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Is anaphoric resolution instruction more effective than existing instruction at improving the reading comprehension achievement of secondary students with poor reading comprehension?

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IS ANAPHORIC RESOLUTION INSTRUCTION MORE EFFECTIVE THAN EXISTING INSTRUCTION AT IMPROVING THE READING COMPREHENSION ACHIEVEMENT OF SECONDARY STUDENTS WITH POOR READING COMPREHENSION?

BY

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USE OF THESIS

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Abstract

This study examined the effect of teaching anaphoric resolution skills on the reading comprehension of Year 10 students with poor reading comprehension. Two direct teaching programmes, an anaphoric resolution programme (A.R.Programme) and a reading comprehension skills programme based on the Unit Curriculum objectives of the Ministry of Education of Western Australia (U.C. Programme), were developed and taught to two groups of eleven Year 10 poor reading comprehenders. The two groups were pretested and posttested for anaphoric resolution skill and reading comprehension achievement, and the increases in mean scores were compared for significant differences using Analysis of Variance (ANOVA).

The Anova results showed that the A.R. Programme was significantly more effective at increasing both anaphoric resolution skill and reading comprehension achievement. After consideration of limitations these results are tentatively accepted.

Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or a diploma in any institution of higher education and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed

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CHAPTER 1

Introduction

Background

Within Western Australia effective reading comprehension is recognized as a pre-requisite to successful learning in secondary school. It has been suggested that average to good readers gain 80 percent or more of the information about a subject through reading (Reading to Learn, 1987, p. 5). Whilst this claim is empirically unsubstantiated, observations of teaching styles within secondary schools in Western Australia suggest that substantial amounts of student learning are dependent upon reading comprehension.

The reading comprehension skills of many secondary students remains a concern within Western Australia and at a national level. This concern is highlighted by the identification of literacy in the transition period from Upper Primary to Junior Secondary as one research priority for the 1992 - 93 ALLP (Australian Language and Literacy Policy) Children's Literacy National Projects funded by the Commonwealth Government of Australia.

Rationale

In recent years instructional strategies used by many secondary teachers in content areas to develop students' reading comprehension skills have included Effective Reading in Content Areas (ERICA) and Predicted Directed Sustained Silent Reading (PDSSR). These strategies are designed to encourage students to develop reading comprehension as a process by which they

use their existing graphophonic, syntactic and semantic language systems to interactively predict, confirm and comprehend text. Students survey text to activate existing knowledge and infer content, check content inferences against the information of the text and then integrate the information with existing knowledge, or conceptual structures known as schemata, to achieve understanding.

Despite being taught ERICA, PDSSR and similar strategies, many secondary students continue to have difficulty achieving in content area subjects. Teachers often intuitively attribute these difficulties wholly or in part to students' inability to comprehend text. One possible reason for these students' poor comprehension of text is that strategies like ERICA and PDSSR do not account fully for the shortcomings of students' background knowledge (i.e., schemata) and existing language systems.

Students who competently comprehend when reading mostly have well-developed schemata and language systems with which to interpret text meaning, whereas students who have difficulty comprehending when reading generally do not have well-developed schemata and language systems (Golinkoff, 1975/76). In the absence of well-developed schemata the latter students are more likely to depend on information encoded in the text's print to attain text meaning (Marshall & Glock, 1978/79).

Many teachers recognize when students have poor graphophonic and semantic language systems. When tackling new reading material they provide support to these students by including sight word and vocabulary development instruction. However, teachers have difficulty detecting when students have poor understanding

of rules required for syntactic processing, consequently the syntactic language system receives little or no support instruction (Adams, 1980).

Syntactic Rules

Syntactic rules act as a bridge between the visual, or surface structure, and the meaning, or deep structure, of text (Cooper & Petrosky, 1976). Some readers acquire these rules through reading experiences. Other readers (less able to meet the demands of the text) fail to acquire these rules through the same reading experiences (Adams, 1980). Readers who do not become competent in the use of syntactic rules in written text do so because of three interactive factors: the limited processing capacity available to them, the sophisticated nature of syntactic rules in written text, and the lack of opportunities to learn syntactic rules through reading experiences.

The poor word recognition competency of some readers can limit their ability to develop understanding of syntactic rules contained in text. Their reading is focused on graphophonic aspects of the reading process, reducing their capacity to process and acquire syntactic and other reading skills (La Berge & Samuels, 1974).

Syntactic rules contained in written text are also more difficult to learn than those readers may have already learned through listening (Adams, 1980). When listening, prosodic cues such as stress, pitch and pause convey clues about how words are grouped together. For readers this information is not explicit in the text, and syntactic rules are not supported in the same way as in oral discourse. Consequently, the

processing of these rules in text is more demanding when reading than when listening.

A corollary to s is that less proficient readers do not read extensively (Lamme, 1976). Therefore, if development of syntactic processing skills is related to the volume of reading undertaken, then less proficient readers have both insufficient and often inefficient experiences with which to learn the syntactic rules required for competent syntactic processing of text.

For students who have syntactic deficits one way of increasing understanding of such rules, and therefore increase their use may be to increase the quantity of reading. Given that previous reading experiences are unlikely to have resulted in development of understanding of syntactic rules this solution would appear to be inefficient.

Another way to increase syntactic processing skills is to directly teach such rules to students. It was hypothesized in this study that students receiving instruction in syntactic rules will improve their syntactic processing skills, and therefore improve their ability to extract from the text the meaning necessary for comprehension. One important syntactic processing skill is anaphoric resolution. This study sought to teach to students with poor anaphoric resolution skills rules for resolving anaphora when reading text.

Anaphoric Resolution

Anaphoric expressions signal the co-referential identity or near identity of two concepts (Baumann & Stevenson, 1986). They usually consist of an anaphoric term and a word, phrase or clause to which that term refers (known as the referent).

Anaphoric resolution is the matching of an anaphoric term to its referent. The most frequent and familiar type of anaphoric expressions in text are pronouns which act as substitutes for previous nouns and noun phrases (Baumann, 1987). An example of a pronoun anaphoric expression is: John fell down the stairs. He hurt his head. The pronoun he refers to John.

Anaphoric expressions in text assume importance because of their frequency and function. They account for between 13 and 15 percent of all text (Baumann, 1987; Irwin, 1986; Richek, 1976/77) and act as cohesive devices in the text (Irwin, 1986).

Anaphoric expressions transport concepts forwards and backwards in the the text without continual repetition. Readers who are unable to resolve some or all of the meanings of anaphoric terms are likely to have the cohesion of the text destroyed or interrupted resulting, in partial comprehension of the text.

Significance of the Study

Despite the frequency of anaphora and their function in text, only very limited research has been reported which investigates the place of anaphoric resolution instruction in reading education. This study is significant for two reasons. Firstly, because it replicates major aspects of the study by Baumann (1986) which showed that anaphoric resolution skill can be effectively taught. Secondly, it is significant because it extends Baumann's (1986) study by comparing the effectiveness of anaphoric resolution instruction to the effectiveness of a programme utilizing existing practices to improve reading comprehension for poor reading comprehenders with poor anaphoric

resolution skills. It examines whether remediation of anaphoric resolution for readers with poor anaphoric resolution skills will result in improved reading comprehension, and whether this instruction is more effective at improving reading comprehension than existing instruction.

Purpose of the Study

The purpose of this study was to investigate whether anaphoric resolution (AR) instruction given to poor reading comprehenders in a lower secondary setting was more effective at improving reading comprehension than the existing unit curriculum (UC) instruction currently being taught to these students.

The Research Questions

This study was planned to provide empirical evidence on the reading comprehension and anaphoric resolution performance of lower secondary readers to answer the following two general questions:

1. For readers with poor anaphoric resolution skill and poor reading comprehension, will the A.R. Programme more efficiently improve anaphoric resolution achievement than the U.C. Programme?
2. For readers with poor anaphoric resolution skill and poor reading comprehension, will the A.R. Programme more efficiently improve reading comprehension achievement than the U.C. Programme?

These research questions were translated into the following null hypotheses.

Hypothesis 1

The A.R. Programme subjects will not show a significantly greater improvement in anaphoric resolution achievement than U.C. Programme subjects as measured by the A.R. Test (refer Appendix A).

Hypothesis 2

The A.R. Programme subjects will not show a significantly greater improvement in reading comprehension than the U.C. Programme subjects as measured by the Progressive Achievement Test (PAT) Reading Comprehension Test (New Zealand Council of Educational Research, 1969).

Definition of Terms

Antecedent: An antecedent is a word or a phrase or a clause to which an anaphoric term refers.

Anaphora: For the purposes of this study anaphora refers to the use of a word as a substitute for a preceding word or group of words, or the use of a word as a substitute for a following word or group of words.

Anaphoric Resolution: The matching of an anaphoric term with its antecedent or subsequent reference.

Anaphoric Resolution Programme (AR): A programme of instruction using the direct teaching strategy outlined by Baumann (1986) to instruct subjects how to associate an anaphoric term with its corresponding antecedent when reading.

Macrostructure of text: The topic and heirarchical organization of the text propositions.

Mastery: For the purposes of this study mastery is defined as 80 percent or more of the presented examples correct.

Microstructure of text: The written details of the passage other than the titles, headings, pictorial and diagrammatic information (e.g., diagrammes, tables, graphs and flow charts).

Reading comprehension: to interpret text to reconstruct and integrate the intended meaning of that text with the reader's existing knowledge.

Reading Comprehension Achievement: Reading comprehension achievement is defined as the score that a subject achieves on the Progressive Achievement Test (PAT) of Reading Comprehension.

Unit Curriculum Programme (U.C. Programme): The U.C. Programme is a programme of instruction using the direct teaching strategy (Baumann, 1986) based on the comprehension skills objectives and strategies recommended by the Ministry of Education of Western Australia for Unit Curriculum Focus units.

Overview of the Design of the Study

The sample for this study consisted of 22 Year 10 students attending a senior high school in the northern suburbs in Perth, Western Australia. An initial sample was formed by Year 10 English teachers identifying students who were poor readers and the Education Support Unit (E.S.U.) teacher identifying Year 10 Education Support students who did not have a graphophonic skill deficit. These students were pretested for reading comprehension using the GAPADOL Test and for anaphoric resolution skill using the A.R. Test (a researcher designed test of anaphoric resolution skill). These tests produced a sample of 22 students who were poor reading comprehenders (GAPADOL reading age between 8.0 and 12.0 years) with below mastery anaphoric resolution skills.

The research design used in this study was a pretest - posttest control group design (Gay, 1987). The independent variable in this study was the type of instructional programme: U.C. Programme or A.R. Programme. There were two dependent variables: anaphoric resolution achievement as measured by the A.R. Test and reading comprehension achievement as measured by the PAT Reading Comprehension Test. Students were randomly assigned to groups and pretested for the dependent variables of anaphoric resolution and reading comprehension. The groups were then randomly assigned for differential treatment, either the A.R. Programme or the U.C. Programme.

At the conclusion of the treatment period of six weeks the two groups were posttested for anaphoric resolution skill and reading comprehension. The results generated were compared for changes in mean scores using a one way analysis of variance.

CHAPTER 2

Literature Review

Introduction

The purpose of this review is to examine the relationship between anaphoric resolution skills and reading comprehension, and to identify factors that will need to be considered when teaching anaphoric resolution skills.

The Relationship between Anaphora and Reading Comprehension

Elements that unify the text (cohesive ties including anaphora) have been shown to positively influence the comprehensibility of text. Irwin (1980) examined the relationship between the number of cohesive ties in a passage, and the free and prompted recall of the text by first and second year college students. Two versions of a passage (high cohesion and low cohesion) were developed. The high cohesion version contained 227 ties and the low cohesion version contained 122 ties. Anaphora made up between 80 and 85 percent of these ties in each passage, and the different types of anaphora were equally represented in respective passages.

Students who read the high cohesion passage achieved better reading comprehension as indicated by free and prompted recall scores. While no significant difference was found for the recall of the microstructure statements, it was reported that the group reading the high cohesion passage had better

recall of the macrostructure statements. Irwin (1980) concluded that the recall of microstructure propositions had been limited because students summarized groups of microstructure ideas. In addition, examination of immediate and delayed (20 minutes) recall of the passages showed that readers of the high cohesion passage had a stable long term memory of content while readers of the low cohesion passage forgot content quickly.

Gottsdanker-Willekens (1981) conducted a similar study. Eighth grade students read passages that contained varying numbers of pronouns (the most frequently occurring type of anaphora). The results showed that passages which contained the greatest number of pronouns were also those that subjects had the most difficulty comprehending. The conclusion drawn by Gottsdanker-Willekens was that resolution of pronoun meaning is a significant factor in reading comprehension.

Dutka (1979) also demonstrated the close relationship between the ability to resolve anaphoric relations and reading comprehension. This study examined the correlation between reading comprehension achievement and anaphoric resolution ability of college students. Dutka (1979) reported a positive, significant correlation. She concluded that 59 percent of variance in reading comprehension could be accounted for by readers' ability to resolve the meaning of anaphora.

These studies show that provided a reader can resolve a text's anaphor/antecedent relations then the occurrence of anaphora will improve the comprehensibility of a text. If anaphoric relations cannot be resolved then the frequent

occurrence of anaphora may represent a barrier to comprehension.

Development of Anaphora by Readers

The ability to resolve anaphoric relations has been identified as following an age-related developmental pattern (Barnitz, 1980; Carnine & Kameenui, 1982; Chapman, 1980; Johnson & Johnson, 1985; Lesgold, 1972; Monson, 1982; Richek, 1976/77). Results from these studies indicated that proficiency in resolving anaphoric relations increased with age and progress through school, and that by adulthood anaphora can generally be resolved.

