
Title	Higher order reading comprehension skills in literature learning and teaching at the lower secondary school level in Singapore
Author(s)	Goh Soo Tian
Source	6 th Institute of Language in Education International Conference, 17 – 19 December 1990, Hong Kong

Copyright © 1990 The Author

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

Citation: Goh, S. T. (1990, December). *Higher order reading comprehension skills in literature learning and teaching at the lower secondary school level in Singapore*. Paper presented at the 6th Institute of Language in Education International Conference, Hong Kong.

This document was archived with permission from the copyright holder.

EP203
AAN1104

Higher order reading comprehension skills in literature
learning and teaching at the lower secondary school level in
Singapore

Goh Soo Tian

Paper presented at the 6th Hong Kong Institute of Language
held at Hong Kong
December 17-19, 1990

*(Institute of Language in Education International
Conference)*

**INSTITUTE OF EDUCATION
LIBRARY SINGAPORE**

EP203
MA

Higher Order Reading Comprehension
Skills in Literature Learning and
Teaching at the Lower Secondary
School Level in Singapore
- A paper presented at the 6th
International Conference, Hong Kong
Institute of Language in Education,
17 - 19 December, 1990.

Goh Soo Tian
Head, English Studies Dept
Institute of Education
Singapore

December 1990

INTRODUCTION

This paper reports on the Literature Learning Project (LLP), a research study undertaken by the English Studies Department, Institute of Education, Singapore in 1989. The Project has a two-fold purpose. The first concern is a practical one: to find out how well students at the lower secondary level are coping with their literature texts. The second concern is more theoretical in nature: to test the hierarchical properties of Hillocks' taxonomy of skills in reading and interpreting fiction.

THEORETICAL BACKGROUND

The theoretical issue behind the research study will be dealt with first. Rosenshine (1980), after reviewing extant lists of reading comprehension skills and examining the re-analyses (Davis, 1968, 1972; Spearritt, 1972; Thorndike, 1973) of the data first presented in Davis' original study (1944), arrived at this conclusion: (a) there was no clear evidence to support the naming of discrete skills in reading comprehension (b) factor analytical studies hitherto did not reveal anything about the hierarchical nature of the skills concerned. Nevertheless, the component-skills view of reading comprehension has greatly influenced textbook design and classroom instruction in reading education over the last two decades despite its lack of theoretical support. The debate between the advocates of the component-skills and the holistic approaches to reading comprehension instruction to date seems unresolved. However, work in the areas of schema activation (Anderson, 1977; Kintsch and Greene, 1978; Spiro, 1980) and metacognition (Flavell and Wellman, 1977; Brown, 1980) seems to show a major paradigm shift in reading comprehension research and that the experimental means for tapping skills and subskills in the reading process may not give a true picture of their functioning in real life situations.

The questionable assumption of isolating separable component skills in reading comprehension aside, the related issue of whether the skills as they are commonly listed are ranked in hierarchical order is the question which this research study addresses. In spite of Rosenshine's dismissal quoted earlier, the skills hierarchy problem has been less well investigated. Rosenshine's classification of the skills under three general types: locating skills, simple inferential skills and complex inferential skills merely confirms the traditional practice of broadly differentiating between the literal and the inferential level of reading comprehension. That making inferences requires more complex processing involving higher order skills than factual

recall and recognition seems to be a matter of simple logic or even common sense that does not warrant formal verification. However, as Pearson and Johnson (1978: 164) point out, "Questions which on the surface look like they require simple, straightforward, literal recall of factual details may in fact require a complex set of inferences which involve the integration of textual and scriptal information."

The work of Hillocks and Ludlow (1984) on a taxonomy of skills in reading and interpreting fiction appears to be the only piece of empirical research in the area of skills hierarchy. According to Hillocks (1980), before students can deal with the abstractions which structural analysis involves, they must be able to deal with the literal and inferential content of the work. If they cannot infer the relationships among characters and events as well as the ideas which those relationships imply in a particular work, it will have little or no meaning for them. Thus, in addition to the literal, simple and complex inferential skills identified by Rosenshine, he added a further higher-order skill type: understanding the structural organization of a work. Hillocks' taxonomy has seven skill types organised under two broad levels:

Literal Level of Comprehension

Basic Stated Information (BSI)
Key Detail (KD)
Stated Relationship (SR)

Inferential Level of Comprehension

Simple Implied Relationship (SIR)
Complex Implied Relationship (CIR)
Author's Generalization (AG)
Structural Generalization (SG)

Question sets using the taxonomy were prepared based on four short prose fiction texts. The question sets were each administered to between 77 and 127 students from grades seven to twelve. Responses were scored using a partial credit scoring design. The data, analysed with the Rasch Rating Scale model, confirmed the hierarchical and taxonomic nature of the item types in the taxonomy.

