Studying the academic reading comprehension process: responding to methodological concerns

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University students are required to read large amounts of material, and academic reading comprehension presents particular challenges for students working through the medium of a second or foreign language. However, little is known about these students' reading comprehension processes. Despite methodological concerns, think-aloud protocol analysis is the method commonly used in studying the reading comprehension processes. While it has revealed data which no other methods could offer, there have been concerns about how the think-aloud procedures are administered. At the same time there are claims that think-aloud protocol analysis can complement almost any kind of data elicitation technique. The study reported in this paper employed retellings, a reading comprehension test, and in-depth interviews to complement think-aloud tasks to reveal the strategies used by 15 third-year students at a state university in Indonesia in comprehending texts in English. Transcripts of the protocols were coded using a coding scheme adapted from Strauss & Corbin's (1990) model. A preliminary analysis indicates that while the complementary methods have extended the breadth of data coverage and allowed for a check on the validity of the data elicited through think-aloud tasks, the readers in the study share characteristics of both good and poor native readers.

Each year in Australia thousands of young people enter tertiary education for the first time and, for many, their studies will be conducted through the medium of English as a second language. The new intakes join an increasingly multilingual and multicultural student body (Kirkpatrick, 1995:43) of both international and local students. Australian universities have attracted significant numbers of international students and in a relatively short time Australia has become one of the world's major providers of higher education and vocational education and training, ranking third among English-speaking countries in terms of international students numbers (Maslen, 1998). A 1993 report of the Department of Education, Employment and Training (DEET, 1993) indicated that by 1992 Australian universities had 39,500 international student enrolments, or almost seven per cent of the total student population at that time. By 1996, the number of international students in Australia had increased to over 53,000 (Coorey, 1997 in McKnight, 1998:3). The changing nature of the undergraduate cohort clearly presents challenge for university lecturers, as international students from non-English speaking backgrounds may not have all the necessary skills required to participate in the mainstream.

Saville-Troike (1984) introduced the term academic competence to refer to the knowledge and abilities students need. In addition to English proficiency, two important components of academic competence are background knowledge of the content area material and effective study skills. One of the most important skills university students should be equipped with is reading. Adamson (1993:107) suggests that reading is the most important language skill for academic achievement, followed by listening comprehension and then writing. This is consistent with Collier's (1989:521) suggestion that successful reading performance is a strong predictor of students' academic performance in the second language at the secondary and postsecondary levels.

While reading comprehension presents particular challenges for English as a second or foreign language students (Sugirin, 1995), little is known about these students' reading comprehension processes. The study reported in this paper is intended to provide some information about these students' reading processes and the potential problems they face. It is expected that the information will enable lecturers and language course providers to devise a means of helping these students.

The method commonly used in studying the reading comprehension process is think-aloud protocol analysis, developed by Newell & Simon in 1960 (Newell & Simon, 1972:165) to study cognitive problem solving strategies. In think-aloud studies, participants are required to report their thinking as they do a task. A number of studies using think aloud data in reading have been published (e.g., Strang, 1970; Olshavsky, 1976-1977; Kavale & Schreiner, 1979). However, challenges to the validity of protocol analysis stemming from the relation of people's words to their thoughts have remained a troubling concern since Watson (1920). Focusing on two important constructs of the information processing theory, long-term memory and short-term memory, Ericsson & Simon (1984;1993) established the basis for the validity of the think-aloud protocol analysis. The most important conclusion Ericsson & Simon (1984; 1993) reached is that people can self-report the contents of their short-term memory and that the best verbal reports are of exactly what is heeded in short-term memory. Kormos (1998:354) claims that think-alouds which are not concurrent verbalisations are highly questionable.

A number of studies have been inspired by Ericsson & Simon's work (e.g., Block, 1986; 1992; Wineberg, 1991; Dobrin, 1995; and Levine & Reves, 1998). While Block (1986; 1992) complements think-aloud tasks with retellings and multiple-choice questions, Levine & Reves (1998) compare the effectiveness of think-aloud protocols with that of strategy questionnaires. Although Block (1986) has not made the maximum use of the multiple-choice questions (except for relating the score to the quality of strategies used), her study proved to be fruitful in revealing the strategies used by her participants. Levine & Reves (1998) concluded that think-alouds and questionnaires complemented each other. These two studies support Kormos's (1998) and Dobrin's (1995) claims that think-alouds can complement almost any kind of data elicitation technique. It is therefore the intention of this paper to present a refined study derived from the success of these two studies. One aspect of the refinement was made by following the multiple-choice test with an in-depth interview in which the participants' responses about the processes they employed to come to a chosen answer to a multiple-choice question could extend and explain the information obtained from the think-aloud tasks. Another aspect was that in an interview, clarification as well as extension could be made of some information sought. The interview conducted immediately after the think-aloud tasks and the multiple-choice test allowed the participants to refer to the texts, the questions and the answers, so that where necessary the on-line verbalisations could be revived.