One of the most comprehensive of these studies was conducted by Monson (1982). Using children from grades two to seven from four schools in the United States and New Zealand, Monson tested the ability to recover the meaning of underlined anaphora in a series of stories. A significant effect for age indicated that the total items correctly resolved increased as the age of the students increased. This developmental pattern was consistent for each of the four anaphoric structures tested (pronoun referent, lexical, substitution and ellipsis). Importantly, 12 year old students in the study were only able to resolve 56 percent of the test items indicating that some children have not developed sound anaphoric resolution skills by the time they enter secondary school.

Results reported by Barnitz (1980) closely resemble those presented by Monson (1982). His study examined the comprehension pronoun referent structures for the pronoun "it" by grade two, four and six students. He compared the comprehension

of the pronoun when the pronoun referred to a noun or noun phrase versus a clause or sentence, the referent followed the pronoun as opposed to preceding the pronoun, and the referent was in the same sentence rather than in another sentence. He concluded that pronoun referent structures show a developmental trend with more complex structures generally lagging behind the less complex ones.

Chapman (1980) examined eight year-olds, 11 year-olds and 14 year-old children's ability to replace pronoun and conjunction structures in cloze text. A clear developmental pattern was found as indicated by significant correlations between the mean cloze score for pronoun and conjunction deletions, and age. In addition, Chapman (1980) noted that 11 year-olds had a mean score double that of eight year-olds and that the mastery of both anaphoric and conjunction processes was still being acquired at age 14.

These studies show that anaphoric resolution skill development remains incomplete by the time students enter high school when readers are reading the text to learn rather than learning to read. This lends support to the notion that anaphoric resolution skills should be taught to school children, in particular, those students who are poor reading comprehenders and who are unlikely to acquire anaphoric resolution skills through existing reading instruction and experiences.

Complexity of Anaphora

Whether a reader resolves anaphora is dependent upon the complexity of the anaphora. Complexity is influenced by

the type of anaphora, the type of referent, the referent distance, the referent order, and semantic and contextual factors. The degree to which each of these factors influence the comprehensibility of anaphoric terms is discussed below.

Type of Anaphora

The type of anaphora a reader encounters is related to the ease of resolving its meaning (Barnitz, 1980; Bormuth, Carr, Manning & Pearson, 1970; Monson, 1982). For example, an anaphor maybe a noun substitute or a verb substitute. Within the noun substitute category there are two different types of noun substitutes, the pronoun and the non-pronoun. Both of these have several subcategories.

Noun substitute anaphora have been shown to be easier to comprehend than verb substitute anaphora (Bormuth et al, 1970). Monson (1982) examined the comprehensibility of the noun substitute anaphoric structures of pronoun referent, lexical and substitution/ellipsis which correspond to the categories in Table 1 as follows:

(a) the pronoun referent type - all pronoun categories (personal, demonstrative and other)

(b) the lexical type - non-pronoun synonymous, and

(c) substitution/ellipsis - non-pronoun deleted.

With the exception of seven year-olds the order for the proportion of correct anaphoric resolutions was pronoun referent, lexical and substitution/ellipsis.

Table 1

Modified Version of the Baumann and Stevenson Taxonomy Used to Identify and Classify Anaphora in Basal Reader Selections

---

I. Noun Substitutes

A. Pronouns

1. Personal (subjective, objective, possessive; singular and plural)
2. Demonstrative (this, that, these, those)
3. Other (relative, interrogative, indefinite, reciprocal, reflexive, intensive)

B.

1. Locative (here, there, where)
2. Temporal (then, now, before, after, later)
3. Synonomous (lad/boy, taxi/cab)
4. Arithmetic (one, some, all, none, few, several)
5. Deleted e.g., I like all candy, but gum drops are the best ( ).

II. Verbal/Clausal Substitutes

A. Verb (e.g., Tom sings well but Jim does not.)

B. Clausal (e.g., Nancy will paint a picture. Otto will too.)

(Baumann, 1987, p.145)

Bormuth et al (1970) examined the differing comprehensibility of pronoun anaphora types. They found that personal pronouns were better comprehended than other pronoun types (demonstrative/other).

While the difficulty of all types of anaphora have not been researched thoroughly, the evidence of research reviewed suggests that the order of the categories presented in Table 1 represents a likely order of anaphoric complexity. Noun substitutes are less complex than verb substitutes and within the noun substitute category pronoun substitutes are less complex than the non-pronoun substitutes.

Type of Referent

The referent of an anaphoric term may be a word or a phrase, a clause, or even a complete sentence. The type of referent has been shown to affect how easily the meaning of an anaphor is resolved. Barnitz (1980) compared students' comprehension of two differing pronoun referent types: pronouns which referred back to the comprehension of nouns and noun phrases (e.g. John wanted to buy a train set because it was on sale), and pronouns which refer back to a clause or a sentence (e.g. Mary rides a skateboard in a busy street, but Henry doesn't believe it). As Barnitz (1980) hypothesized, text passages in which the pronoun refers to a noun or noun phrase were comprehended significantly better than passages in which the pronoun referred to a clause or a sentence.

These findings are supported by Dutka's (1979) earlier analysis of anaphora characteristics which resulted in items

in a substitution test being poorly resolved. She correlated characteristics such as item length (the number of words in the referent) with the test item's mean score. Her results indicated that the length of the referents was the best indicator of difficulty for resolving anaphora's meaning, concluding the longer the referents the more difficult it was to resolve the meaning of the anaphora.

Both studies show that the longer the referents the more difficult it is to resolve the related anaphora. An inference that can be drawn is that the increased amount of information contained in a longer referent makes resolution of the anaphor more difficult. Therefore, a word referent is less complex than a phrase referent, which is less complex than a sentence referent.

Referent Distance

The distance between an anaphor and its referent also affects the difficulty of anaphoric resolution. The referent of an anaphor may occur in the same sentence (intra-sentential) or in a different sentence (inter-sentential). Dutka (1979) suggested that a referent that is closer to its anaphor will still be in working memory when a reader encounters the anaphor. The chance of successful resolution will be higher the closer the anaphor is to the referent. However, results from her experiments to examine the effect of increased distance between the anaphor and the referent on students' ability to resolve anaphoric structures are contradictory.

Dutka (1979) reported a negative correlation for the

distance between the anaphor and the referent, and the mean item score for the anaphoric resolution test. That is, the further away an antecedent was from the anaphor the more difficult it was to resolve. Barnitz (1980) made a comparison betweer the students' ability to resolve intra-sentential and inter-sentential anaphoric pronoun structures. He found that there was no significant difference between students' ability to resolve intra-sentential and inter-sentential structures. Barnitz (1980) noted that this part of his study was difficult to develop and control, and this may in part explain the contradictory results.

Both Dutka (1979) and Barnitz (1980) reported that there was an interaction between the length of the referent and the referent distance. In particular, Dutka concluded from her study that combined length and distance were best predictors of resolution difficulty. The longer the construction replaced by the substitute and the farther away the antecedent is from the anaphor the more difficult the item to resolve.

Referent Order

Another factor influencing the complexity of anaphora is the order in which the anaphor and its antecedent occur. In most cases of the referent occurring first in the text and being followed by the anaphor (e.g., John ran quickly down the street. Near the corner he tripped and fell). Some anaphora is backward referencing, the anaphora precedes the referent (e.g., "I love it," shouted John. "This water slide is terrific."). Monson (1982), Barnitz (1980) and Dutka (1979)

have shown that the backward-referenced structures are easier to comprehend than forward-referenced structures. Barnitz postulated the reason for this difference is that forward-referenced anaphora violates the natural order of language.

This difference maybe due to more than just the naturally expected order. A forward-referenced anaphor does not serve the same cohesive function as a backward-referenced anaphor. The occurrence of a backward-reference anaphoric term generally acts to define the previously stated antecedent. It can confirm the meaning of the antecedent and complete the resolution. Compare examples in which the order of the anaphor she is reversed. In the backward-referenced example,

"Sam jumped on the motorcycle ready for a trip. She turned the key but nothing happened."

Until the anaphor she appears Sam can be either a male or a female. The anaphor she syntactically ties the two sentences together as the reader recalls and refines the meaning of the noun Sam. If the passage is rephrased as a forward-referenced anaphor,

"She jumped on the motorcycle for a long trip. Sam turned the key but nothing happened."

It is unclear whether she and Sam are one and the same. The anaphor she cannot be confirmed and therefore the anaphoric resolution cannot occur and the cohesion of the text may be lost.

These contrasting examples clearly show how backward-

referencing anaphora acts as a cohesive element in the text. While forward referencing anaphora is more difficult to resolve, it is also very infrequent in text. On this basis, when instructing students how to make anaphoric resolutions the examples presented should be predominantly backward-referencing. This will give the students the opportunity to become proficient in the type of examples most frequently used.

Semantic and Contextual Factors

Confirmation of anaphora can also be achieved by the reader matching the information from a sentence with their existing knowledge. This relationship between anaphora and the reader's semantic knowledge is demonstrated well by the following three examples showing how the assignment of the anaphor she can be influenced by semantic and contextual variables:

1. Rosemary trusted the secretary because she was efficient.
2. Rosemary trusted the secretary because she was a good administrator.
3. Rosemary trusted the secretary because she was gullible. (Garvey, Caramazza & Yates, 1976, p.228.)

The assignment of the anaphor she changes in each example according to the readers' understanding of the context. In example 1 it is likely that she is assigned to the secretary because "the secretary" and "efficient" are semantically more compatible than "Rosemary" and "efficient". In example 2 it is difficult to differentiate whether she is assigned to

"Rosemary" or "the secretary". The sentence may be interpreted as meaning that Rosemary is a good administrator or that the secretary is a good administrator. The anaphor she can be validly assigned to either "Rosemary" or "the secretary". In example 3 it is more likely that she is assigned to Rosemary. Rosemary is unlikely to trust the secretary because the secretary is gullible. Rosemary's trust of the secretary can be explained by Rosemary's gullibility.

Using similar examples Hirst and Brill (1980) investigated the effect of context on the interpretation of anaphoric relations. They showed that the stronger the contextual constraints the easier the assignment of pronouns to the antecedent.

Garrod and Sanford (1977) measured the effect of conjoint frequency (the relative semantic distance between the anaphor and the antecedent) on the reading time of the second sentence in pairs of sentences. They compared category last and instance last, as well as low conjoint and high conjoint frequency examples. Below are examples of (1) a low conjoint frequency (LFC), and category last sentences; and (2) a high conjoint frequency (HFC), instance last sentence.

1. A goose (LFC) would sometimes fly into the house.
   The bird (category) was attracted to the larder.
2. The bird (category) was attracted to the larder.
   A robin (HFC) would sometimes fly into the house.

Two significant main effects were established. These were, low conjoint frequency items required longer to read,

and the category last sentences were read more rapidly than the instance last sentences. Garrod and Sanford (1977) assumed that reading time reflected the time taken to process and interpret the sentences. They argued the difference in the reading time for low conjoint and category last sentences indicated that readers were integrating the information (resolving anaphors) at the time of reading, and that readers did this to maintain and store a coherent meaning in memory.

These studies demonstrated the role semantic knowledge and contextual factors play in influencing the accuracy and ease with which anaphoric resolutions are made. The implication for this study is that instructional material upon which the A.R. Programme is based should be more contextually and semantically simple in the initial stages of instruction. Materials that are contextually and semantically difficult may interfere with subjects' acquisition of skills. Once subjects have acquired the skill being taught more semantically difficult examples should be included (i.e., as part of the independent practice stage of instruction).

Implications for Instruction

It may be concluded, on the basis of research into factors influencing complexity of anaphora that the ability to resolve an anaphoric relationship is influenced by a combination of anaphoric features. When instructing students how to resolve anaphora, it appears necessary to include not only examples of different types of anaphora, but also a variety of examples featuring different referent length, referent distance, referent

order and contextual constraints. On the basis of the literature, anaphora with long referents (phrase or a sentence) and referents not in the same sentence (inter-sentential) should be the focus of instructional examples. In particular, more practice at resolving these types of examples, shown to be most difficult, may need to be provided.

Relationship Between Text Type and Anaphoric Resolution

Text may be classified into the two broad types of narrative and expository. It has been shown that there is a difference in the proportions of the different types of anaphora between these text types. Baumann (1987) reported that narrative text contained significantly more instances of anaphora than expository text, and of all anaphora in either text type personal pronouns were the most frequent.

Kameenui and Carnine (1982) examined the ways in which the anaphora in differing text type influenced reading comprehension. Their investigation determined the extent to which fourth grade students had difficulty in answering literal questions following the reading of narrative and expository text. They used text in which intra-sentential and inter-sentential pronoun structures were either left intact or replaced by their referents. When anaphoric structures were left intact students comprehended narrative text significantly better than expository text. When anaphoric structures were replaced with their referents this significant difference was not sustained.

Kameenui and Carnine (1982) argued that these results

were probably due to the abstract nature of the expository text and reflect the lack of prior knowledge of readers. It is also possible that the complexity of the anaphora in expository text influenced initial comprehension differences. Anaphora in expository text frequently is more complex than in narrative text as referents are longer (i.e., consist of several words) and the distance separating the anaphor and the referent is longer (i.e., more inter-sentential anaphora). It has been shown by Dutka (1979) that the best anaphoric indicators of reading comprehension difficulty are a combination of these factors. As a result of its greater complexity and varied rhetoric structures, expository text generally places greater cognitive demands on the reader because it both necessitates more semantic processing, and contains anaphora that is more difficult to resolve. Replacing anaphoric structures with their referents in expository text allowed subjects to read the text maintaining the cohesion without devoting significant processing to anaphoric structures.

To effectively teach students how to make anaphoric resolutions, instructional examples from both narrative and expository text should be used. As the literature suggests that students have more difficulty with resolving the more complex anaphora evident in expository text, instruction should give priority to developing efficient resolution of the more complex anaphoric structures such as those with referents of more than one word and inter-sentential structures.

