date. In this method subjects are required to take a reflective look at their thinking processes while performing a particular task and report it verbally. Such an online reporting is known as concurrent verbal reporting. Researchers also refer to this method as protocol analysis, and it results in a report which is called protocol (McDonough, & McDonough, 1997). In addition to this concurrent introspection, retrospective one may also be used in order to examine the thought processes that have occurred before reporting. The concurrent and the retrospective verbal reports usually take place in immediate sequence.

Protocol analysis has rooted in the field of cognitive psychology. It is a popular method to gain information on mental processing as this method enables access to it while it is in progress through the verbal reports of the subjects. In their monumental book, Ericsson and Simon (1993) explicate the psychological bases underlying the protocol analysis. This method

relies heavily on the construct of short-term and long-term memory. The information in the short-term memory can be stored only in a limited amount for a limited time due to its capacity. While this information is available in the short-term memory, it can be heeded or brought to consciousness and made verbal whenever necessary. This enables verbalization of this information for reporting purposes. Further, Cohen (1996) categorizes the reports into three types of data:

1. self report, which is the subjects' descriptions about their own learning behaviour in general, e.g., "I tend to be a speed listener."
2. self-observation, which results from the inspection of a specific learning behaviour, e.g., "What I just did was to skim through the incoming oral text as I listened, picking out key words and phrases."
3. self-revelation, or think aloud, which demonstrates the thinking processes of some particular information being attended to, e.g., "Who does the 'they' refer to here?"

Such data are very useful in revealing various types of mental processes; therefore, verbal reports have been used extensively in studies that attempt to reveal the processes which are taking place in the subjects' mind during such tasks as during literary appreciation (Eva-Wood, 2004), library research (Branch, 2000), translation (Li, 2004), writing (Ransdell, 1995), listening comprehension (Goh, 2002), and reading comprehension (Wade, 1990; Crain-Thoreson, Lippman, & McClendon-Magnuson, 1997). This paper, however, focuses on verbal protocol as it was used in a study that explored reading strategies, especially those employed by undergraduate learners when they encounter unfamiliar words. It begins by reviewing related research on strategies performed by language learners when they are reading, followed by a brief description of the aforementioned study on vocabulary strategies. Next, the advantages and limitations of the verbal protocol as they emerged in the study are discussed. Finally, the necessary actions to be taken to minimize the limitations conclude this paper.

VERBAL REPORTS IN RESEARCH ON READING STRATE-GIES

Scholarly interest in reading strategies has been accumulating for the last few decades due to its important role in shedding light on how successful comprehension—and eventually learning—can be achieved.

Therefore, numerous researches have been conducted to explore these strategies and identify the patterns of their use. To elicit the strategies as they are used by language learners, various methods have been applied, such as questionnaires (Barnett, 1988; Oxford, & Nyikos, 1989; Taillefer & Pugh, 1998; Taraban, Rynearson, & Kerr, 2000; Catalan, 2003; Griffiths, 2003), interviews (Duffy et al., 1987; Klingner & Vaughn, 1996; Mokhtari & Reichard, 2004), and protocol analysis, the examples of which are presented in the rest of this section.

Kamhi-Stein (2003), for instance, examined the reading strategies of four underprepared L2 college students by having them think aloud while reading two passages in L1 and L2. She found that two of them viewed reading as a process of meaning construction and performed mental translation in reading, i.e. they read in L2 but verbalized it in L1. The other two, on the other hand, considered reading as a process of linguistic decoding. For one of them, reading means understanding the meaning of words in the texts, while for the other it refers to pronouncing the words accurately. As they had confusion over their bilingualism, they did not do any mental translation when reading L2 texts. Nevertheless, all students used comprehension-monitoring, text-based and high-level strategies in various degrees.

Likewise, Upton (1997) investigated L2 reading strategy use as it related to the students' L1. However, instead of selecting merely the underprepared ones as Kamhi-Stein did, he included two groups of participants with differing L2 proficiency: ESL students whose L2 was at the intermediate level as shown by their TOEFL scores, and academic students who were more advanced. The results of the verbal protocol indicated that the ESL students generally translated into L1 in three situations, i.e. when handling unknown words, when figuring out sentential and textual meaning, and when confirming their comprehension of the whole text. The academic students who had better L2 proficiency, in contrast, preferred to use L2 in the same situations.