The participants

The participants of the study reported in this paper are fifteen third-year student-teachers majoring in English as a foreign language at a state university in Indonesia. They are above average among their peers in that their average indexes of grades in reading and speaking are among the highest (3.1 and 3.2 respectively, while the average indexes of the peer group are 2.7 and 2.6, respectively, out of a scale of 0 to 4). In addition, while students may choose to complete their study by course work or by

research, the participants of this study are all enrolled as research students. They participated in the study voluntarily and gave their written consent.

Data collection procedures

Think-aloud tasks

Think-aloud tasks applied in this study follow the model referred to as *concurrent* or *on-line verbal reports*. Participants were explicitly instructed to verbalise all the thoughts that occurred to them while reading the text sentence by sentence. To ensure that all the participants understood fully what they were expected to do, the researcher asked them to rehearse, and when they achieved an appropriate level of performance, the actual think-aloud task started. In order that the participants reported exactly what they were thinking while reading, they were free to talk into the tape in English, Indonesian, or English and Indonesian. Texts on reform in American education, fatal diseases, curriculum development, and a forest fire were used in this study, but, for space considerations and that the present study is still in progress, only the participants' strategies in comprehending the first text will be discussed in this paper. The text is presented below. The symbol "•" indicates a point at which the subject was invited to think aloud.

Text 1

In the beginning of the nineteenth century, the American educational system was desperately in need of reform • Private schools existed, but only for the very rich, and there were very few public schools because of the strong sentiment that children who would grow up to be laborers should not "waste" their time on education but should instead prepare themselves for their life's work • It was in the face of this public sentiment that educational reformers set about their task •

Horace Mann, probably the most famous of the reformers, felt that there was no excuse in a republic for any citizen to be uneducated • As Superintendent of Education in the state of Massachusetts from 1837 to 1848, he initiated various changes, which were soon matched in other school districts around the country • He extended the school year from five to six months and improved the quality of teachers by instituting teacher education and raising their salaries • Although these changes did not bring about a sudden improvement in the educational system, they at least increased public awareness as to the need for a further strengthening of the system •
(Phillips, 1996:62)

Retelling, comprehension test, in-depth interview and observations

After completing the first reading, the participants were given a chance to look over the text material so that they could reassemble a complete, coherent version from the fragmentation that might have resulted from the continual interruption in the reading task. Then the researcher asked them to retell everything they remembered about the text. When the researcher noticed an ambiguity in the retelling, he asked for clarification. The retelling was scored using the criteria adapted from Irwin & Mitchell (1983).

Table 1: Criteria for assessing retelling

Criteria	Score
Participant generalises beyond text; includes thesis statement (summarising statement), all main ideas, and appropriate supporting details; includes relevant supplementations; shows high degree of coherence, completeness and comprehensibility.	5
Participant includes thesis statement (summarising statement), all main ideas, and appropriate supporting details; includes relevant supplementations; shows high degree of coherence, completeness and comprehensibility.	4
Participant relates main ideas; includes appropriate supporting details and relevant supplementations; shows adequate coherence, completeness and comprehensibility.	3
Participant relates a few main ideas and some supporting details; includes irrelevant supplementations; shows some degree of coherence; shows some completeness; the whole is somewhat comprehensible.	2
Participant relates details only; includes irrelevant supplementations or none; shows low degree of coherence; incomplete; incomprehensible.	1