PRACTICAL CONSIDERATIONS

The Hillocks and Ludlow research was published in 1984. It was felt that a replication of their study with a larger sample, comprising students in Singapore schools would be a worthwhile project. Apart from the theoretical objective of testing the Hillocks taxonomy, the study would also satisfy certain practical considerations, though reading research in the Singapore context has gradually moved away from a primary school focus to the secondary school level in the more recent years, there was no study which addresses the problems students encounter in reading and comprehending texts of a literary nature. Widdowson's distinction between the study and the learning of literature (1985: 184) is particularly relevant to students at the lower secondary level. To what extent is the literature learning a matter of learning how to read and process the text? More specifically, are these students able to go beyond the literal level of comprehension and apply the higher-order inferential and structural skills in understanding and interpreting their literature texts? Answers to these practical questions would provide useful input in literature methods courses at the Institute of Education.

PROCEDURES

Inventory Construction

Three short stories commonly included in the lower secondary school literature curriculum were selected: "The Necklace" by Maupassant, "An Incident" by Lu Hsin and "The Goalkeeper's Revenge" by Bill Naughton (the first two were the English translation versions). Three question sets applying the Hillocks taxonomy were devised for the texts. These question sets were examined by literature graduate students and experienced teachers of literature and were found to conform to the taxonomy. They were trialed on a small scale and found to contain no serious anomaly. The question sets can be found in the Appendix.

Sample

The revised question sets were administered in six sample schools comprising a Special Assistance Plan (SAP) school, three government secondary schools and two mission schools. Table 1 shows the distribution according to level and stream of the total sample.

Each question set was administered during two normal class periods comprising 70 minutes. The students were allowed to refer to the texts as they answered the questions. None of the three short stories had been taught to the classes prior to administration of the inventories.

Scoring

A partial credit scoring system was used. Two points were awarded for a right answer, one point for a partially right answer, and zero for a wrong answer. Responses were marked as "right", "partly right" and "wrong". The criteria for each category of response were developed and a training workshop for the six markers, who were literature graduate students, was conducted. After the first round of practice marking a standardisation session was held to ensure inter-marker consistency. The reliability correlations between the two markers for each of the three texts were: .91 for "The Necklace", .88 for "An Incident" and .93 for "The Goal-keeper's Revenge."

Data Analysis

The base data for the processing and analysis of the results are the scores of each person (in the form of a response string e.g. 2 2 2 1 1 0 0) and item total scores. To answer the first research question, ie. how well did the students perform in the higher order comprehension questions as compared to the literal questions, the item total scores were examined. To answer the second research question, i.e. whether the item types on the Hillocks taxonomy were hierarchical and taxonomically related to each other, a more elaborate statistical treatment of the data was necessary. This required a measurement model that could compute a) estimates of item difficulties, b) yield person ability estimates in the same linear metric as the items and c) provide a means of testing the fit of the data to the model (Hillocks and Ludlow, 1984:16). The model chosen was the Rating Scale model, and the computer programme BIGSCALE (Wright, Linacre, and Schultz, 1989) was used to process the data.

RESULTS

Table 2 presents the total item scores for the seven item types in the three texts. A comparison of the scores for the three items in the literal level and the four items in inferential level (see Table 3) shows a sharp drop indicating a general inability to make the leap from the lower to the higher order

comprehension level. This is not unexpected, but what is surprising perhaps is the extremely low scores especially for the AG and SG items. The students did not fare too well either in the two items requiring making of inferences. The sharp decline from the literal and inferential scores is particularly noticeable in the case of the "Goalkeeper" text. The fact that the students were able to understand this text very well at the literal level (over 85% average) did not ensure their performance at the inferential level (about 18%). Thus the hypothesis that students at the lower secondary school level are generally unable to answer higher order comprehension questions in their literature learning is strongly supported by the research data.