Instruction of Anaphora

In developing a programme to teach anaphoric resolution not only do the type and features of the anaphora need to be considered, but also the form the instruction will take. Only one study has examined the impact of instruction on the resolution of anaphora. Baumann (1986) compared three groups of Year 3 students' comprehension of anaphoric structures following anaphoric resolution instruction. One group received direct teaching of anaphoric relations, a second group received an existing basal reading programme, and a control group received no added instruction. The direct teaching strategy included four steps:

(a) introduction/example in which the lesson objective was introduced and the target skill shown through example,

(b) direct instruction in which the teacher modelled, showed and demonstrated the skill in a face to face manner,

(c) teacher-directed application in which students attempted examples under supervision, and

(d) independent practice in which students practised the skill unaided.

This practice closely resembled the instructional model presented by Rosenshine and Stevens (1984).

Baumann (1986) found that the direct teaching group performed consistently better on the anaphoric resolution tasks than either of the other two groups. Importantly, this

showed that students could be taught to increase their skills in resolving anaphoric relations. In the absence of additional research into the instruction of anaphora, and taking into consideration Baumann's findings, a direct teaching strategy as used by Baumann (1986) and based on the instructional model of Rosenshine and Stevens (1984) will be used for the A.R. Programme and the U.C. Programme.

Summary

The presence of anaphora in text has the capacity to enhance or impede comprehension depending upon whether readers have the anaphoric resolution skills required to resolve the meanings of anaphoric substitutes. Readers who have anaphoric skills find the inclusion of anaphora improves reading comprehension (Irwin, 1980). Readers without anaphoric resolution skills find reading comprehension more difficult (Gottsdanker-Willekens, 1981).

Most readers acquire anaphoric resolution skills developmentally. They encounter and process anaphora within the context of achievable reading tasks which leave them sufficient processing capacity to be able to resolve texts' anaphor/antecedent relationships and allow them to use the context of the material being read to support the resolution processes. These readers, therefore, master the anaphoric resolution processes through normal reading practice.

For readers who have difficulty mastering fluent reading skills the opportunity to acquire anaphoric resolution skills may be limited. These readers may require direct instruction

of anaphoric resolution skills.

Planning an instructional programme to teach anaphoric resolution skills should take into consideration the order of the type of anaphora to be taught, the type of text within which examples are presented, and the confluence of factors that simultaneously influence the complexity of anaphora (e.g., length of the antecedent and the distance of the anaphora from the antecedent).

CHAPTER 3

Theoretical Framework

The theoretical framework of this study is based on an understanding of reading comprehension being a process dependent upon the relationship between a reader's processing abilities and a text's processing demands. It recognizes not only that readers take to a text cognitive structures (known as schemata) and language systems (i.e., graphophonic, syntactic and semantic) (Goodman, 1975), but also that a text contains cognitive structures conveyed by graphophonic, syntactic and semantic language systems represented in print.

Readers use their processing abilities (i.e., schemata and language systems) to access and interpret the meaning of a text. When there is a close relationship between readers' processing abilities and the text's processing demands readers will comprehend the text easily (refer to Figure 1). For example, a 13 year old student who has wide experience and knowledge of fishing, and has normative age appropriate language systems will have few reading comprehension difficulties when reading an article on fishing which has text considerate to the language systems of 13 year olds.

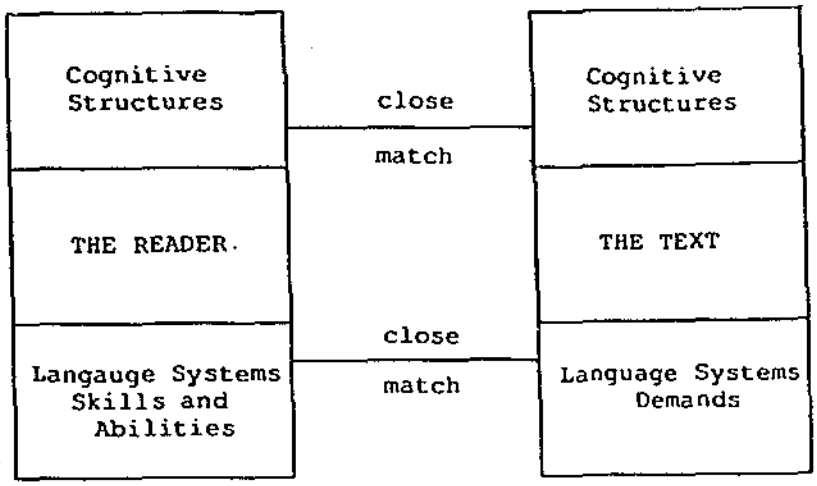

Figure 1. Diagrammatic representation of when reading comprehensions will be achieved easily.

When there is not a close relationship between the processing abilities of readers and the processing demands of the text it may be difficult for readers to achieve comprehension (refer to Figure 2). For example, a 13 year old student who does not have wide experience and knowledge of fishing and has language system skills and abilities well below normative age level will have difficulty reading the same magazine article.

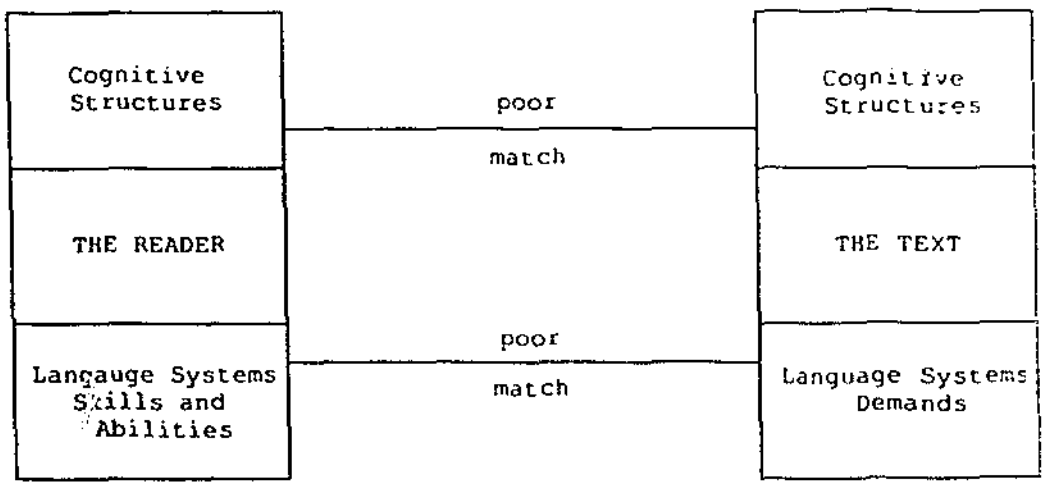

Figure 2. Diagrammatic representation of when reading comprehension is unlikely to be achieved.

In some instances the relationship between readers' cognitive structure and the text's cognitive structure will be strong, but the relationship between readers' language systems and the text's language systems' demands will be weak (refer to Figure 3). For example, a 13 year old male student who has wide experience and knowledge of motor mechanics but has well below normative age language systems may be able to read a motor mechanics journal with sophisticated language systems' demands. The reader uses his strong cognitive relationship with the text to access, through accurate prediction, the language systems of the text.

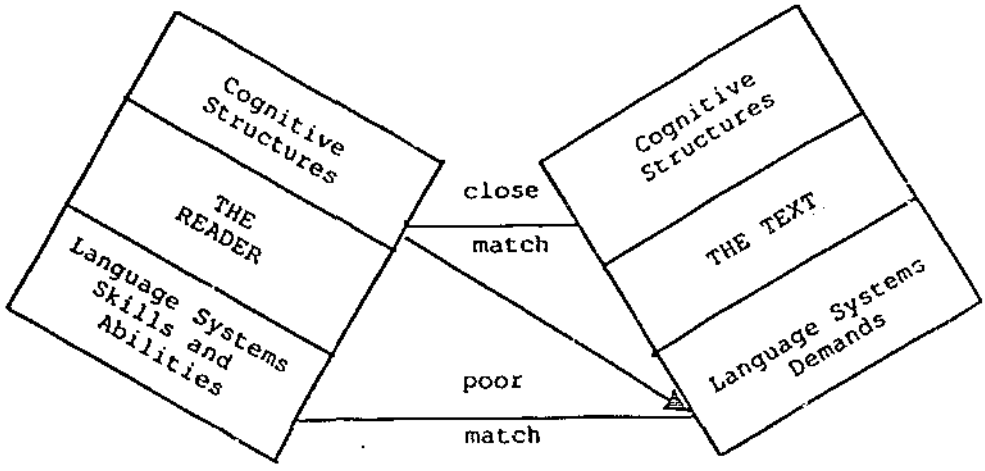

Figure 3. Diagrammatic representation of when reading comprehension is achieved mostly by cognitive processing.

In other instances the relationship between a reader's language systems and a text's language system demands may be strong, but the relationship between the reader's cognitive structures and the text's cognitive structures may be weak (refer to Figure 4). For example, a 13 year-old student who reads a text about chemical compounds, but who has normative age-appropriate language system skills, will probably be able to comprehend that text without prior

experience of chemical compounds. The reader compensates for cognitive deficiencies by utilizing language system skills to access the cognitive structures of the text in order to comprehend.

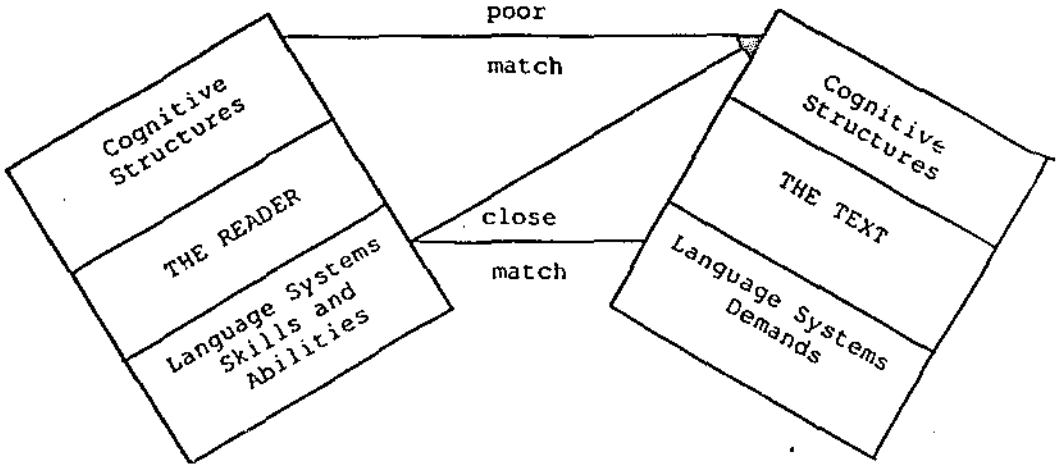

Figure 4. Diagrammatic representation of when reading comprehension is achieved mostly by driven processing.

Most poor readers consistently find the relationships between their processing abilities and the processing demands of the text they read are weak (as represented by Figure 2). Golinkoff (1975/76) notes that most poor readers do not have well developed cognitive structures or well developed language systems.

Current strategies of reading comprehension taught in secondary school are based upon the schema - theoretical models of reading comprehension in which readers access their existing schemata (cognitive structures) prior to engaging text. The activated schemata are then used in conjunction with existing language systems to process and interpret text.

The theoretical framework of this study suggests that the teaching of schema - theoretical strategies to poor reading comprehenders will not be valuable unless there is instruction to improve schemata prior to reading (e.g., efficient content

instruction). Even when poor readers have strategies to access their existing cognitive structures the relationship between these cognitive structures and those of the text remain weak because the activated schemata are limited. This indicates that these readers will continue to have difficulty accessing the meaning of the text. The relationship between all of the readers' processing abilities and the text's processing demands remain weak.

The theoretical framework of this study suggests that readers who can use language systems efficiently will be able to access the cognitive structures embedded in print. Therefore, instruction of language systems will provide poor readers with better access to the cognitive structure of text than schema-theoretically based strategies, and result in comparatively better reading comprehension.

The resolution of anaphora contained in text is a syntactic language system skill. It was chosen as the basis for instruction because it is important if a reader is to maintain text cohesion (i.e., be able to directly link one sentence to the next). Successfully maintaining cohesion enables a reader to build a coherent representation of a text's meaning (i.e., access the cognitive structure of the text).

It is a philosophical assumption of the theoretical framework of this study that students with poor cognitive structures use their language systems to access, through a text's print, the cognitive structures of a text. That is, in the absence of their own cognitive structures these readers build new cognitive structures using the information obtained from the text. As such these readers require skills that enable them to link sentences to each other to make coherent sense of text messages.

CHAPTER 4

The Experimental Design

This chapter includes a description and review of the design of the study, a description of subjects and an overview of the instruments used for the collection of data. Also included is an outline of the procedure of the study and a summary of the data analysis methodology.

The Design of the Study

Kerlinger (1975) outlines three criteria of research design. These can be expressed as the following questions:

i) Does the design answer the research question?

ii) Does the design control for independent variables?

iii) Can the results of the study be generalized to other subjects, other groups, and other conditions?

The specific aim of this study was to examine the impact of anaphoric resolution instruction compared to the impact of existing unit curriculum instruction on the reading comprehension achievement of poor reading comprehenders. In particular, the study investigated whether the teaching of one cohesive element (anaphoric resolution) improved reading comprehension of poor reading comprehenders more than instruction based upon the unit curriculum objectives.

The design (refer to Figure 5) used in this study was the pretest - posttest control group design, with the control group receiving differential treatment (Gay, 1987). Subjects

were randomly assigned to one of two groups, and groups were randomly assigned to either the control group (U.C. Group) or the experimental group (A.R. Group) by flipping a coin. The independent variable of this study was the curriculum content of instruction.