Upon the completion of the retelling, the participants were asked to answer seventeen multiple-choice questions based on the text used in the think-aloud tasks. The questions were adapted from *Longman Preparation Course for the TOEFL Test* (Phillips, 1996:62-63) and *The Penguin Practice Book for the TOEFL Test* (de Souza, 1996:26), which had been trialled on 59 non-research students at the same university and analysed using *ITEMAN (tm) Version 3.00* (1988) with a reliability index of 0.533. The test paper and the answer sheet were then used as a reference focus in an interview session modeled on a focused or semi-structured interview (Minichiello, 1995:65). The interview started with questions directly related to the text (e.g., how a participant came to the decision to choose the answer to a question) to more general questions (e.g., what problems were encountered in comprehending the text, etc.). What matters in the interview is how the participant came to a certain answer (*the process*), not her/his correct or incorrect answers (*the product*). Throughout the execution of the tasks (think aloud, retelling and comprehension test) and the interview, the researcher made casual observations and took notes on phenomena considered relevant to the study.

Methods of analysis

Tapes of the think-aloud tasks and interview were transcribed, accompanied with notes from the observations, where appropriate. Portions of the responses in Indonesian were translated into English. The transcripts were coded using Strauss & Corbin's (1990) coding model. A sample of transcription, translation and coding were verified by other raters familiar with the respective fields for the purpose of triangulation.

Results

Fifteen students participated in the study but in order to allow for in-depth discussion of the findings, strategies of only two participants ("Dani" and "Mimi") responding to the same text (about education) will be presented. The selection of these participants is

based on their positions in the range of proficiency measured by the multiple-choice test. Dani and Mimi, who achieved the highest and lowest scores in the test (14 and 11, respectively, out of possible 17), are assumed to represent the two ends of the proficiency range represented by the participants.

Think-aloud protocols

In reading Text 1, despite the instruction to read it sentence by sentence, Dani started by skimming the whole text before focusing on the first sentence. After reading the first sentence he inferred that the American education in the nineteenth century was not advanced yet.

> "Ya, setelah membaca, saya, em, melihat atau membayangkan bahwa pada awal abad 19 Amerika itu belum begitu maju dan di bidang pendidikan khususnya." (Yes, after reading, I see or imagine that at the beginning of the 19th century America was not so advanced, especially in the area of education.)

Then he made an association with his knowledge about the present educational condition in America:

> "Kemudian, di sisi lain sebetulnya saya malah membandingkan dengan keadaan Amerika yang sekarang ini dalam bidang pendidikan yang sudah maju." (On the other hand, I am comparing it with America today which is highly advanced in education.)

Only after that did he paraphrase the sentence:

> "Di sini tersirat bahwa pada awal abad ke-19, em, sistem pendidikan di Amerika memerlukan reformasi." (It is implied here that at the beginning of the nineteenth century the educational system in America needed a reform.)

As soon as he read the second sentence he was puzzled and questioned the text content:

> "Untuk kalimat ke-2 di sini saya agak heran. Kenapa sampai terjadi bahwa masyarakat Amerika pada saat itu melihat bahwa pendidikan tidak begitu penting bagi anak-anak, dan mereka menganjurkan anak-anak mereka itu, em, menyiapkan diri untuk bekerja?" (For the second sentence, I am a bit puzzled here. How was it possible that the American people viewed education as unimportant for children and suggested that children should prepare themselves for life work?)

Once again he associated this with his knowledge about the present America when he commented, "Jadi ini bertentangan dengan, em, kesan saya, rakyat Amerika sekarang ini." (So it is contrary to my impression about the American people today.) However, he accepted it as a fact without any pretension to anything different.

> "Sebenarnya saya tidak mengharapkan hal yang lain karena ini mungkin fakta yang memang ada. Jadi saya cuma, em, membaca sejarah saja sebetulnya. Nggak apa." (I did not expect anything different as this was a fact. So I just read this history. Never mind.)

Upon reading the third sentence Dani referred to the second sentence and inferred what problems the reformers envisaged.

> "Kemudian kalimat ke-3. Yak, saya mendapat kesan bahwa para pelaku reformasi di sini itu benar-benar melihat bahwa pendidikan memang memang diperlukan. Jadi mereka mengantisipasi pendapat rakyat Amerika yang tersirat dalam kalimat ke-2 tadi." (Then the third sentence. Yes, I got the impression that the reformers here really saw that education was indeed needed. So they anticipated the American public opinion implied in the second sentence above.)

Evaluating the text content, Dani justified what the policy maker (Horace Mann) did.