Magliano, Trabasso, and Graesser (1999) examined the strategies of undergraduates when they were making inferences during reading. These undergraduates turned out to possess strategic control over inferences made while comprehending the texts. They inferred by relying on the information in the texts or their knowledge of the world, depending on the conditions in which they were reading, i.e. to explain, to associate, to predict, or to understand. Laing and Kamhi (2002) also focused their study

on this particular reading skill, i.e. inference. They assigned the subjects into two groups—average and below-average readers—and gave them a comprehension task in two conditions, i.e. listen-through and think-aloud. As expected, the average readers could draw inferences more than the below-average ones, and the comprehension of both groups was better in the think-aloud than listen-through condition.

Li and Munby (1996) adopted a broader scope in their study. Instead of concentrating on the strategies employed in only one reading skill, they explored various reading strategies in general, resulting in the identification of the following: paraphrasing, repetition, using contextual clues to predict, looking for purposes and important information, visualizing, self-questioning, using background knowledge, paying attention to connectives, skimming, scanning, paying attention to topic sentences, using comparison and contrast, and picking out key words. They also acknowledged the subjects' metacognitive awareness, i.e. awareness of their own cognitive processing, and also their ability to introspect the mental processes orally.

Out of a number of reading strategies listed above, those that relate to vocabulary—such as context cues—have remained one of the widely researched strategies. Empirical evidence has supported the significance of the lexical items in building the meaning of a whole text; therefore, unknown vocabulary may impede successful comprehension. This triggers scholars to devote quite a large amount of research to unlock the strategies that learners use to overcome the unknown words. To illustrate, Harmon (1998) had four middle school learners think aloud to identify their strategies in handling unfamiliar words. Like Li and Munby above, she found that these learners had awareness of the existence of procedures to overcome unfamiliar words. The learners applied multiple strategies to attack one single word, and one learner might exercise more strategies than others. In another study (Harmon, 1999) she explored the vocabulary strategies of two other learners, and gained consistent results in that both use several strategies in order to unlock the meaning of one unfamiliar word. Further, she identified the vocabulary strategies as word-level analysis, synonyms, and dictionary.

Wesche and associates (Bot, Paribakht, & Wesche, 1997; Paribakht & Wesche, 1998; Wesche & Paribakht, 2000) conducted a series of studies to probe into the vocabulary strategies of ESL university students by means of verbal protocol. They came to a conclusion that their findings were consistent with the existing model. The studies highlighted the major role

of inferencing as the main strategy in dealing with unknown words. In addition, they emphasized the benefits of learning vocabulary "incidentally" from reading.

METHODOLOGY

The verbal reports examined in this paper were collected during a study I conducted to investigate the vocabulary strategies used by undergraduates who were learning English as a foreign language in Indonesia. Of 75 students in two reading classes, eight proficient readers who scored the highest in English version of DIALANG Reading Test voluntarily took part as the subjects of the study after being approached to participate.

In this study each of the subjects performed two tasks: a concurrent verbal report and a retrospective interview. The first task required them to read two English texts aloud, and while doing so they also thought aloud, verbalizing the strategies they were applying to cope with unfamiliar words they encountered in the texts. This session was audio-taped to capture veridical expressions, and important things were also recorded in field notes in written form. Immediately after the concurrent introspection, the subjects were interviewed while the relevant information heeded in their short-term memory during the think-aloud was still traceable. In this audio-taped retrospective interview I asked them how they dealt with the unfamiliar words while performing the concurrent think-aloud, the reasons for choosing a particular strategy for a certain word, and also the concealed meaning of lengthy silence and such vague expressions as "okay" or "oh." The taped concurrent introspections and retrospective interviews were later transcribed to enable further analysis. It is essential to emphasize that it was the retrospective *interview*—rather than retrospective *report*—which was employed in this study. Although both of them occur after the concurrent think-aloud, they differ in that the former requires the participants to attend to and report only *certain* cognitive processes specified by the interviewer, whereas the latter has the participants to review and verbalize the cognitive processes as a *whole* from the beginning to the end.

As expected, the think-aloud could elicit invaluable data related to the abstract processing of lexical difficulties during reading. Nevertheless, some drawbacks of this method were observed in this study. Both the advantages and the disadvantages of the think-aloud method will be elaborated in the next section.

FINDINGS AND DISCUSSION

Think Aloud: Benefits and Limitations

Thinking aloud turned out to yield invaluable data that might not have been available if questionnaires, interviews or observations only had been used to collect the data. There are some advantages of verbal reports over the other methods. First, this method enabled the subjects to produce unstructured—hence more natural—expressions of their inner thoughts. In this study they were allowed to verbalize what was in their mind without being controlled by signs at which they should stop thinking and start verbalizing. As a consequence, they were able to attend to any words which were unfamiliar to them at any point during reading. This resulted in a unique, detailed set of data as each individual subject attended to different words in the same texts. From this data the cognitive processing while coping with lexical difficulties could be mapped more veridically. Second, it was easier to observe the patterns of strategy use and the reasons for this pattern to occur only from one set of data obtained from a single method. (Note: The translated version of the report is provided below the original one.)