R	C	X_1	O
R	O	X_2	O

Symbols: R = random assignment of subjects to groups
O = test, pretest or posttest
X_1 = unusual treatment (anaphoric resolution instruction)
X_2 = control treatment (unit curriculum instruction)

Figure 5. Diagrammatic representation of the pretest - posttest control group research design.

The experimental group received anaphoric resolution instruction and the control group received instruction based on the Unit Curriculum English objectives. The dependent variables of this study were reading comprehension as measured by the PAT Reading Comprehension Test score and anaphoric resolution achievement as measured by the A.R. Test.

This design addresses the general question relating to the comparative effectiveness of anaphoric resolution instruction to improve reading comprehension by providing for the direct comparison of two instructional programmes intended to improve reading comprehension achievement. That is, both the control

comparison of two instructional programmes intended to improve reading comprehension achievement. That is, both the control treatment and the experimental treatment were specifically focused on improving reading comprehension.

Gain Scores

The groups were compared through the statistical analysis of the mean gain scores. Gay (1987) notes that the weakness of this type of analysis is that it does not allow equal opportunity for all subjects to improve and suggests that that correct analysis of data is direct comparison of posttest scores using either a t test or analysis of covariance. Each of these types of analysis only determine if there is a significant difference between treatments. Jongsma (1980) suggests that comparative studies that do not provide for analysis of absolute gain make it difficult to judge the effectiveness of comparative treatments. For example, a finding of no significant difference does not enunciate if the treatments were equally effective or equally ineffective, just as a significant result may be achieved in favour of one treatment when both treatments were ineffective in absolute terms.

Gain scores are usually less reliable than the scores from which they are calculated, because the differences between the experimental group and the control groups can be not significant when an effect is substantial. Kerlinger, 1975!! Borg & Gall, 1989) however, preface this criticism by recognizing that analysis of variance of difference scores can be done if the experimental effects are substantial.

Gain scores analysis was used for this study because it was necessary to evaluate the comparative effectiveness of the two treatment groups. The A.R. Programme presented instruction for all the various types of anaphoric resolution skills. It was designed to remediate a specific skill that influences the reading comprehension of a specific group of readers (i.e., poor reading comprehenders with poor anaphoric resolution skills). This determines that it must produce a significant absolute gain in both anaphoric resolution and reading comprehension, over and above any gain attained from regular instruction. The analysis of data through direct comparisons of posttest scores using t - test or analysis of covariance cannot clearly show such gain whereas gain scores can. Gain score analysis makes it possible to determine whether or not one programme is better than another. For instance, a less than a significant absolute gain would suggest that as a remedial programme the A.R. Programme was of limited value.

Control of Independent Variables

Kerlinger (1975) stresses that validity of an experimental design is determined by how well the design controls for independent variables that produce systematic variance. Poor control of extraneous independent variables which produce unwanted systematic variance affects the confidence with which the relationships observed between the manipulated experiment variables can be accepted.

Gay (1987) explains that there are three elements of

the pretest – posttest control group design that control for unwanted sources of systematic variance. These are randomization, pretesting and the existence of the control group. Random assignment to groups controls for regression to the mean, maturation and selection factors, the pretest controls for mortality, and the control group controls for history, testing and maturation.

Can Results be Generalized to Other Subjects, Groups and Conditions?

One weakness associated with the pretest-posttest control group design is the interaction between the pretest and the treatment. Generalization of results may need to be restricted to groups who have been pretested. The extent to which this weakness was evident in this study will be discussed in relation to interpretation of findings in Chapter 7.

The design of this study seeks to ensure population and ecological validity. The subjects of the study are poor reading comprehenders and the study was carried out in a classroom environment, so generalization of results to poor reading comprehenders participating in secondary school can be carried out with some confidence. However, as Gay (1987) notes it is very difficult to conduct a well controlled study in a classroom setting and this study proved no exception to this observation. A number of limitations threatening internal validity did occur and these are also discussed in relation to interpretation of the findings in Chapter 7.

Subjects

The subjects of this study were 22 Year 10 students from a northern suburbs government high school in Perth, Western Australia. All students in the sample group met the following criteria:

1) Below mastery anaphoric resolution skill (less than 80 percent of the presented examples) as measured by a test of anaphoric resolution developed by the researcher (A.R. Test); and
2) A reading age score of 8.0 to 12.0 years as measured by the GAPADOL Test.

Instruments

The GAPADOL Test

In this study the GAPADOL Test (McLeod & Anderson, 1972) was used to establish a reading comprehension level for each student. It was used in order to identify a sample of students who have a reading comprehension age in the range eight years to 12 years.

The GAPADOL Test is a relatively short and easily administered group test. It has been normed on Australian and Canadian students and has median Hoyt coefficient of .90 (range .84 - .93). The content validity of the cloze tests such as the GAPADOL relies on the research such as that reviewed by Jongsma (1971) which extols the cloze procedure as a method of testing global comprehension.

The Anaphoric Resolution Test

A test produced by the experimenter to measure student's ability to make anaphoric resolutions was developed to identify those students who had poor anaphoric resolution skills.

Content validity. The test comprised of one narrative and one expository passage of approximately 200 - 300 words in length, to represent natural written discourse (see Appendix A). The test passages had a readability of approximately 9.0 years in terms of controlled word frequency and sentence length as measured by the Spache Readability Formula (Spache, 1978).

Goodman & Gresspass (1983 cited in Barnitz, 1986) justifiably objected to the unnatural length of experimental passages used to research anaphora. In particular, they noted passages used were often very short and presented in isolation from other passages, thereby limiting the contextual clues for assigning referents. The passages used in this test were of sufficient length to address this concern.

As the type and complexity of anaphora used is influenced by text type (Kameenui & Carnine, 1982) the A.R. Test included examples of both narrative and expository text. The chosen passages also included a range of anaphora in similar proportions to that shown in Table 2 (refer to Appendix A). In this way the test passages contained a representative sample of all the types of anaphora in the different contexts that a subject normally encounters.

Construct validity. Anaphora in the passages were identified and underlined. The subjects were asked to write down what

they thought had been replaced by the substitute and the responses were scored according to semantic appropriateness by the author. This represented a direct measure of the subject's ability to resolve anaphoric relations text.

Table 2

Percentage of all Words and Percentage of all Anaphora for Various Anaphora Categories Across all Texts

Anaphora category	Percentage of all words	Percentage of all anaphora
Noun substitutes	12.9	98.3
Pronouns	11.3	86.2
Personal	9.5	72.9
Demonstrative	0.8	6.3
Other	0.9	7.0
Nonpronouns	1.6	12.2
Locative	0.3	2.5
Temporal	0.5	3.5
Synonomous	0.3	2.1
Arithmetic	0.4	3.1
Deleted	0.2	1.1
Verbal/clausal	0.2	1.6
Verb	0.05	0.4
Clausal	0.2	1.3

(Baumann, 1987, p.152)

Reliability. In December 1991, a sample of 15 Year 10 students identified by their English teachers as poor readers were given the A.R. Test at six week intervals. These two scores were correlated and a test - retest reliability of .889 as measured by the Pearson r correlation coefficient was established. Gay (1987) suggests that a reliability level of .90 or over is acceptable for any test, but that the acceptance level is in part determined by the test. Although the reliability level for the A.R. Test is just below Gay's (1987) suggested level it was accepted by the researcher as appropriate for this study because it meets Gay's general outline for reliabilty.

The Progressive Achievement Test (PAT) Reading Comprehension

The alternative forms (A and B) of the PAT Reading Comprehension Test at level four were administered as a pretest - posttest respectively. The students were tested on the PAT Reading Comprehension level 4 because this represented a level at the mid-point of the reading ages of the study sample on the GAPADOL.

The passages of the PAT test are graded in complexity from simple to hard according to Elley's (1967) noun frequency readability method, and have been standardized using Australian subjects and include Australian content. They are designed to measure both factual and inferential reading comprehension of narrative and expository text. The proportions of narrative and expository text changes with year level and generally reflects the greater emphasis on expository text in higher

grades.

The authors have supported their claim to content validity for the test by administering the alternative forms of the test to 100 students at three different schools. Form A was administered normally and Form B was administered orally. The A - B test retest reliability for the two scores for the three schools was .86, .87 and .89. Tests for each grade have a reported Kuder - Richardson 21 (K-R 21) reliability coefficients ranging from .84 to .92.

Procedure

Pretesting

The identification of subjects occurred at the participating school in week one of term two, 1992. All Year 10 students, including education support students, identified as poor readers by the reading resource teacher and teachers of Year 10 English were tested for anaphoric resolution skill using the Anaphoric Resolution Test. All of these students were then tested for reading age using the GAPADOL Test. Students who achieved less than 80 % (i.e., mastery level) on the A.R. Test and who fell within the 8.0 years to 12.0 years range on the GAPADOL, formed the sample group.

It may be considered that not all poor readers were identified because not all Year 10 students were tested using the GAPADOL. It was, however, considered unethical and inefficient to test all Year 10 students. This would have wasted the instructional time of an overwhelming majority of students who were clearly not poor readers. In addition,

testing may well have identified a number of students (i.e., poorly motivated) who did not achieve on these tests despite being competent readers thereby polluting the initial sample. It was deemed more accurate and efficient to use the accumulated knowledge of teachers on the reading abilities of these students.

For this study, students who had a reading age less than 8.0 years were assumed to have insufficient decoding ability to cope with the processing required to learn anaphoric resolution skill (Chapman, 1980). These students were included in a group that received special assistance in language system skills instruction from the Education Support Unit teacher.

It was expected that pretesting may produce two other groups of students: students who were good reading comprehenders (GAPADOL reading age greater than 12 years) but did not have anaphoric resolution mastery, and readers who were poor reading comprehenders (less than 12.0 years on the GAPADOL) but had anaphoric resolution mastery. This situation did not eventuate. All poor reading comprehenders had below mastery anaphoric resolution skill.

Treatment

The control (U.C. Group) and the experimental (A.R. Group) groups began their respective programmes in week 2 of term 2, 1992. Each programme consisted of 3 x 50 minute periods per week for six weeks, making a total of 900 minutes instruction. Both programmes used the direct teaching methodology as presented by Baumann (1986) and which was based upon Rosenshine and Steven's model of instruction (1984) (refer

to page 25 in Chapter 2).

Instructors. The researcher taught the A.R. Group. The A.R. Group (n = 11) was made up of a combination of nine regular stream students and two Education Support Unit (E.S.U.) students. The researcher was normally the E.S.U. teacher and therefore had taught 2 of these students previously for one term, but was unfamiliar with the remaining nine students. He had qualifications of a B.A. (Social Science), Diploma of Education, Bachelor of Education (Special Needs) and Learning Assistance Teacher Course.

The second teacher taught the U.C. Group (n = 11) which was made of a combination of nine regular stream students and two E.S.U. students. This teacher was normally an English teacher but had been working on a 0.2 of his 1.0 time allocation as a reading resource teacher for two years. He had had contact in a teaching capacity with all regular students in the U.C. Group over the previous two years, but was unfamiliar with the E.S.U. students. He had qualifications of a Bachelor of Arts Honours (Social Science), Diploma of Education and had partially completed a Bachelor of Education (Reading Education).

A.R. Programme. The A.R. Programme centres on the development of comprehension of the microstructure of (i.e., the meaning of the sentences of text). One set of elements of text identified by Pearson (1981) influencing the comprehension of the microstructure of text are sentence connecting devices such as anaphora.

The categories of anaphora as shown in Table 1 were

translated into 16 behavioural objectives as shown in Appendix C. These objectives were used as a basis for 18 instructional lessons (see Appendix E for sample lesson).

U.C. Programme. The U.C. Programme is based on the development of reading comprehension by improving analysis of the macrostructure of text (i.e., the heirarchical structure of the propositions of the text). Pearson (1981) notes that implicit in such analysis is the expectation that the height of identified propositions will determine the comprehensibility or memorability of the particular text segments. For narrative text this translates into the ability to identify features of the text central to the story such as setting (including key characters and location), major plot episodes, character motivations and plot resolution events. For expository text this includes identification of the main idea and supporting ideas.

The U.C. Programme was based on the reading comprehension objectives outlined in the English Focus Units of the Unit Curriculum (Ministry of Education, 1991). These objectives were translated into behavioural objectives and used as the basis for the 18 lessons of this programme (refer to Appendix B which shows the Unit Curriculum objectives and the U.C. Programme behavioural objectives).

Differential treatment control group. Gay (1987) notes that in a study with an experimental design the experimental group receives a new or novel treatment whilst the control group receives a different treatment or is treated as usual.

In this study the U.C. Group received treatment that represents the usual comprehension skills of the Unit Curriculum but it is a differential treatment because it being presented using an instructional model (direct teaching) different to that normally used in regular classes. The scripted nature of the direct teaching mode, however, made for a more standard presentation of both the A.R. Programme and the U.C. Programme allowing for a more valid comparison of results.

Posttesting

At the end of the six weeks both the A.R. group and the U.C. Group were posttested using identical versions of the A.R. Test and the PAT Reading Comprehension Test.

Analysis of Data

The mean increases in scores for the dependent variables of reading comprehension and anaphoric resolution skill, as measured correspondingly by the PAT Reading Comprehension Test and the A.R. Test, were compared for significant differences using analysis of variance (ANOVA). This analysis was done following a t test analysis (independent samples) of the pretest scores as of the U.C. Group and the A.R. Group (A.R. Group $n = 9$ and $n = 5$), as recommended by Gay (1987). The t test analysis showed that there was no significant difference between the two groups therefore allowing a direct comparison of the mean gain scores. These results are shown in Chapter 5.