> "Dan saya kira ini wajar karena orang yan terdidik atau yang melakukan 'policy' terhadap pendidikan itu memang harus melakukan hal-hal semacam ini. (And I think this is natural because educated people or policy makers in education should take such measures.)

Moving to the first sentence of the second paragraph, he showed his agreement to what Horace Mann did when he said, "Saya sangat senang dengan tindakan dari Horace Mann di sini bahwa dia melakukan tindakan yang nyata." (I am very pleased that, here, Horace Mann took real measures). This evaluation of text content (showing agreement) must have been preceded by Dani's inference on Horace Mann's views and efforts, because when the researcher asked for clarification, "Tindakan nyata, ya? Maksudnya?" (Real measures. What do you mean?), he said:

> "Ya. Jadi dia merasa kecewa sekali dan menganggap rakyat Amerika itu harus terdidik, tidak boleh tidak terdidik. Saya sangat senang dengan pendapat dia. (Yes. So he was very disappointed and demanded that the American people must be educated. They must not be uneducated. I appreciate his opinion.)

Then, again, he made an association with, and reiterated his expectation of, the condition in Indonesia, followed by his agreement on Horace Mann's views.

> "Jadi saya juga membayangkan seharusnya di Indonesia juga begitu, saat membaca ini.Ya. Jadi dia merasa kecewa sekali dan menganggap rakyat Amerika itu harus terdidik, tidak boleh tidak terdidik. Saya sangat senang dengan pendapat dia." (On reading this sentence I imagine that the condition in Indonesia should also be like this. Yes. So he (Horace Mann) was very disappointed and claimed that the American people must be educated. They must not be uneducated. I am pleased with his view.)

Only after making evaluation based on his inference about the first sentence of the second paragraph and that of the whole first paragraph did Dani point out his understanding of the sentence when he paraphrased it as follows: "Jadi dia merasa kecewa sekali dan menganggap rakyat Amerika harus terdidik." (So he was very disappointed and claimed that the Americans must be educated.) And again, he reflected his association with the condition in Indonesia when he said, "Jadi saya juga membayangkan seharusnya Indonesia juga begitu." (I think that Indonesia should also be like this.)

Moving on to the next sentence, Dani praised Horace Mann's sincere efforts to achieve the goal of making the American people educated when he said:

> "Dia begitu bersungguh-sungguh dalam mewujudkan keinginannya untuk menjadikan masyarakat Amerika itu terdidik, dan dia melakukan atau mewujudkannya dengan perubahan-perubahan yang nanti akhirnya mungkin akan bermuara terhadap keinginan yang ingin dia capai di masyarakat Amerika." (He was sincere in realising his ambition to make the American people educated, and he realised it by making changes which would, eventually, result in the ideal he wanted to achieve for the American society.)

Again, he associated Horace Mann's efforts with the condition in Indonesia. He said:

> "Di Indonesia, orang-orang semacam ini memang perlu sekali. Perlu sekali ada, dan mungkin kalau sudah ada juga perlu melakukan tindakan semacam ini." (In Indonesia, people such as this (Horace Mann) are badly needed. They are badly needed, and when they are available, they also need to make such efforts.)

As for the next sentence, Dani directly associated it with the current situation in Indonesia and praised Horace Mann's policy while indirectly criticising the policy-makers in the Indonesian education when he commented:

> "Kalau seorang pembuat kebijakan itu mencetuskan kebijakannya, juga jangan hanya menargetkan satu hal agar tujuannya tercapai saja, tapi juga harus memikirkan orang-orang atau apa saja yang akan ikut serta dalam ... merubah atau melakukan perubahan tersebut. Saya melihat Horace Mann yakin akan pendapat dia. Dia melakukan perubahan ... saya yakin untuk perbaikan. Di sini saya yakin bahwa guru akan merasa senang membantu ... karena dia tidak dijadikan obyek saja, tetapi juga dijadikan orang yang ikut serta melakukan perubahan, dan diperhatikan. Di Indonesia harusnya begini juga." (When policy-makers made a policy, they should not only consider the goal, but they should also think of the people who will be involved in the changes (the process). I see that Horace Mann was confident in his policy. I am sure that he made changes for improvement and that teachers would be happy to participate as they were not only made objects, but also subjects, of the change, and they received due attention. It should also be like this in Indonesia.)