HANDY: [*I would see him waiting for the* (0.1) *whirring of wings. Whirring of wings, violin in hand.*] Whirring of wings, what does it mean? (0.2) Is this (0.3) oh, no. (0.2) Kepakan sayap mungkin. Suara kepakan sayap atau (0.1) coba diliat di kamus saja untuk yakinnya. (0.5) W h (0.4) w h (0.14) p q r s t (0.8) [desingan, deruan]. Ya, mungkin suara kepakan sayap.

[*I would see him waiting for the* (0.1) *whirring of wings. Whirring of wings, violin in hand.*] Whirring of wings, what does it mean? (0.2) Is this (0.3) oh, no. (0.2) The flapping of the wings maybe. The sound of the flapping wings or (0.1) let me see it in the dictionary to make sure. (0.5) W h (0.4) w h (0.14) p q r s t (0.8) [zing, buzz]. Yes, maybe the sound of the flapping wings.

In this particular piece of verbal report, Handy was obviously stumbled over the word *whirring*. To overcome this lexical problem, he attempted to infer the meaning by making use of the textual context, i.e.

taking the surrounding phrase *waiting for the* and *of wings* into account, resulting in a tentative guessed meaning of *kepakan* (flapping). Although this inferred meaning approached the intended one, he was still unsure about the accuracy of his guess. As a consequence, he resorted to a bilingual dictionary to confirm it.

Another example of the verbalization that provided clear description of the patterns of and the reason for strategy use could be found in the following extract.

SESILIA: *At times I had the curious feeling that he was trying to make up his mind about me, asking himself if I were friend or foe.*] (0.1) Foe. Lawan katanya friend mungkin. (0.5) Foe foe foe foe foe foe (0.2) ya, he eh, [musuh].

At times I had the curious feeling that he was trying to make up his mind about me, asking himself if I were friend or foe.] (0.1) Foe. It's the opposite of the word 'friend' maybe. (0.5) Foe foe foe foe foe foe (0.2) yes, uh huh, [enemy].

Sesilia was wondering what the word foe meant, and tried to guess its meaning by making use of the clue in the passage. She sensed an opposition there from the word *or*, and therefore could infer the meaning of this unknown word as the antonym of the word *friend*. However, she still doubted whether the real meaning was *musuh* (enemy) or not, as reflected in the word *mungkin* (maybe) she articulated. The next step was looking up the dictionary. She turned out to find the meaning there and was content that the inferred meaning was accurate.

Despite those benefits gained from the verbal reports, this method showed some limitations. The most obvious one was the silence that occurred while the subjects were thinking aloud. The length of the silence ranged from 1 to 27 seconds, and none of the subjects received a reminder to keep verbalizing because it was pre-determined that the reminder "Keep talking" was articulated only when the silence lasted for 30 seconds or more. Regardless of the length of the silence, some essential data could be potentially lost as the silence reflected the subjects' active thinking rather than the other way round. They were so absorbed in solving their lexical problems that they unconsciously ceased verbalizing and withdrew to silence. Another limitation similar to the silence was the brief, ambiguous statements. Occasionally they uttered expressions like *okay, oh*, or *hm*,

which carried several possibilities of meaning in a think-aloud context. Like the silence, these expressions did indicate active attempts on the part of the subjects. Although they consisted only of one word and did not seem meaningful grammatically, they could convey a number of possible meanings which—of course—were not likely to be extracted from the verbal reports alone. The third drawback relates to the individual characteristics of the subjects, i.e. the degree of their ability in verbalization. Some of them were loquacious, some tended to be reticent, and some could verbalize the right amount of information. The first two cases might affect the data as too many or too few words were gained from the data.

The fourth problem concerned the discrepancy between the cognitive processing and the verbalization. It has been proposed that thinking process operates faster than speech. In the following example, it was apparent that what the subject was reading in her mind actually preceded what she uttered.

CASSIE: [*The boarding house was very isolated I had discovered its peace and tranquillity when tramping about at a loose end the previous summer. Was iso-*] terisolasi.

[*The boarding house was very isolated I had discovered its peace and tranquillity when tramping about at a loose end the previous summer. Was iso-*] was isolated.