An ANOVA was used in preference to the t test because it is generally a little easier to calculate. Kerlinger (1975) notes that the t test and the analysis of variance yield the

same result. With only two groups, or one degree of freedom $F = t^2$, or t = square root of F. This equality shows that in the case of two groups it does not matter whether t of F is calculated.

CHAPTER 5

Results

Subjects

Two subjects in each group either left school or completed insufficient instruction (e.g. were long term absentees due to family disruption), and consequently were not included in any data analysis. As a result each group was reduced to nine subjects. Following two weeks of instruction (i.e., 6 x 50 minutes) four students from the A.R. Group did not wish to continue participation in the instruction of the study and invoked their right to withdraw. The A.R group was reduced through subject mortality from nine to five subjects. Despite their withdrawal from the instructional phase of the study these four subjects completed the posttests. Therefore, pretest and posttest data were collected for all nine subjects in the U.C. and A.R. Groups.

Analysis of Anaphoric Resolution Scores

Table 3 presents pretest-posttest data from the Anaphoric Resolution Test (A.R. Test). It summarises the mean scores of the U.C. Group and A.R. Group subjects. Following instruction both group's posttest scores showed an improvement in anaphoric resolution skill as measured by the A.R. Test. The U.C. Group had a mean gain of 2.2 and the A.R. Group a mean gain of 14.8. Therefore, the A.R. Group had a mean gain of 12.6 more than the U.C. group for the same period of instruction.

Table 3

Summary of A.R. Test Pretest and Posttest Scores for the U.C. Group and the A.R. Group

Group	Number	Pretest Mean*	Posttest Mean*	Mean Difference
U.C.	9	45.9	48.1	+ 2.2
A.R.	5	36.2	51.0	+ 14.8

* Maximum A.R. Tests score = 65

An independent samples t - test comparison of the pretest anaphoric resolution scores was conducted to determine if there was a significant difference between the U.C. Group and the A.R. Group thereby requiring analysis of covariance. The independent samples t -test results showed there was no significant difference between the pretest scores of the U.C. Group and the A.R. Group, $t(12) = 1.827$; $p > 0.05$. Consequently, one way analysis of variance (ANOVA) was conducted to compare the mean changes in the A.R. Test scores.

Table 4 shows the results of the one way ANOVA. A statistical significant difference was found between the mean difference scores of the U.C. Group and the A.R. Group, (F (1,13) = 7.412, $p < 0.025$). The A.R. Group had made a significantly greater improvement in anaphoric resolution as measured by the A.R. Test.

Table 4

Results of ANOVA for Pretest Posttest Mean Difference Scores between the U.C. Group and A.R Group for the A.R. Test

Source	df	Sum of Square	Mean Square	F	p
Between Group	1	508.502	508.502	7.142	.0203
Within Group	12	854.356	71.196		
Total	13	1362.857			

Analysis of Reading Comprehension Scores

Table 5 presents a summary of the mean pretest-posttest reading comprehension scores achieved on the PAT Reading Comprehension Test for U.C. and A.R. Group subjects. Posttest data shows that following instruction the U.C. Group's mean comprehension score reduced by 1.5 (i.e., a mean difference of -1.5 was evident) and the A.R. Group had a mean comprehension score gain of 2.4 (i.e., a mean difference of + 2.4). Cummulatively, this represents a difference of 3.9 in the mean gain of the two scores.

Table 5

Summary of Reading Comprehension Pretest and Posttest Scores for the U.C. Group and the A.R. Group

Group	Number	Pretest Mean*	Posttest Mean*	Mean Difference
U.C.	9	18.4	16.9	-1.5
A.R.	5	12.4	14.8	2.4

* Maximum PAT Reading Comprehension score = 40

An independent samples t - test comparison of the pretest PAT Reading Comprehension scores was conducted to determine if analysis of covariance was necessary. The results of this t - test showed there was no significant difference between the pretest scores of the U.C. Group and the A.R. Group, $t\ (12) = 1.783$; $p > 0.05$. A one way analysis of variance (ANOVA) was then applied to compare the mean changes in the scores.

Table 6 presents the the ANOVA analysis comparing the mean differences for PAT Reading Comprehension scores for the U.C. Group and the A.R. Group. It shows a statistically significant difference between the mean difference scores for reading comprehension for the U.C. and A.R. groups, $F\ (1,13) = 5.515$, $p < 0.05$ in favour of the A.R. Group.

Table 6

Results of ANOVA for Pretest Posttest Mean Difference Scores between the U.C. Group and A.R Group for the PAT Reading Comprehension Test

Source	df	Sum of Square	Mean Square	F	p
Between Group	1	50.292	50.292	5.515	.0368
Within Group	12	109.422	9.119		
Total	13	159.714			

Post Hoc Analysis

Correlated samples t - test analysis of the A.R. and U.C. Groups' pretest posttest scores for anaphoric resolution (A.R. Test) and reading comprehension (PAT Test) were carried out to analyse for the main effects of significant increases in anaphoric resolution and reading comprehension. The comparison of the A.R. Test scores showed a significant difference $t(4) = 4.603$, ($p > .05$) between the A.R. Group's ($N = 5$) pretest and posttest A.R. Test scores for anaphoric resolution. The A.R. Group did not show a significant improvement in reading comprehension, and the U.C. Group did not show a significant improvement in either anaphoric resolution skill or reading comprehension.

CHAPTER 6

Discussion of Results

Relationship between Anaphoric Resolution and Reading Comprehension

The literature reviewed in this study showed that, at present, there is no research that clearly defines the relationship between the ability to resolve anaphora and reading comprehension. Anaphora is used by writers to promote clarity and economy of language. Whether anaphora promotes cohesion of a text for the reader is dependent on the reader's ability to resolve the anaphora. For readers who can resolve the meaning of a text's anaphora then the anaphora acts cohesively by directly linking sentences to each other through substitution (grammatical matching of an anaphor to its antecedent) and reference (recognition of the semantic identity shared by an anaphor and its antecedent). For readers who cannot resolve the meaning of a text's anaphora, the frequent occurrence of anaphora will inhibit the readers' ability to maintain the cohesion of the text's meaning.

Maintenance of cohesion of the text helps to develop the reader's understanding of the text and consequently comprehension. Daneman and Carpenter (1980) showed that poor readers are more concerned with lower level reading skills (e.g., decoding) and generally have less memory capacity to devote to integrative processes, one of which is anaphoric

resolution. For these readers the direct teaching of anaphoric skills focusing on inferring anaphoric relations may result in the improvement of reading comprehension.

The present study compared the effectiveness of anaphoric resolution instruction (A.R. Programme) to a programme based on Unit Curriculum reading comprehension objectives (U.C. Programme) in improving reading comprehension for poor reading comprehenders with weak anaphoric resolution skills. To make this comparison it was necessary to establish that the A.R. Programme was significantly more effective than the U.C. Programme in improving anaphoric resolution skill. An analysis of anaphoric resolution scores showed a significant difference in the independent variable (i.e., anaphoric resolution). Therefore, given control of other variables to equate the groups, any significant difference in the dependent variable (i.e., reading comprehension) between the two programmes could possibly be attributed to differential treatment.

Anaphoric Resolution Results

This study compared the effectiveness of an instructional programme designed to teach anaphoric resolution to the effectiveness of a reading comprehension programme developed from Ministry of Education Unit Curriculum reading comprehension objectives to improve anaphoric resolution skill. The following null hypothesis was tested:

> The A.R. Programme subjects will not show a significantly greater improvement in anaphoric

resolution skill than the U.C. Programme subjects as measured by the Anaphoric Resolution Test.

The comparison of mean gains for the Anaphoric Resolution Test scores for the U.C. Group and the A.R. Group showed that following participation in the respective programmes a statistically significant difference existed in favour of the A.R. Group. The null hypothesis was therefore rejected.

While these findings can not be directly compared with those made by Baumann (1986) because of differences in ages of subjects and length of programmes, they are consistent in showing direct teaching of anaphoric resolution skills produces an improvement in anaphoric resolution skill. It can be concluded from this study that for students who possess weak anaphoric resolution skills the provision of a programme that directly teaches anaphoric resolution skills is likely to improve capacity to resolve anaphora in text.

A significant improvement in anaphoric resolution skill following anaphoric resolution instruction was not the only focus of this study. Improvement in anaphoric resolution is not worthwhile unless it also produces an improvement in reading comprehension. The concern of this study was whether the measured improvement in anaphoric resolution skill was generalized to the subjects' reading processes and resulted in improved reading comprehension, and specifically whether any improvement was significantly more effective than that attained by a programme based upon existing instruction.

Reading Comprehension Results

The A.R. Programme was compared to the U.C. Programme to determine its comparative effectiveness in improving reading comprehension. A second null hypothesis tested this relationship:

> The A.R. Programme subjects will not show a significantly greater improvement in reading comprehension than the U.C. Programme subjects as measured by the PAT Reading Comprehension Test.

The comparison of changes in the means of the U.C. Group and the A.R. Group for pretest and posttest scores for the PAT Reading Comprehension scores showed that a statistically significant difference existed between the two groups in favour of the A.R. Group. The null hypothesis was therefore rejected.

These findings show that for this sample of students the instruction of anaphoric resolution was significantly more effective in improving their reading comprehension achievement than a general reading comprehension programme. They support the notion that for students who have microstructure comprehension deficits, instruction to improve comprehension of microstructures of text is more effective than instruction to improve comprehension of macrostructures of text in improving reading comprehension. In particular, the results support the argument that for students with poor anaphoric resolution skill, direct teaching of anaphoric resolution is comparatively more effective than the direct teaching of macrostructure

comprehension to improve reading comprehension.

The mean improvement in reading comprehension scores for subjects in the A.R. Group suggested that the subjects in this group utilized the anaphoric resolution skills taught in the A.R. Programme in their reading processes. In comparison the subjects in the U.C. Group did not show an improvement in reading comprehension scores which suggests they did not or were unable to utilize the learned macrostructure comprehension skills in their reading processes. That is, direct teaching to improve comprehension of the text was not effective in improving reading comprehension.

The absence of improvement in reading comprehension by the U.C. Group may have occurred for three reasons. These are a deficiency in students' background knowledge, students having other language system weaknesses, or the instruction period was not long enough for the U.C. Programme to produce an effect.

Students taught the U.C. Programme may have lacked the relevant background knowledge needed to construct text meaning. The design of this study did not include formal assessment of subjects' schema in relation to the cognitive structure of the PAT Reading Comprehension Test passages, therefore, it is impossible to accurately comment on this influence. However, the subjects of this study were all low achieving Year 10 students so it is reasonable to assume that they did not have well developed schema.

Subjects were also students who were poor readers.

Characteristically poor readers have deficits in one or more of the three language systems (Golinkoff, 1975/76). Despite being taught macrostructure strategies these readers may have had difficulty in comprehending the text because they could not adequately access the information contained in the text's microstructure to confirm their interpretation of the macrostructure.

The use of random assignment of subjects to the two groups was an attempt to control for any differences in background knowledge and language system weaknesses between the two groups. However, the consequent difference found between the reading comprehension achievement of the two groups can be explained, perhaps, in the way the U.C. Programme and the A.R. Programme address these student weaknesses. The U.C. Programme does not compensate for schema and language system deficits but is based on students using their existing schema and language systems. The A.R. Programme is designed to provide students with a skill allowing them to access the microstructure of the text which then enables them to construct or adopt the schema of the text in the absence of a well developed schema of their own. It directly addresses one aspect of a language system deficit, the syntactic language system deficit of poor anaphoric resolution, which is common to all the subjects.

In addition, the U.C. Group's lack of improvement in reading comprehension may have resulted because the instruction phase of this study was conducted for six weeks and this may not have been sufficiently long enough for students to acquire

the skills to improve macrostructure comprehension skills. This is not a real concern for this study as it a comparative study investigating whether there is a case for the inclusion of syntactic skills instruction such as anaphoric resolution in existing programmes. The author does not seek to argue for the elimination of existing instruction but for an extension of these programmes to address students' weaknesses in language systems, particularly the syntactic language system. The significant result in favour of the A.R. Group from the limited instruction time suggests that anaphoric resolution instruction can be included in existing programmes with significant benefits (without absorbing too much of the time already used to achieve other objectives).

Anaphoric Resolution and Reading Comprehension Results

In this study the effectiveness of two instructional programmes to improve reading comprehension was compared. The A.R. Programme was shown to be statistically significantly more effective in improving both anaphoric resolution and reading comprehension. The significant result in favour of the A.R. Group occurred despite the small size of the sample and the analysis of data using difference scores. Kerlinger (1975) notes that unless experimental manipulation is strong the factors of small sample size and analysis of difference scores are unlikely to produce significant results. It can, therefore, be concluded that the experimental manipulation (anaphoric resolution instruction) was strong. However, the subject sample represented a restricted population of poor

reading comprehenders with poor anaphoric resolution skills, limiting generalization of results to this population.

Post Hoc Analysis

Post hoc correlated t - test analyses of pretest-posttest scores for each group was instigated to clarify the effect each programmes' instruction had on both anaphoric resolution and reading comprehension. Only one main significant difference was found. The anaphoric resolution instruction (A.R. Programme) significantly improved anaphoric resolution skill. The fact that the U.C. Programme did not produce a significant improvement in anaphoric resolution was to be expected as it contained no instruction in this skill.

In addition, the post hoc correlated samples t - test analyses of pretest-posttest scores for reading comprehension was undertaken to determine if the significant comparative result in favour of the A.R. Group was partly owing to the regression of the U.C. Group's mean PAT reading comprehension score. It was apparent from observation of the mean difference scores in Table 5 that the significant differences in reading comprehension means between the two groups may not have resulted entirely from the efficiency of instruction in anaphoric resolution skills to increase reading comprehension, but the inefficiency of the unit curriculum instruction to maintain or improve reading comprehension.