Upon the conclusion of the passage, Dani confirmed his prediction about the outcome of Horace Mann's efforts when he said:

> "Saya sudah memprediksi bahwa akhirnya yang terjadi akan sesuai dengan kalimat terakhir ini. Perubahan dalam bidang pendidikan memang nggak bisa 'instant', langsung terjadi, karena yang diubah bukan benda, dalam arti merah menjadi hijau, tapi pendapat masyarakat yang tidak dapat diubah langsung secara drastis. Tapi ada point positif dari tindakan Horace Mann ini, yaitu ada suatu peningkatan kesadaran terhadap pendidikan." (I already predicted that what happened in the end would be in accordance with the last sentence. A change in education cannot be instant; it is not a matter of turning something from red to green. What is to be changed is public opinion which cannot be changed drastically. However, there is a positive point about what Horace Mann did, i.e. increased awareness as to education.)

For the same text, when asked to start reading it sentence by sentence and to report what was going on in her head while reading, Mimi responded by skimming the whole text before focusing on the first sentence. When the researcher asked her for the second time to think aloud on the first sentence, she started by paraphrasing it.

> "From the first sentence, I am sure that the author here wants to state that the educational system needs a reform, meaning that something wrong ... needs to be better solution."

For the second sentence, she subvocalised the words 'the very rich' and 'strong sentiment' and read the whole sentence aloud and commented:

> "I need to underline the words 'strong sentiment' here, as if the author states that education here is not so important for the children because they will be just laborers. So they should not waste their time in education. And something more important for them is preparing themselves for their life work. So may be the 'technical skills' that they need in their life. But I am not sure, em, because I don't know exactly what the author means by the word 'prepare' in life work here. So I need to read longer, or the next sentences, right?"

Besides being not sure about the meaning of some phrases, Mimi seemed to get confused with the party believing that education was not important for those who would be laborers. Was it the author, Horace Mann, or the American public?

For the third sentence, Mimi started by making a comprehensible paraphrase:

> "It tells us that ... that's the problem ... that's the ... the problem that public faces, ya. And that's the things that the reformers or the educational reformers em ... have to do or have to solve. Because here I read the word 'task'."

However, confusion seemed to occur when she said: "So what is to be the strong sentiment of the public is the educational reformers. Does it so?"

But she then ventured to summarise the gist of the sentence when she said:

> "The main idea here is that the author wants to express or state the strong sentiment of the public about the educational system in America ... that the schools ... the private schools there are not so important for the children. Or it means that the author is not so ... what is the opposite of 'pessimistic'? Oh, ya, he is not so optimistic with the result of educational system in America ... from this first paragraph."

Moving on to the fourth sentence, Mimi's confusion was apparent when she said:

> "Ini ... agak heran ini." (It is surprising.) "The reformers, one of the reformers, em, Horace Mann, felt that there was no excuse in a republic for any citizen to be uneducated. I wonder why, because em, I'm sure and I think that education is very important for everyone, especially for children, right? So I don't know why this man or this famous reformer, Horace Mann, felt that the education in America, in a republic, is not so important because he said that there was no excuse in there for any citizen to be uneducated."
> "Jadi saya membayangkan em ... nggak ada masalah, nggak ada ... nggak perlu disalahkan kalau di negeri tersebut orang-orang itu uneducated. Gitu. (So I imagine that there was no problem; no one should be blamed if the people were uneducated. That's it.).

For the fifth sentence, Mimi paraphrased the gist of the sentence and questioned what came next.

> "As Superintendent of Education Horace Mann made changes. Then the changes applied or done in various school districts around the country. Em, dan saya berpikir dari kalimat ini, kemudian (Em, and then from this sentence I am wondering) what changes, what kind of changes that the Superintendent of Education here did."

For the sixth sentence, Mimi subvocalised it, confirmed his prediction about what came next, paraphrased the sentence, and made an association with the Indonesian condition.

> "Oh, the ... alternative that ... that ... he ... 'he' here is Horace Mann or .... ya, Horace Mann. ... Em, the solution or the alternative that he offered here are: first, improving the quality of teachers by instituting teacher education and raising their salaries. And I think that because offered solution here are very good, maybe it can be implemented ... it can be done in our country too. Raising the salary of the teachers ... it will encourage it ... em ... it will encourage the teachers to improve their quality of teaching ... to make them better teachers, right?