As for the second research question, whether the item types in the Hillocks taxonomy are hierarchical and the relationship between the items is taxonomic, a brief examination of the Rating Scale analysis follows. Table 4 presents a summary of the Rasch Model statistics. In the table, scale value refers to the item difficulty estimate. A negative scale value indicates a relatively easy item while a positive scale value indicates a relatively hard item. The standard error is an estimate of the precision of the scale value. The fit T is an approximate t-statistic testing the reasonableness of the scale value estimate. Sample statistics are based on the person ability distribution. It must be noted that the scale values for the three question sets cannot be compared without further analysis.

A general look at the scale values shows that the item difficulties in the three question inventories do conform to the hypothesis, ie. BSI is the easiest item and SG is the hardest item. The standard errors indicate a clear separation of item locations on the whole. The item fit statistics do not suggest any serious anomaly. An inspection of the residuals for the persons with a fit of $t > 2.0$ reveals that the number of poorly fitting persons is low : 7, 16 and 6 for the three texts respectively. The extent of the misfit is also fairly low, not exceeding > 3.0 in most cases with the exception of two persons for the "Necklace" text who have untypical response strings of : 2 0 2 0 2 2 and 2 1 1 0 2 2 1 given their ability levels of 1.51 and .88 respectively.

Two other observations can be made. The first is the reversal of the order of the scale values for KD and SR in the "Goalkeeper" text. The SR item should be more difficult than the KD item according to the prediction. But the scale values show otherwise. This can be explained by the fact that the SR question, "Why was Sim asked to join the Clinic Street special school?" proved slightly easier than the KD question, "Who was Bob Thropper?" The answer for the KD is directly stated ("... the captain, Bob Thropper, threatened him") but the information is not

highlighted. On the other hand, though the answer for the SR question requires more complex processing of the text, the reader can rely on extra-textual knowledge to supply a reasonable answer. The part of the text containing the answer reads:

"It was near the end of the season, and Scuttle Street were at the top of the league and in the final for the Mayor's Shield, when a new and very thorough inspector visited the school. He found Sim's scholastic ability to be of such a low order that he directed him at once to Clinic Street special school."

Qualitative analysis shows that many of the partial credit responses seem to depend more on the students' prior knowledge involving a "special school" schema than a close translation of textual information. Some of the responses are: "Because he failed his exams" and "Sim was kicked out because he did badly in his studies".

The other point is the rather high scale values at the two extreme ends for the "Goalkeeper" text. The BSI has a scale value of -6.35 and the SG has a scale value of 5.64, both far exceeding the +2 limit for acceptable item difficulty. An inspection of the item total score shows that only ^{one} person did not get the item correct for BSI and that conversely, only one person could answer the item correctly for SG! Thus on the whole, the research question about the hierarchical and taxonomic nature of the item types in the Hillocks taxonomy is satisfactorily answered. The results strongly shows that the items in the taxonomy are hierarchical in nature and are taxonomically related to each other.

DISCUSSION

The theoretical issue of the hierarchical nature of reading comprehension skills inventories is still largely unresolved. But this study has clearly demonstrated that one particular inventory, that is, Hillocks' taxonomy in reading and interpreting fiction is in fact hierarchical in nature. The performance of the subjects in the sample points to the fact that students at the lower secondary school level need a great deal of help in answering questions involving inferential and structural generalizations. A check with teachers of literature reveals that while most of them are aware of the problem they are not very certain as to how to teach the inferential comprehension skills. Many also feel that the majority of their students are still struggling with basic reading comprehension problems because of a generally low language proficiency. This often made claim is however not supported by the results as most of the students were able to perform reasonably

well at the literal level. This shows that they possess sufficient language ability to comprehend their literature texts at a factual level. The Hillocks taxonomy can serve as a useful guide to teachers in their classroom questioning and in setting test questions.

Qualitative analysis of the student responses to the questions provides some pointers as to how teachers can help their students to make the transition from the lower to the higher order comprehension skill level in literature learning. The KD question in the "Necklace" text gives one illustration. The question appears quite simple: "What did Mathilde's husband bring home one evening?" All the graduate students and literature teachers who were given the question sets to examine found that this question conforms to the Key Detail type, that is, a low order question. The poor performance (51.5%) of the students prompted a close examination of the question-answer relationship or QAR (Pearson and Johnson, 1978) which governs the actual difficulty or ease in deriving the correct answer. The part of the text that contains the answer reads:

"But, one evening, her husband returned home with a triumphant air, holding a large envelope in his hand."