Correlated samples t - test analysis of the A.R. group's PAT scores made it possible to judge if the experimental variance resulting from the manipulation of the independent variable

of instruction for the A.R. Group was significant when the variance produced by the reduction of scores for the U.C. Group was removed. It showed that the A.R. Group did not make a significant improvement in reading comprehension from pretest to posttest, therefore it can be concluded that the significant result in favour of the A.R. Group for reading comprehension can at least in part be attributed to the decrease in the mean reading comprehension score for the U.C. Group.

Summary

From the data analyses of all results three conclusions can be drawn. Firstly, there was a comparative significant difference in mean gains in favour of the A.R. Group for anaphoric resolution skill. This difference could be attributed to the the anaphoric resolution instruction. Second, there was a significant difference in mean gain scores in favour of the A.R. Group for reading comprehension. Third, the instruction of anaphoric resolution was not the only significant factor in producing this result. The comparative significant difference in mean gain scores in favour of the A.R. Group for reading comprehension must be viewed in the light of the mean regression of reading comprehension scores of the U.C. Group. It must be recognized that neither the A.R. Group or the U.C. Group made any significant improvement in reading comprehension. This suggests that significant difference between the two groups could in part be explained by the ineffectiveness of the U.C. Programme to maintain or increase reading comprehension achievement.

CHAPTER 7

Conclusions

Generalization of results regarding reading comprehension research remains a problem for most researchers. The framework of this study sought to maximize external validity. In particular, the study sought to ensure population and ecological validity. To achieve this the study used a subject sample directly representing a restricted population (Year 10 student in Perth's northern suburbs with a low GAPADOL reading age and poor anaphoric resolution skills on the A.R. Test), and set the study within the environs of a regular secondary school.

Limitations of the Study

As a consequence of the attempt to ensure population and ecological validity this study suffered in certain aspects of its internal validity. In particular, factors such as mortality and instrumentation surfaced as threats to internal validity. These were compounded with design limitations of experimenter effect, study length, pretest - instruction interaction and the effect of other instruction on reading comprehension achievement.

Mortality of Subjects

Mortality of subjects proved to be a significant limitation of the study. The A.R. Programme lost 4 subjects through withdrawal. The subjects who withdrew belonged to two distinct groups: regular stream subjects and education support subjects.

Withdrawal of regular stream subjects. The two regular stream subjects who withdrew from the programme were concerned that education support subjects were part of the group. They both expressed to the researcher a belief that being in a class with education support students would result in their being labelled as education support students. They also expressed a dissatisfaction with the direct instruction method of teaching. They felt that it was too childish and related this back to their previous concern of being identified as an education support student.

Withdrawal of education support subjects. Both of the education support subjects chose to leave the A.R. Programme because they felt uncomfortable in the class. Although they were coping academically with the A.R. Programme, other subjects in the class were occasionally derisive. Once one of the education support subjects decided to leave the programme then the other subject chose also to leave.

Summary of subject mortality limitations. The reduced size of the A.R. Group was likely to have increased the opportunity for the A.R. Group teacher to interact with subjects, therefore increasing the academic engaged time of those learners. In addition, it was evident that the regular stream subjects who withdrew from the A.R. Group after two weeks of participation were the subjects whose behaviour was the most disruptive to the group. This allowed the teacher an increased amount of time for teaching and remediation as time spent on classroom control was reduced.

Becker (1977) noted from field research into the teaching of reading and language to the disadvantaged students that increased engaged task time along with direct instruction were the two most important factors in improving reading achievement. Therefore, the withdrawal of four A.R. Group subjects could have provided the A.R. Group subjects with an advantage over the U.C. Programme subjects and may have led to the significant results.

Instrumentation

Despite the quoted reliability of the tests used in this study, it was evident from observation of the subjects during testing that data collected using these instruments, may not have reflected those reliability levels. This was particularly evident for the PAT Reading Comprehension Test. Reliability data for the PAT Reading Comprehension Test is based on random samples of subjects covering the entire range of reading abilities. This study sampled only poor reading comprehenders and some of these showed great anxiety when attempting the test, while others showed an inconsistent attitude varying from indifference to genuine effort when completing the pretest and the posttest.

Recent research supports concern arising from this observation. Paris, Lawton, Turner and Roth (1991) surveyed attitudes and motivation grades 2 - 11 students towards standardized achievement tests. They found that a large number of students, especially low achieving students, became anxious and did not try when taking tests in order to preserve feelings

of competence when they receive low test scores. They concluded that these students undermine the validity of the test scores. Paris et al (1991) commented that:

> Students' perceptions of assessment and their motivation for test taking must be considered in order to understand the significance of test scores.... It is surprising to us that the major participants in educational assessment are routinely ignored by researchers, test designers and policymakers. Every teacher has an anecdote about students who cannot mark their answer sheet properly, who become anxious or quit in the middle of a test.... For these students assessment does not provide valid indicators of their knowledge and abilities. (p. 41)

This limitation is of more concern in this study because of the small size of the sample. Any variation of test performance resulting from anxiety and poor motivation would have increased error in the test results. Consequently interpretation of results for this study should be made with great care.

Experimenter Effect

Another limitation of the study was the fact that the experimenter delivered the A.R. Programme (the experimental group's programme) and a regular teacher conducted the U.C. Programme (the control group's programme). This transpired because the regular teacher who participated in the study was concerned about his ability to teach unfamiliar content (anaphoric resolution skills) using a strategy (direct teaching

method) he had not used extensively before. The regular teacher decided he was comfortable teaching familiar content (U.C. Programme's strategies) using the direct teaching method.

It is recognized that the experimenter effect may limit the validity of the results in this study. This limitation was restricted but not eliminated by the similarity of experience and qualifications of the researcher and teacher.

Length of Study

This study was limited to three fifty minute sessions of instruction per week for six weeks. It could be considered that this amount of instruction was too limited to produce any significant result for either programme. However, the time devoted to instruction of anaphoric resolution in this study was far greater than Baumann's (1986) study which showed a significant improvement in anaphoric resolution skill following seven lessons.

This study also included direct teaching instruction on all anaphoric skills as defined by the Taxonomy of Anaphora (Baumann & Stevenson, 1987). This represents an intense form of instruction for a reasonable length of time for subjects of this age and level of achievement. It became evident towards the end of the study that extending the instruction beyond six weeks for the A.R. Programme students would have limited benefit owing to declining motivation.

This limitation could be overcome by integrating the direct teaching of anaphoric resolution skills into existing subject programmes (not just English), increasing the relevance

of the text from which examples are drawn.

Pretest - Treatment Interaction

Both Gay (1987) and Kerlinger (1975) note that pretest - treatment interaction may reduce the generalizability of results to pretested groups in research designs. This limitation is not a concern in this study because it is not recommended that anaphoric resolution skills be taught to students with anaphoric resolution competence. It is intended that pretesting of students to identify those students who have poor anaphoric resolution skill be undertaken prior to instruction, and only those students who have not achieved mastery be taught anaphoric resolution skills. Whether interaction between the pretest and the instruction occurs is less important than ensuring that anaphoric resolution skills are taught only to those who need them and not those who do not need them.

Other Instruction

Jongsma (1980) notes that in many comparative studies the experimental treatment is often not the sole treatment received by the experimental group. He cautions that the experimental treatment may be just one of many efforts directed at improving reading comprehension during the school day. This limitation is not considered to have had any significant influence on the results of this study. The focus of instruction in subject areas other than English at Year 10 is directed toward content learning and any reading instruction is both limited and directed at improving specific content understanding. In English subject time (during which this study was carried

out) both the A.R. Group and the U.C. group received their respective programmes for three of the five English periods of each week. During the remaining two periods the groups were combined and instruction focused on fulfilling the written assessment requirements of the regular curriculum. Any instruction during this time that may have influenced reading comprehension achievement would have been the same for both groups.

Summary of Limitations and Implications for Further Research

The effect of the limitations of the study need to be carefully considered. The described limitations of instrumentation reliability and subject mortality are of particular concern because they threaten the internal validity of the study. They highlight some of the limitations that occur when conducting research with students, particularly those with low academic achievement, and any further research would need to address these problems. One possible way of overcoming the many limitations that occurred in this study would be to use younger subjects, such as those entering high school.

This research was aimed at addressing the reading comprehension difficulties of students in transition from learning to read to reading to learn. A much larger proportion of year eight secondary students fall into this category. It is likely that a much larger sample of subjects could be attained without including education support students, consequently removing the problem of withdrawal of education

support students.

In addition, the researcher's experience, as a teacher, suggests that magnitude of the other limitation problems experienced in this study would be reduced by obtaining year eight subjects. Year eight subjects are less likely to withdraw from the study, more likely to provide a concerted effort on any tests therefore improving reliability of test data, and will be more adaptable to the direct teaching method used in this study because it is likely to be similar to some of the teaching strategies experienced in recent primary school.

Future Research Questions

Although the results of this study are limited, there is sufficient evidence to suggest that the relationship between anaphoric resolution instruction and reading comprehension warrants further investigation. One area of future research would be to compare the anaphoric resolution skill of poor reading comprehenders and good reading comprehenders. The extent of poor reading comprehenders' anaphoric resolution deficits compared to those of good reading comprehenders needs to be clarified.

In addition, investigation into ways to establish and improve reliability of tests used in research with low achieving students appears to be warranted. It would seem that this area of study has been neglected and resolution of the problems evident in this study would be useful. If researchers could sample low achieving students and have confidence in the reliability in the collected data then more researchers would

be likely to investigate the problems exhibited by these students and the ecological validity of such research enhanced.

Implications of the Study

When reading text readers use their existing graphophonic, syntactic (including anaphoric resolution) and semantic skills and knowledge to comprehend. The proportions of these skills and knowledge used by the readers is dependent upon what skills and knowledge they have available in relation to the demands placed upon them by the text. It is likely that ability to comprehend the text effectively using existing skills and knowledge also supports anaphoric resolution. Competent readers who have have strong graphophonic, syntactic and semantic skills will easily resolve anaphora. Poor readers without strong graphophonic, syntactic and semantic skills are not supported when resolving anaphora in text. For these readers, anaphoric resolution, a facet of reading vital to maintaining the cohesion of text meaning and achieving comprehension, may need to be taught directly.

In general, the significant results in favour of teaching anaphoric resolution suggest that for poor readers instruction in macrostructure comprehension strategies alone are not effective in improving reading comprehension. They suggest that more recognition needs to be given to the specific skill weaknesses of poor readers while they are in transition from learning to read to reading to learn. The notion that improving poor readers' comprehension can be achieved by inducting them into the use of the strategies predominantly used by good

readers needs to also directly address poor readers' specific skill weaknesses. Direct teaching of these skills maybe one effective way to remediate specific weaknesses.

Conclusion

The described limitations of this study, in particular the influence of the small sample size resulting from subject mortality, require that most conclusions be accepted tentatively. The findings and conclusions represent a basis for further research into the relationship between anaphoric resolution and reading comprehension, and the effect of anaphoric resolution instruction on reading comprehension. Any such research would need to address carefully this study's limitations.

This study showed a statistically significant difference in favour of the A.R. Programme when compared to the U.C. Programme for improving anaphoric resolution and reading comprehension. These results occurred even though the size of the sample was very small and the analyses of data focused on difference or change scores. That is, to achieve the significant results in favour of the A.R. Group the size of the comparative changes in anaphoric resolution and reading comprehension were relatively large.

The result in favour of the A.R. Group for anaphoric resolution is accepted and is supported by the post hoc analysis. It is clear that anaphoric resolution instruction more effectively improved the anaphoric resolution skill of the A.R. Group than the unit curriculum based instruction improved

anaphoric resolution skill for the U.C. Group. This was to be expected because the U.C. Group contained no direct teaching of anaphoric resolution skills.

The result in favour of the A.R. Group for reading comprehension must, however, be carefully interpreted in conjunction with the post hoc analysis result. The correlated samples t - test analysis of pretest posttest PAT scores for the A.R. Group showed that the A.R. Programme did not significantly improve reading comprehension. In this study, therefore, some of the comparative effect in favour of the A.R. Group for reading comprehension must be attributed to the regression of PAT scores for the U.C. Group.

It is important at this point to recognize that the teaching of a limited set of skills, such as anaphoric resolution skills, represents the teaching of only a very small portion of the complex process of reading comprehension. Consequently, the significant improvement in anaphoric resolution skills represents such a small part of the total reading comprehension process that it is unlikely to have sufficient impact on reading comprehension to produce a statitically significant improvement. It can too easily be incorrectly assumed that because a relationship between anaphoric resolution teaching and reading comprehension cannot be established that instruction is not worthwhile.

This research did not directly investigate the relationship between anphoric resolution instruction and reading comprehension, but the efficacy of two methods of instruction

designed to improve reading comprehension for specific type of reader. The essential question of this research was whether anaphoric resolution skills taught to students with poor anaphoric resolution and reading comprehension achievement will be more efficient at increasing reading comprehension than other instruction designed to improve reading comprehension.

The results of this study are tentatively accepted as supporting the notion that direct teaching of anaphoric resolution is comparatively more effective than direct teaching of macrostructure strategies to improve reading comprehension of poor reading comprehenders with anaphoric resolution deficits. It is also tentatively accepted that the results support the notion that the effect of macrostructure comprehension strategies is not significant enough to overcome anaphoric resolution deficits and possibly other deficits in the three language systems used in the reading comprehension process.

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APPENDIX A

Test of Anaphoric Resolution Skill

Test of Anaphoric Resolution Skill

Teacher's Directions

Read all of the following to the students.

This test is to see how well you can work out what some of the words in the story mean.

Open your test booklet to page 1. Look at the top of the page to the title of the story. (Check that all students are following the directions.)