Having never been involved in any discussion about, or being ignorant of, the length of school year, Mimi was puzzled with the discussion on the change of the school year.

> "And I don't know exactly what, what the author here means by five six months. The school year from five to six months per semester or, I don't, the school year from five to six months. Maybe the previous time the school year is five months, right? And the change here is, em, from five to six months. So the length of the school year is longer, longer, ya?"

Upon reading the last sentence, Mimi made the following conclusion:

> "Above all, ... em ... the conclusion of the last sentence is that the ... the need for further strengthening of the system ... for educational system in America is ... badly needed. Em ... 'further strengthening' ... it means that the educational system is not so good in the opinion of the public or the educational experts. Em, ya, but the changes or the things that change ... in the prior sentence here... didn't bring about a sudden improvement in the educational system.

Dani's and Mimi's strategies of comprehending Text 1 as presented above may be summarised in the following table.

Table 2   Dani's and Mimi's strategies and their frequencies in comprehending Text 1

| | Dani | | Mimi | |
Strategy	Frequency	%	Frequency	%
Skim	1	2.86	2	4.4
Infer	5	14.29	7	15.6
Paraphrase	7	20	9	20
Make an association with b. knowledge	7	20	2	4.4
Predict/anticipate content	1	2.86	3	6.7
Evaluate (e.g., agree, disagree, question text content)	8	22.9	2	4.4
Monitor comprehension (e.g., question meaning of word, phrase, or sentence; vocalise or subvocalise; focus attention)	1	2.86	12	26.7
Establish intersentential relation	1	2.86	3	6.7
Recognise text structure	-	-	1	2.2
Guess meaning from context	2	5.7	3	6.7
Provide illustration	2	5.7	-	-
Summarise	-	-	1	4.4

Retelling

Dani's and Mimi's points of retelling (with original wording preserved, particularly where ambiguity occurs) are as follows.

Dani's retelling
• In the ninenteenth century, public awareness of the importance of education was still low despite the existence of private schools.
• The majority of the American people thought that children should not waste their time at school, but should prepare themselves for work.
• As a superintendent of education Horace Mann opposed this public opinion. He pointed out that Americans must be highly educated.
• He made changes to realise his ideals.
• He changed the academic year from five to six months.
• Horace Mann carried out the reform wisely, i.e. by raising the teachers' salaries and inviting them to participate in making the changes.
• Although the result was still below his expectation, there was a positive point, i.e. the awareness as to the need for education was taking shape.

Mimi's retelling
• In the nineteenth century American education needed reform.
• There were many private schools but they were just for rich people.
• There were a few public schools but people did not respectfully believe the result of the system applied in public schools. (?)
• Reformers had the task to make changes to improve the strong public sentiment about education in America. (?)

- Horace Mann felt that there was no excuse in a republic for citizens, the people there, as uneducated. In other words, Horace Mann stated that it was not a problem if citizens did not become educated.
- Then the Department of Education initiated changes that matched in other districts. (?)
- The changes were improving the quality of teachers by instituting their education, raising their salaries and lengthening the school year from five to six months.
- The changes did not bring about sudden improvement but at least it encourages the opinion of the public. (?)

Using the retelling assessment criteria for this study (Table 1), Dani scored 3 out of possible 5. His reconstruction of the passage generally follows the line of thought represented in the passage. The retelling contains all the main ideas of the passage, but there are a few details he failed to mention, including the existence of public schools which have implications in the passage. Despite a number of generalisations beyond the text and illustrations he provided in the think-aloud session, they do not appear in his retelling. For her retelling, Mimi scored 2 out of possible 5. Despite the higher number of main ideas and details mentioned, confusion was apparent in her retelling. She thought that it was Horace Mann who believed that there was no problem if the American people were not educated. Her conclusion is also ambiguous; it suggests that she was not sure about the gist of the last sentence.

Multiple-choice test

As mentioned earlier, Dani answered 14 out of 17 multiple-choice questions correctly. His score is the highest among the fifteen participants. In contrast, with 11 correct answers, Mimi obtained the lowest score among the participants.