This is followed by the wording on the invitation card itself, distinguished by smaller print and set within quotation marks:

"The Minister of Public Instruction and Mme Georges Rampenneau request the honour of M. and Mme Loisel's company at the palace of the Ministry on Monday evening, January 18th."

The words "an invitation to a ball" are not directly stated, and students are expected to make the following connection: the "large envelope" contains the invitation of the Minister of Public Instruction to Loisel and Mathilde to a formal occasion at the palace. The fact that about half the 161 students were unable to answer this question shows that they were unable to make the connection. First of all, the teacher can help by establishing the "invitation to a ball" schema. The idea of a ball (surely they would have encountered in their prior knowledge Cinderella going to a ball?) which is explicitly stated later in the story seems to present a cultural problem. The teacher can then draw the students' attention to the structural clue signalling an important detail, "But, one evening ...". Further textual signals like the indentation and smaller print should also be pointed out. Such skills are generally considered as part of reading comprehension, but they need to be highlighted in literature lessons and explicitly taught.

Implications for Further Research

This study has addressed the issue of literature learning at the lower secondary level, using only the short story. Similar studies extended to the upper secondary and junior college levels involving a wider range of texts including other genres of poetry, the novel and dramatic literature would contribute a fuller data base. Such research would be able to throw light not only on student learning but how teachers can improve their teaching of literature. The current trend in literature teaching is toward a more response-centred approach. Terms like "student involvement", "personal engagement" and "emotional response" are fairly commonly used, often approvingly. It would be interesting and useful to see how this response dimension could be explored and possible item types added on to the Hillocks taxonomy. Questions on how response is to be assessed and how response items are to be ranked in a hierarchy involving other comprehension skill types, of course, pose a challenge to the would-be researcher who undertakes such a task.

Goh Soo Tian
Head, English Studies Department
Institute of Education

Table 1: Distribution of the Sample

<u>Text</u>	<u>Sec. One</u>		<u>Sec. Two</u>		<u>Total</u>
	<u>N*</u>	<u>E*</u>	<u>N</u>	<u>E</u>	
The Necklace	42	40	40	39	161
An Incident	95	86	80	73	334
The Goalkeeper's Revenge	43	48	35	50	176
	180	174	155	162	671

*N = Normal Stream, E = Express Stream

Table 2: Item Total Correct Scores

	<u>Item Type</u>	<u>Total Score</u>	<u>Percentage</u>
The Necklace n = 161	BSI	228	70.8
	KD	166	51.5
	SR	163	50.6
	SIR	145	45.0
	CIR	58	18.0
	AG	19	5.9
	SG	9	2.8
An Incident n = 334	BSI	615	92.1
	KD	609	76.2
	SR	395	59.1
	SIR	227	33.9
	CIR	164	24.5
	AG	104	15.6
	SG	79	11.8
The Goalkeeper's Revenge n = 176	BSI	351	99.7
	KD	286	81.2
	SR	288	81.8
	SIR	84	23.9
	CIR	73	20.7
	AG	58	16.5
	SG	1	0.3

Table 3: Comparison of Literal and Inferential Comprehension
Level Average Percentage Scores

	<u>Literal</u>	<u>Inferential</u>
The Necklace	57.6	17.9
An Incident	75.8	21.4
The Goalkeeper's Revenge	87.6	17.8