In this excerpt, Cassie obviously read the whole word of *isolated* and then immediately translated it into the Indonesian *terisolasi*. However, the transcription of this verbal report showed that Cassie had not finished uttering the English word before saying the Indonesian. Yet, it was understood that she translated the whole word instead of only the first few syllables of the word. Likewise, in the following she obviously read the English clause "I would see him waiting for the whirring of wings" in her mind while uttering the Indonesian translation:

CASSIE: [*I would see him waiting for the whirring of wings, violin in hand. I would*] saya akan melihatnya menunggu [*whirring of wings.*]

[*I would see him waiting for the whirring of wings, violin in hand. I would*] I would see him waiting [*whirring of wings.*]

Another subject, Handy, refuted a possibility he proposed even before saying what this possibility was. He was wondering if the phrase *whirring of wings* meant something, but when proposing it he stopped short at "Is this" without stating the possibility further. Instead, he rejected it by stating "Oh, no."

HANDY: Whirring of wings, what does it mean? (0.2) Is this (0.3) oh, no. (0.2) Kepakan sayap mungkin.

Whirring of wings, what does it mean? (0.2) Is this (0.3) oh, no. (0.2) The flutter of wings maybe.

The drawbacks listed above should not discourage the use of concurrent verbal protocols as a method in future research. Some procedures can be done in order to minimize the effects of these drawbacks, so that the validity will not be adversely affected.

Procedures to Minimize Limitations

The concurrent verbal protocol—like any other research method—has certain limitations that might influence the confidence in interpreting the resulting data. The above limitations may be prevented or partially overcome by taking several steps.

The very first procedure that is indispensable in any concurrent think-aloud is training prior to the data collection. The value of training the research subjects to practice the think-aloud tasks has been acknowledged as it obviously assists them to have full understanding about what they are supposed to do during think-aloud tasks. In the present study, the subjects took a training session individually shortly before the think-aloud task itself. There have been mixed views of the nature of the training task. Some suggested a training task that differs from the real task to avoid leading the subjects to behave in a particular manner and reducing the genuineness of their behavior (e.g. McDonough, & McDonough, 1997). Some others, on the other hand, maintain that both tasks should be similar to ensure that the subjects are familiar with the procedure in a specified context and purpose (e.g. van Someren, Barnard, & Sandberg, 1994). This study, however, adopted the second view. During the training session, they performed a task resembling what they were about to do in the real task, i.e. reading a short passage containing unfamiliar words aloud and verbalizing the

strategies they used in overcoming them. Immediately after this practice, the researcher discussed the results with each subject, the main purpose of which was to provide feedback to him/her about the activities that should be maintained or avoided during the think-aloud task. Care was taken to keep the feedback remaining in the technical areas (e.g. avoiding lengthy silence) and not touching any issues in the cognitive processing by participants (e.g. how they guessed word meaning). The feedback was effective in reducing silence which was excessively long and also ambiguous statements such as *oh* or *hm*. From such training, subjects were also advised to verbalize information which was within tolerable limits to prevent either excessive or insufficient information being articulated.

In addition to training, retrospective interviews were conducted in order to clarify and confirm the results of the concurrent verbal protocol. In these interviews, the subjects were asked questions that prompted them to introspect immediately after the reading task was completed. This way the researcher could ask the subjects to clarify what they were thinking about while being silent at a particular point in the verbalization or articulating the aforementioned vague statements. Furthermore, their cognitive processes while taking a certain strategy captured during the online reading could be confirmed further in the retrospective interviews in case the researcher was unconvinced about the occurrence of a strategy or the patterns that emerged from the concurrent think-aloud. The complementary use of the concurrent verbal report and the retrospective interview, therefore, could generate more reliable and valid data.

Finally, it is essential to note that in qualitative research the use of multiple methods is highly recommended because one method yields different types of information from another on the same event. In this way, a method may compensate the limitations of another. The data obtained from the other methods provide valuable resources to validate the results of the main method. To illustrate, in the present study employed another method besides the concurrent think aloud and the retrospective interview, i.e. observation. During online introspection, the researcher was present near the subjects and took notes of their observable, relevant behavior. Also, matters that required further probe such as the reasons for silence or switch from one strategy to another was noted down. The observation resulted in field notes that turned out to be beneficial in the researcher's attempt to triangulate the data collected from the concurrent think aloud as the field notes occasionally could gather data that might not have been present in the verbal reports.

CONCLUSION

The concurrent verbal reports may serve as a useful method to look into the mental processes, especially in the studies that attempt to explore the strategies of learners in constructing meaning from the written input. From the learners' verbalization researchers can gain insight into the abstract thought while it is executing some decisional tasks in learning, such as overcoming the lexical difficulties. Obviously this method demonstrates weaknesses in addition to this valuable benefit, but these weaknesses can be kept to a minimum by carrying out such procedures as practice before the think-aloud task, retrospective interview to complement the concurrent introspection, and multiple methods of data collection. Researchers, consequently, can apply this method with high degree of confidence in future studies.

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