Interview

An interview to discuss answers to the multiple-choice questions has revealed additional information about Dani's and Mimi's text comprehension processes. Both Dani and Mimi associated the word 'sentiment' (opinion) in the first sentence with the word 'sentimen' in Indonesian (meaning dislike, envy, or ill-feeling). While Dani chose the word 'opinion' as the meaning of 'sentiment' in this context, Mimi stuck with the Indonesian word 'sentimen' and considered the word to mean 'disagreement'. Both Dani and Mimi were not sure about the meaning of the word 'matched' in the fifth sentence, but they both considered the word would mean 'applied'. From the interview it was confirmed that Mimi failed to comprehend the meaning of the expression containing double negatives '... there was *no* excuse for citizens to be *un*educated'. She interpreted the expression as '... there was no problem if the citizens did not become educated'.

Observation notes

The researcher realises that video recording would provide a more accurate and complete picture of the participants' behaviour throughout the data collection process, but it has the potential of revealing the participants' identities and may discourage participation. However, from the casual observation notes, there are a number of phenomena worthy of mention. Firstly, Dani and Mimi both started the think-aloud task by skimming the whole text despite the instruction to think aloud the text sentence by sentence. Secondly, while Mimi's think-aloud protocol indicates regressions in her comprehension process, most of the time she pointed her finger to the word(s) she was

attending to. Thirdly, Dani seemed to be unsure about the meaning of the word 'superintendent' and avoided commenting on it in the think-aloud and retelling sessions.

Comprehension problems

In the interview both Dani and Mimi claimed that vocabulary was their main problem in comprehending texts. They also admitted that some units posed more problems than the others. For example, they claimed that linguistics was the most difficult subject in their study. They said that there were many concepts they had to learn apart from the many difficult words found in most of the texts on linguistics. For Dani sentence constructions generally pose no problem. Mimi did not explicitly admit that sentence constructions are problematic, but the think-aloud task, retelling and test discussion reveal that she failed to provide a correct interpretation of '... there was no excuse for citizens to be uneducated'. In addition, she mentioned that discussion of test answers such as the one conducted in the current study provided her with some insight about which areas of learning she still needed to struggle.

Discussion

The observation note reveals that both Dani and Mimi started reading by skimming the whole text, despite the instruction to read it sentence by sentence. They sought the gist of the whole text before reading parts. This indicates that their strategies follow top-down processing, which is characteristic of the strategies of good readers (Clarke, 1980; Block, 1992; Adamson, 1993). However, a closer look at the summary of Dani's and Mimi's strategies presented in Table 2 reveals that top-down processing is not always the case. In addition, despite some similarities there are differences in the patterns of Dani's and Mimi's strategy uses.

One striking feature of Dani's strategies is the number of occurrences of four strategies – inferring, paraphrasing, making an association with background knowledge or experience, and evaluating text content. Despite the presence of a number of similarities Dani's strategy profile contrasts with that of Mimi. While Dani's inferring and paraphrasing strategy occurrences account for 14.29% and 20%, respectively, of the total occurrences of the strategies he used, Mimi employed 15.6% and 20%, respectively. While Dani's association with background knowledge and evaluation account for 20% and 22.9%, respectively, Mimi employed only 4.4% for each of these strategies. On the other hand, while Dani's monitoring comprehension accounts for only 2.86% of the total occurrences of the strategies used, Mimi's use of the same strategy accounts for 26.7% of her total strategy occurrences. From this phenomenon, there appears to be a general pattern of strategies used by the two participants in comprehending the same text.

While Dani's strategies tend to form a pattern of "one of, or the combination of, inferring, association with background knowledge and evaluation, followed by paraphrasing", Mimi's strategies appear to follow a pattern of "monitoring comprehension followed by paraphrasing, concluded by inferring". The patterns may be represented as follows:

Dani's strategy pattern: (infer - associate - evaluate) ---> paraphrase.
Mimi's strategy pattern: (monitor - paraphrase) ---> infer.

Dani's strategy pattern, with paraphrasing mostly comes after inferring, suggests that he comprehended the sentence as soon as he read it. His paraphrase confirms his inference

of the sentence. This implies that Text 1 was relatively easy for Dani. In contrast, Mimi had to work hard to comprehend the text. This can be seen from her monitoring comprehension strategy which accounts for 26.7% her total strategy occurrences. For most of the sentences, he started by vocalising or subvocalising parts or the whole sentence, focusing attention on, or, questioning the meaning of a word or words before attempting to paraphrase the sentence. Only after going through these stages did she make an inference. This pattern of stages taken follows the bottom-up processing, which is characteristic of the strategies of poor or less proficient readers. This implies that the text is difficult for Mimi. This is consistent with Aron & Baker's (1991:122) claim that readers use top-down processing when they read the material with which they are not familiar. Despite Block's (1992:337) assertion that questioning and monitoring is part of good reading, Mimi's questioning and monitoring belong to low-level metacognitive strategies (Wongbiasaj & Chaikitmongkol, 1995:114). On the other hand, Dani's ability to evaluate text content, provide relevant illustrations and make frequent and relevant associations with his background knowledge and experience confirm his status as a good reader.