Table 4: Summary of Rasch Model Statistics

	Item Type	Scale Value	Standard Error	Fit T	Sample Statistics
The Necklace	BSI	-2.25	.13	-1.3	n = 161 Mean ability = -1.16 Standard deviation = 1.39 7 persons with t > 2.0 0 persons with t < -2.0
	KD	-1.22	.12	-3.8	
	SR	-1.18	.12	2.7	
	SIR	-.90	.12	2.1	
	CIR	.68	.15	-.4	
	AG	2.05	.23	.6	
	SG	2.83	.32	.3	
An Incident	BSI	-2.64	.13	1.9	n = 334 Mean ability = -.24 Standard deviation = 1.11 16 persons with t > 2.0 0 persons with t < -2.0
	KD	-1.39	.09	1.0	
	SR	-.59	.08	1.1	
	SIR	.46	.08	-.1	
	CIR	.92	.09	-1.9	
	AG	1.47	.10	-1.8	
	SG	1.77	.11	-.6	
The Goalkeeper's Revenge	BSI	-6.35	.90	.4	n = 176 Mean ability = .14 Standard deviation = 1.0 6 persons with t > 2.0 0 persons with t < -2.0
	KD	-1.78	.14	.2	
	SR	-1.82	.14	2.2	
	SIR	1.21	.12	1.0	
	CIR	1.40	.13	-1.2	
	AG	1.69	.14	-3.4	
	SG	5.64	.91	.3	

References

- Anderson, R. C. et al (1983). Effects of the reader's schema at different points in time. Journal of Education Psychology, 75, 271-279.
- Brown, A. L. (1980). Metacognitive development and reading. In R.J. Spiro et al (eds.) Theoretical Issues in Reading Comprehension. Hillsdale, N.J. Erlbaum.
- Davis, F. B. (1968). Research in comprehension in reading. Reading Research Quarterly, 3(4), 499-544.
- Davis, F. B. (1972). Psychometric research on comprehension in reading. Reading Research Quarterly, 7(4), 628-678.
- Flavell, J.H. & Wellman, H.M. (1977). Metamemory. In R. V. Kail & J. W. Hagen (eds.) Perspectives on the Development of Memory and Cognition. Hillsdale, N.J.
- Hillocks, G. (1980). Toward a hierarchy of skills in the comprehension of literature. English Journal, 69(3), 54-59.
- Hillocks, G. & L. H. Ludlow (1984). A taxonomy of skills in reading and interpreting fiction. American Educational Research Journal, 21(1), 7-24.
- Kintsch, W. & Greene, E. (1978). The role of culture-specific schemata in the comprehension and recall of stories. Discourse processes, 1, 1-13.
- Pearson, P.D. & Johnson, D. D. (1978). Teaching Reading Comprehension. Holt, Rhinehart & Winston, N.Y.
- Spearritt, D. (1972). Identification of subskills of reading comprehension by maximum likelihood factor analysis. Reading Quarterly, 8, 92-111.
- Spiro, R.J. (1980). Constructive processes in prose recall. In R.J. Spiro et al (eds.) Theoretical Issues in Reading Comprehension. Hillsdale, N.J. Erlbaum.
- Thorndike, R. L. (1973). Reading as reasoning. Reading Research Quarterly, 9(2), 135-147.
- Widdowson, H.G. (1985). The teaching, learning and study of literature. In H. G. Widdowson & R. Quirk (eds.) English in the World: Teaching the Language and Literatures. London: Cambridge University Press.

Appendix

The Question Sets

The Necklace

1. Who did Mathilde marry?
2. What did Mathilde's husband bring home one evening?
3. Why did Loisel make Mathilde write the note to Mme Forestier?
4. Why was Mathilde relieved that Mme Forestier did not open the box containing the necklace when she returned it?
5. Why did Mathilde tell Mme Forestier that she was the cause of her (Mathilde's) suffering?
6. What idea does the author suggest about how changeful life can be sometimes?
7. Explain briefly how the author uses contrast to bring out the meaning of the story.

An Incident

1. When did the incident happen?
2. What prevented the old woman from being seriously hurt?
3. Why did the author resent the rickshaw man's eagerness to help the old woman?
4. Why did the policeman tell the author that the rickshaw man could not pull him any more?
5. Why did the author say that the rickshaw man "asked for trouble" by helping the old woman?
6. What general conclusion about human nature does the author want us to draw from the story?
7. How does the author make use of contrast to bring out the central meaning of the story?1.

Appendix - cont'dThe Goalkeeper's Revenge

1. What was Sim's main interest in life?
2. Who was Bob Thropper?
3. Why was Sim asked to join the Clinic Street special school?
4. Why was Sim not allowed to play in the final for the Mayor's Shield?
5. Why was Sim close to tears when he spoke to Bob Thropper for the last time?
6. What general idea does the author suggest about human nature in this story?
7. What is the special significance of these words "I can buy them and sell them" in the story?