The title of the story is Kenju's Forest.

Look at the first paragraph of the story. (Check that all students are looking.) It has a number 1 next to it. Silently read the paragraph as I read it to you aloud.

Kenju loved to wander along paths that lay between the rice fields. He would reach up to the sky and laugh aloud.

The word "He" is underlined. Notice Kenju is written in the space next to "He". The word "He" stands for Kenju.

Look at the second paragraph of the story. It has a number 2 next to it. (Check all students are following the directions.) Silently read the paragraph as I read it aloud to you.

The birds sang and the trees danced in the wind - how wonderful it (the birds sang and the trees danced in the wind)

was.

The word "it" is underlined. The word "it" stands for "the birds sang and the trees danced in the wind."

Notice that some underlined words stand for one word. Some underlined words stand for more than one word.

Turn back to the cover of the test. In the dark print is a practice example. Read the example paragraph. Try to work out what the underlined words stand for. Write what each underlined word means in the space next to each underlined word.

(Wait for 3 minutes)

Mark the example.

Example Answer

Dad came through the door carrying a large bag. He (Dad) laid it (the bag) on the floor carefully. Tom, Mary and John raced up to him (Dad). They (Tom, Mary and John) each got a present.

Now look at the bottom of the page. Look at the directions in the box. Read along silently as I read them to you.

DIRECTIONS

Read the following stories and try to work out what each of

the underlined words stands for. Write the word or words that each underlined word stands for in the space in the brackets next to the underlined word. The first two spaces are filled in for you. You have 40 minutes.

TEST OF ANAPHORIC RESOLUTION SKILL

Name : _____

Date : _____

Practice Example

Dad came through the door carrying a large bag. He ( )
laid it ( ) on the floor carefully. Tom, Mary
and John raced up to him. ( ) They ( )
each got a present.

Directions

Read the following story and try to work out what each underlined word stands for. Write the word or words that each underlined word stands for in the space provided in the brackets after the word/s. The first 2 spaces have ben filled in. You have 40 minutes.

Kenju's Forest

1. Kenju loved to wander along the paths and lay between the rice fields. He (Kenju) would reach up to the sky and laugh aloud.

2. The birds sang and danced in the wind - how wonderful it (the birds singing and dancing in the wind) was.

3. Everybody in the village laughed at Kenju, but this ( ) did not spoil his ( ) happiness.

4. One day Kenju came running across the field to his ( ) family. The last frost had passed and they ( ) were busy preparing for spring.

5. "Mother! Mother!" he ( ) cried, even more excited than usual. "Would you ( ) buy me lots of cedar trees to plant in our ( ) empty field behind the house?"

6. His ( ) family stopped work and looked up at Kenju, who ( ) waited, a small smile trembling on his ( ) lips.

7. At last his ( ) father spoke, "Kenju is a good boy. He ( ) has never asked for anything and that field has been empty for so long. Go and buy him ( ) the seedlings," he ( ) said, turning to Kenju's brother.

8. The next morning Kenju was up with the sun. It ( ) was a shining winter's day.

9. Kenju listened carefully to his ( ) brother's instructions; he ( ) wanted to do everything (

just right. He ( ) had dream't about his ( )
trees standing like soldiers in long straight rows.

10. They ( ) had been working steadily
when Heiji appeared. He ( ) owned the farm next
door but spent most of his ( ) time in the village.

11. "If your ( ) stupid trees do grow, they ( )
will block out my ( ) sun!" Heiji barked.

12. Kenju froze, for Heiji had always frightened him. ( )
Luckily his ( ) brother was nearby. He ( )
straightened up and glaring at Heiji said, "Good morning to
you ( ), Heiji! Aren't you ( ) working
today?"

13. Heiji just grunted and went back to town.

14. It seemed to take forever for the seedlings ( )
to grow. The whole village laughed at Kenju. They ( )
had all told him ( ) so ( ).

15. Nevertheless, Kenju was proud of his ( ) trees.
He ( ) stand for hours on the edge of the field admiring
them. ( )

16. One day the village decided to play a joke on Kenju.

17. "It's about time you ( ) pruned your (
trees, young Kenju. All those lower branches should be lopped
off," advised one ( ) looking very serious.

18. He ( ) thanked him ( ) for his ( )
advice and set off to find his ( ) axe. Kenju pruned
his ( ) treasured trees, one ( ) after
the other. ( )

PLEASE TURN TO THE NEXT PAGE

Friction

1. Two things rubbing together cause friction. Friction is important to our lives. Friction between our shoes and the ground helps us to walk and stops us slipping. Friction between the tyres and the road lets cars move forward; it ( ) also stops them ( ) from skidding.

2. Friction can also slow things down. A ball rolling along the ground will gradually get slower until it ( ) stops. Friction between the ball and the ground slows it (down. Brakes use friction to slow down moving vehicles. On a bicycle they ( ) are just blocks of rubber on either side of the wheel. When they ( ) are on, the rubber blocks are squeezed against the sides of wheel which slows it ( ) down. Car brakes work the same. ( )

3. The thin blades of ice skates move easily on the wet smooth surface of the ice. This ( ) is because there ( ) is little friction between the two smooth surfaces. But if you rub two dry, rough surfaces together you can see that the friction can wear them ( ) away. When sandpaper is rubbed over wood, it ( ) wears away the rough surface of the wood and leaves it (smooth. This ( ) is useful. But friction can also wear away moving parts in a machine, ruining them. ( ) To prevent this, ( ) a lubricant, such as oil, is used. If oil is placed against door hinges, they ( ) will move against each

other easily. Oil is also used on bicycle chains and in car engines to help them ( ) move smoothly.

Analysis of the Readability of Passages Used in the Test of Anaphoric Resolution Skill

Kenju's Forest

1. Sample : paragraphs 4 to 7
2. Number of Words : 104
3. Number of Sentences : 8
4. Words not on the Dale List : frost, preparing, empty, trembling, excited, usual, cedar, seedlings.

   Total = 9

5. Calculation :

Average sentence length x .141	= 13 x .141	= 1.625
Dale score x 0.086	= 9 x .086	= 0.774
Constant		= 0.839
Total (Grade Level)		= 3.238

Friction

1. Sample : paragraph 1 and 2
2. Number of words : 114
3. Number of sentences : 9
4. Words not on the dale List : brakes, vehicles, bicycles, blocks, rubber, friction, important, slipping, forward, skidding, heat, gradually.

   Total = 12

5. Calculation

Average sentence length x .141	= 12.666 x .141	= 1.786
Dale score x .086	= 12 x .086	= 1.032
Constant		= 0.839
Total (Grade Level)		= 3.657

Number and Percentage of Various Anaphora Categories in the Test Sample

Anaphora Category	Number of Anaphora	Percentage of All Anaphora
Noun substitute	59	98.3
Pronouns	55	91.6
Personal	52	86.6
Demonstrative	2	3.3
Other	1	1.6
Nonpronoun	4	6.6
Locative	-	-
Temporal	-	-
Synonomous	1	1.6
Arithmetic	2	3.3
Deleted	1	1.6
Verb/clausal	1	1.6
Verb	-	-
Clausal	1	1.6

APPENDIX B

U.C. Programme Objectives

Derivation of Instructional Objectives for the U.C. Programme

The two process objectives for the Unit Curriculum English Focus Units that contained reference to reading comprehension skills were:

1. Understanding and responding to the structure, style and tone, and varying language according to the audience and purpose.

2. Understand, order, and convey facts, ideas and opinions in variety of comprehending and composing situations.

For the purpose of this study these process objectives were redefined as the following:

1. Given either a piece of narrative or expository text, the student will recognize and respond to the differeng text type with appropriate comprehnsion strategies.

2. Given either a piece of narrative or expository text, the student will be able to demonstrate understanding and order of facts, ideas and opinions contained by answering literal, inferential and evaluative questions.

The following are the text objectives and strategies stated in the in the English Focus Units aand form the basis for the U.C. Programme.

Objectives

Prose fiction text

Storyline (sequence of events and the reason for these)

Characters (who they are and the different kinds)

Transactional text

Collect information from labels in the text

Categorize information in the text

Recognize key ideas

Interact with the text

Search

Simplify

Strategies

Predicting

Using magazines, newspaper articles and subject textbooks, have the students work in pairs to predict the content from the titles, headings, pictures and diagrams. students then read to confirm or modify predictions. Keeping in mind that all pre - reading predictions are acceptable.

Present a number of key words from a newspaper or magazine article. In pairs or small groups students predict the story line.

Read aloud a part of a newspaper or magazine article. invite students to predict the outcome.

Extracting information

Provide students with a passage of transactional text. In class or small groups discussion identify the main and supporting ideas. Present these in pictorial, diagram or cartoon sequence.

Provide students with a timetable, a flow diagram or a cartoon sequence. After discussion, have the students present the main informatiion in written form.

Questioning

Select a passage of prose, prepare a set of questions

covering three levels of comprehension - literal, inferential and evaluative. in discussion, students answer the questions on the passage.

Framework

These objectives and strategies were restated as behavioural objectives and placed in the framework below for instruction.

I. Recognize the type of text - expository or narrative.

II. Comprehend the narrative text

- a. comprehend storyline
  - i. predict
  - ii. identify events and reasons
  - iii. order events
  - iv. confirm using i. and ii.
  - v. answer literal, inferential and evaluative questions
- b. comprehend characters
  - i. identify and locate
  - ii. describe
  - iii. answer literaland inferential questions

III. Comprehend expository text

- a. Extracting information
  - i. lccate facts and opinions
  - ii. express main ideas
  - iii. answer literal, inferential and evaluative questions

Behavioural Objectives for the U.C. Programme

The learning objectives have been stated in terms of a situation (under what conditions), outcome performance (precise description of what is to be learned) and an action (the form of the observation of the outcome).

I. Recognizing text type.

A. General objective. Given an example of either of the text forms used in this programme, narrative or expository, the student will orally or in writing name the text type.

Specific objectives.

i) Given examples of expository and narrative text, the student will show identification of narrative text by ticking the narrative text.

ii) Given examples of expository and narrative text, the student will show identification of expository text by ticking the expository text.

iii) Given examples of expository and narrative text, the student will list, in writing, three differences.

II Comprehending narrative text.

A. General objective. Given a piece of narrative text the student will, orally or in writing, show comprehension of the text's storyline by answering literal, inferential and evaluative questions.

Specific objectives.

i) Given a piece of narrative text, the student will orally or in writing make a prediction as to the content.

ii) Given a piece of narrative text, the student will orally or in writing show recognition of major story line

events by listing those events.

iii) Given a piece of narrative text and an unordered set of the major storyline events, the student will orally or in writing indicate the order of the events as they occurred in the text.

iv) Given a piece of narrative text the student willshow identification of the storyline by writing a specified number of the text's major events in the order they occurred in the text.

v) Given a piece of narrative text the student will show comprehension of the storyline by answering literal, inferential and evaluative questions relating to the story line events.

B. General objective. Given a piece of narrative text, the student will, orally or in writing, show comprehension of the text's characters by answering literal, inferential and evaluative questions.

Specific objectives.

i) Given a piece of narrative text the student will, orally or in writing, sho recognition of the major characters of the text by listing them.

ii) Given a piece of narrative text, a list of the major characters from the text and a list of descriptions of those characters, the students will, in writing show understanding of the characters by matching the characters with the appropriate description.

iii) Given a piece of narrative text and a list of the major characters, the students will show comprehension of the characters by writing a minimum one sentence description of each of the listed characters.

iv) Given a piece of narrative text the student will, in writing, show understanding of characters by identifying a specified number of major characters from the text and writing a short description (no less than 1 sentence and no more than 1 paragraph) of each.

v) Given a piece of narrative text, the student will, in writing, show comprehension by answering literal, inferential and evaluative questions relating to characters.

III Comprehending expository text.

A. General objective. Given a piece of expository text, the student will, in writing, demonstrate the ability to extract information from the word text by answering literal, inferential and evaluative questions.

Specific objectives.

i) Given a set of facts and opinions, the student will show understanding of facts by distinguishing the facts from opinions by ticking the facts.

ii) Given a piece of expository text, the student will show that he/she can locate facts by writing a specified number of facts derived from the text.

iii) Given a set of facts and opinions, the student will show understanding of opinions by distinguishing the opinions from the facts by ticking the opinions.

iv) Given a piece of expository, the student will show he/she can locate opinions in the text by writing a specified number of opinions from the text.

v) Given a set of facts and opinions from a piece of expository text, the student will show they distinguish between fract and opinion by writing F next to the facts and O next

to the opinions.

vi) Given a set of facts and opinions from a piece of expository text, the student will show understanding of the relationships between these statements by grouping, in writing, sets of statements under given common headings.

vii) Given sets of facts and opinions from a piece of expository text, the student will identify the main idea by writing a statement with all the facts and opinions describing the main idea.

viii) Given a piece of expository and groups of several facts and opinions, the student will identify the main idea by selecting and labelling with a general statement the group representing the author's main idea.

ix) Given a piece of expository text, the student will read the text and show comprehension of the main idea by writing a title that expresses the underlying idea of the text.

x) Given a piece of expository text in which the student has identified the main idea, the student will show identification of supporting ideasby writing a specified number of supporting ideas derived from the text.

xi) Given a piece of expository text the student will show reading comprehension of the main idea and supporting ideas by answering, in writing, literal, inferential and evaluative questions relating to the main idea and supporting ideas of the text.

APPENDIX C

Objectives for the A.R. Programme

Instructional Objectives for the A.R. Programme

The learning objectives have been stated in terms of a situation (under what conditions), outcome performance (precise description of what is to be learned) and an action (the form of the observation of the outcome).