What contributions did the complementary methods (retelling, comprehension test and interview, and observations) make?

Firstly, without observation notes, Dani's and Mimi's skimming strategies would not have been detected from the think-aloud protocols. Secondly, Dani's doubt about the meaning of 'superintendent' in the think-aloud task was confirmed in the retelling. While the word did not seem to receive attention in the think-aloud session, it was not mentioned in the retelling either. As for Mimi, while her misunderstanding of the double negative construction was confirmed, other strategies such as giving further illustration and making evaluation were revealed. Thirdly, the discussion of the comprehension test answers in the interviews confirmed the reader's comprehension or miscomprehension in the think-aloud task. In addition, it also provides cues about what caused miscomprehension. For example, Mimi's misunderstanding of the word 'sentiment', which confused her in the think aloud task, was revealed in the interview. She mistook the word 'sentiment' which means 'opinion' for 'sentimen' in Indonesian which means 'dislike' or 'ill-feeling'. This word also posed a problem for Dani, but from the context he made an accurate guess that it was 'pendapat' (opinion), thus revealing his use of the guessing strategy based on context. Without the interviews, Mimi's confusion could not have been explained, while Dani's use of the guessing strategy would not have been detected. Hence these contributions justify the argument for the use of the multi methods in this study. Employing the think-aloud task alone might not have been able to reveal some of the strategies and phenomena reported in this study. Other than strategies and phenomena reported, the in-depth interviews also revealed problems the subjects generally encountered in reading texts in English.

Conclusion

The study reflected in this paper is still in progress and only the participants' responses to the first text are reported. Therefore, the writer does not claim that the results are conclusive. However, the application of the retelling, the comprehension test, the interview and the observations to complement the think-aloud task has extended the data coverage and allowed for a check on the validity of the data elicited through the think-aloud task. Although the participants of this study are above-average students in the Indonesian context, their strategy use still shows the characteristics of less proficient native readers. They display a range of patterns of strategy use similar to the patterns

used by native readers. Some of these patterns may reflect good readers' strategies, while some may reflect poor readers' strategies. While Dani's strategies approximate to a good native reader's strategies, Mimi adopts strategies of a poor native reader.

Implications

Research implication

While only reading texts in a reading test was investigated through think aloud tasks, retelling and interviews in this study, the application of these multi methods in future research may lead to better and more comprehensive insights into the processes of comprehending other forms of written language.

Implication for lecturers

The first text the participants were asked to read in this study is about education. It was assumed that all the participants were familiar with this text as they were student-teachers in the last year of their undergraduate study. In addition, despite Mimi's lowest score in the multiple-choice test, she was one of the 'above-average' students among her peers. Yet, she still had difficulty comprehending a text relevant to her major. It can be assumed that international students at the undergraduate level from non-English speaking background (NESB) may have more serious problems in understanding the materials they are assigned to read. The implication is that lecturers should not make assumptions that all non-native readers use the same sort of range of strategies as native readers. Although the participants of this study are above-average students in the Indonesian context, their strategy use still shows the characteristics of less proficient native readers. Many of the international students coming from the NESB may be less proficient in reading than the participants of this study so that more attention and help may be required. While merely understanding texts is still difficult for these students, reading texts critically, which is demanded of university students, will be more difficult. Therefore, the volume of materials the students are expected to read needs to be considered.

Despite the assumption that students are competent in reading and other language skills as they have passed the English test before they enter the university, all lecturers should share responsibility of helping the NESB students to develop themselves into proficient readers in order to enable them to participate in the mainstream. Lecturers should not take reading comprehension for granted, as is a complex task for NESB students. Students approach it in a variety of ways, some effective and some are not. They need to develop their reading skills by the help of all lecturers.

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