I Noun substitutes

A. Pronouns

Specific objectives - personal.

i) Given an underlined nominative personal pronoun anaphoric substitute (either singular or plural), the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. "Go outside in the rain John and you will catch a cold," said the teacher.

ii) Given an underlined objective personal pronoun anaphoric substitute (either singular or plural), the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. The children had gone to play on the swings. James ran after them.

iii) Given an underlined possessive personal pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. As the car sped around the corner its front wheel fell off.

Specific objectives - demonstrative.

i) Given an underlined demonstrative anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. Hot air rises. It is this that makes the balloon fly.

Specific objectives - other.

i) Given an underlined relative pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the meaning.

e.g. Tom is a boy who learns fast.

ii) Given an underlined interrogative pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. "There was a crowd of people on the train on the way home. Whom do you think I saw?" Jane asked.

iii) Given an underlined indefinite pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. The soldiers crossed into enemy lines. None returned.

iv) Given an underlined reflexive pronoun anaphoric

substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. John flinched in pain. "I have cut myself!" he yelled.

v) Given an underlined intensive pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. Bill threw his hands up. I myself was unaware of that.

B. Non -pronouns.

Specific objectives - locative.

i) Given an underlined locative non - pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. The car came to rest against the tree. It was here that the detective found his next clue.

Specific objective - temporal.

i) Given an underlined temporal non - pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. James became sick with fever. He died a short time after.

Specific objective - synonomous.

i) Given an underlined synonomous non - pronoun anaphoric

substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. The taxi driver arrived ten minutes late. James climbed in the cab and ordered the driver to take him to the airport as quickly as possible.

Specific objective - arithmetic.

i) Given an underlined arithmetic non - pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. The crowd cheered loudly. One threw a streamer onto the field.

Specific objective - deleted.

i) Given an underlined deleted non - pronoun anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. Bill liked all sports but football was his favourite (_____).

II Verbal/clausal substitutes

A. Verb

Specific objectives - verb.

i) Given an underlined verb anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the

space provided above the anaphoric term, the antecedent.

e.g. Harry runs well but Sam does not.

B. Clausal

Specific objective - clausal.

i) Given an underlined clausal anaphoric substitute, the student will show the ability to resolve the meaning of that anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. Bill will swim across the river. Mary will too.

APPENDIX D

Sample Lesson U.C. Lesson

UCLESS 7

UNDERSTANDING CHARACTERS

General Objective: Given a piece of narrative text, the student will, orally or in writing show comprehension of text's characters by answering literal, inferential and evaluative questions.

Specific Objectives:

1. Students will show recognition of the major characters of a text by listing them.

2. Students will show comprehension of text's characters by writing a description of identified major characters.

BOLD TYPE REPRESENTS STATEMENTS MADE DIRECTLY TO STUDENTS BY THE TEACHER. OTHER COMMENTS AND ANNOTATIONS ARE IN NORMAL PRINT.

INTRODUCTION

To date we have looked at major story line events in a piece of text. Today and during the next few lessons we are going to examine major characters in text.

When an author describes a character he or she will generally descreibe two aspects of the character - appearance

and personality. Let us look at words that could describe these two aspects. Hand out page 1. Read through words in the list and discuss meanings using student feedback to define the words.

Look at Activity 1. Read the instructions to the students. Does everyone understand what they must do in Activity 1? Check response and provide further explanation if necessary. Allow time for students to complete activity and collect feedback.

Hand out page 2. Let us now look at a passage that describes a character. Read the passage at the top of page 2 silently as I read it to you. Read the passage. The name of the character in this passage is Miss Collingwood. The passage includes description of both her physical appearance and her personality. The words - tall, dark haired and pretty - describe Miss Collingwood's appearance. The words - nobody has ever seen her get mad or heard her shout - describe her personality. The words - nice gentle face and kind smile - tell something about both her appearance and her personality. They directly tell you what she looks and sounds like, but indirectly indicate she has a pleasant personality. Look at question 1. Read the question 1. In the space provided write Miss Collingwood. Wait while students complete. Check that answers complete. Repeat step for question 2 using information above.

DIRECT INSTRUCTION

Look at the Direct Instruction example on page 2. Read

th passage silently as I read it to you. Read the passage. There is one main character in this passage. Who can tell me who it is? Check student response. In the space provided write Augustus Gloop. Wait while students note. The author uses many words to describe Augustus Gloop. Who can tell me a word used to describe his physical appearance? Accept responses. There is only one word used by the author that tells about Augustus's personality, who can find it? Accept the response - greedy. In the spaces provided write three of the words used to describe Augustus's physical appearance and the word greedy to describe his personality. Write in columns under the headings: i) physical, and ii) personality words descriptive of August's character. Check students work.

Now let us use the words found to write a description of Augustus Gloop. Choose three words from your boarded list of physical description words. Circle these words on the board. I am going to use these three words of Augustus's physical description and the word greedy to write description of Augustus. Write on the board: Augustus Gloop was a greedy boy who was enormously fat and flabby. Write this sentence in the space provided.

GUIDED PRACTICE

Now turn to the page with Guided Practice example. Read the passage silently to yourself. Wait while students do so. In this passage the character is mainly described in terms of personality. I want you to do three things for me. These

are: 1. name the main character, 2. list words that describe physical appearance and personality, and 3. complete the two sentence description of the character. Before doing question 3 we will check how you did on question 1 and 2. Please fill in questions 1 and 2. Allow time for students to complete 1 and 2. Check responses and have students correct or complete responses. Now go ahead and fill in the spaces in question 3. Check student responses.

INDEPENDENT PRACTICE

It is now time to put the skills you have learned into practice alone. I am handing out a paper with a passage and questions similar to those we have been doing together. I want you to read and complete the work alone. Hand out the paper and allow student 10 minutes to complete. Check responses orally if time permits or collect for correction and feedback.

UCLESS7

Understanding Characters

INTRODUCTION

APPEARANCE WORDS

Fat	Thin	Fair	Dark	Pretty	Plain
plump	slender	blonde	black	attractive	ugly
chubby	bony	fair-haired	swarthy	beautiful	horrid
Small	**Big**	**Healthy**	**Sickly**	**Pale**	**Tanned**
little	lanky	sturdy	weak	pasty	ruddy
short	burly	robust	feeble	sallow	sunburnt
petite	towering	vigorous	delicate	pallid	bronzed

PERSONALITY WORDS

Sensible	Foolish	Lazy	Busy	Shy	Vain
wise	silly	idle	active	modest	boastful
careful	foolhardy	sluggish	energetic	bashful	bragging
cautious	frivolous	lethargic	industrious	diffident	conceited
Friendly	**Hostile**	**Polite**	**Rude**	**Brave**	**Cowardly**
loving	angry	courteous	cheeky	bold	scared
amiable	malicious	well-mannered	impolite	courageous	faint-hearted

Make a list of 3 words from each word stack that describes you.

APPEARANCE	PERSONALITY
_____	_____
_____	_____
_____	_____

Miss Collingwood is the headmistress and I think she is lovely. She's tall and dark haired and pretty and she's got a nice gentle voice and a kind smile. Nobody has ever seen her get mad or heard her shout and somehow she never needs to, because everybody always does what she wants anyway.

1. What is the name of the character described?

_____

2. This passage includes description of both the physical appearance and the personality of the character. What words describe her physical appearance? What words describe her personality?

PHYSICAL APPEARANCE	PERSONALITY
_____	_____
_____	_____
_____	_____

DIRECT INSTRUCTION EXAMPLES

Augustus Goop was a nine year old boy who was so enormously fat he looked as though he had been blown up with a powerful pump. Great flabby folds of fat bulged out over every part of his body, and his face was like a monstrous ball of dough with two small greedy curranty eyes peering out on the world.

1. What is the name of the main character?

_____

2. List 4 words the author uses to describe him.

PHYSICAL APPEARANCE	PERSONALITY
_____	_____
_____	
_____	

3. Write a description of the main character of this passage.

_____

_____

GUIDED PRACTICE

The first person to come into the shop after the traveller had gone was a very nervous fat boy called Damian Bullock. The most notable thing about Damian, apart from his fatness, was his constant terror. He was frightened of dogs, roosters, spiders, and mice. He was frightened of most loud noises and certain soft ones, of boys bigger than he was, the same size as he was and slightly smaller ones too. He was frightened of girls, teachers, his own father, thunder and lightning. He came into Mr Philpott's shop because he could see a very tough red-headed boy known as Copper Candle lurking down the road with his gang and Damian was naturally terrified of Copper Candle.

1. What is the name of the main character?

   _____

2. List 3 words used by the author to describe him.

   PHYSICAL APPEARNCE PERSONALITY

   _____ _____

   _____

   _____

3. Complete this sentence describing the main character of the passage.

   _____ is the main character of this passage. He is a _____ who is always very _____ and _____.

INDEPENDENT PRACTICE

Lucy was a short, plump girl with a snub nose and a wide toothy grin. She had long, lank, brown hair and her face was covered with freckles. Lucy enjoyed school except for two things. One was work and the other was Maureen Best ... Maureen was one of those girls, tall, slim, with hair curly and shiny. And she seemed to be brilliant at everything, but it made her rather big headed. The two girls didn't like each other at all. Maureen thought that Lucy was the biggest clot on earth and looked like a mouldy apricot.

1. Who are the 2 main characters?

   _____ and _____

2.

2. Write two sentences to describe each of the characters. Make one sentence a description of their physical apearance and the other sentence a description of their personality.

APPENDIX E

Sample Lesson A.R. Programme

ARLESS 5

RESOLVING DEMONSTRATIVE PRONOUNS

Objective: Given an underlined demonstrative anaphoric substitute, the student will show the ability to resolve the meaning of the anaphoric term by circling in the text, or writing in the space provided above the anaphoric term, the antecedent.

e.g. Hot air rises. It is this that makes the balloon fly.

BOLD TYPE REPRESENTS STATEMENTS MADE DIRECTLY TO STUDENTS BY THE TEACHER. OTHER COMMENTS AND ANNOTATIONS ARE IN NORMAL PRINT.

INTRODUCTION

In today's lesson you will learn to find the meaning of demonstrative pronouns such as:

this, that, these and those.

These words are used to replace other words that are in the text. Look at the following example on the board. Write the sentence below on the board.

Hot air rises. It is this that makes a balloon fly.

Read the sentence. What makes a balloon fly? Student response - hot air. What word in the second sentence has been

used in the second sentence instead of hot air? Student response - this. Good. This means hot air in the second sentence. Put a circle around the words hot air in the second sentence. Wait for students to follow instruction. If you put the words hot air in the place of the word this in the second sentence you can see how the meanings are the same. Read the sentence. Replace the word this in sentence 2 with hot air.

This is what you are going to learn in this lesson - how to resolve the meaning of demonstrative pronouns: this, that, these and those.

DIRECT INSTRUCTION

Write direct instruction examples on the blackboard or place on the overhead.

DIRECT INSTRUCTION EXAMPLES

1. "Two add two makes five," answered Sam.
   "Don't worry about it Sam," he muttered. "Anybody can make a mistake like that."
2. The children liked to paint pictures. you could see that.
3. "My dog was run over by a car and killed. About four months ago that was," said Mary.
4. A well planned fish tank must have some water plants. This is because plants give out oxygen which is then used by the fish.

5. "Wait, look at this," cried Bill pointing. He had almost missed it. There, tied to the lamp post was a green garbage bag.

Look at the set of sentences I have written on the blackboard/placed on the overhead projector.

Repeat this step as for sentence 1 for all sentences

Can anyone read the first example. Student response. Now try to answer these questions:

1. What mistake did Sam make? Student response - two add two makes five. Good. What does the word that mean? Student response - two add two makes five. Good. The word that refers to a particular mistake. The word that could be replaced by the words two add two makes five. The sentences would read - "Don't worry about it Sam, " he muttered. Anybody could make a mistake like two add two makes five. Put a circle around the words two add two makes five. Student response - circle the words.

2. In the second example what could you see? Student response - the children liked to paint pictures. Good. What word in the sentence means the children liked to paint pictures. Student response - that. Good. The word that means the children liked to paint pictures. Put a circle around the whole of the first entence. Wait students complete instruction. Notice how the word that refers back to the whole of the first sentence.

3. Look at example three. What happened about four months

ago? Student response - Mary's dog was run over by a car and killed. What does the word that mean? Student response - Mary's dog was run over by a car and killed. The word that means that Mary's dog was run over by a car and killed. Put a circle around the words: Mary's dog was run over by a car and killed. Wait while the students follow the instruction.

4. What sort of fish tank will help a fish get oxygen? Student response - a well planned fish tank with water plants. Good. What does the word this mean in the second sentence? Student response - a well planned fish tank must have some water plants. Good. The word this in the second sentence refers back to what has been said immediately in the last sentence. The two sentemnces could easily be combined without losing any of the meaning. The sentences could read - A well planned fish tank must have plants because plants give out oxygen which is then used by the fish. Put a circle around the whole of the first sentence - A well planned fish tank must have some water plants. Wait while students circle the first sentence.

5. What was Bill pointing to? Student response - a green garbage bag tied to a lamp post. What word in the first sentence means a green garbage bag tied to a lamp post? Student response - this. The word this in the the first sentence means a green garbage bag tied to a lamp post. Notice that those words are not in the text in that order but the words of the same meaning are. What words in the text have the meaning: a green garbege bag tied to a green lamp post? Student response - tied to the lamp post was a green garbage bag. Put a circle around

those words. Notice that the meaning of the word this came from the third sentence. To find the meanings of some words you need to read forward.

TEACHER GUIDED PRACTICE

Now here are two sets of sentences. Handout out a copy of Set A and Set B. Look at Set A. Read sentence 1 to yourself silently as I read it to you. In sentence 1 who can tell me what the underlined word means? Nominate student. Put a circle around the words (read these words aloud from teacher's set below) that mean the same as the underlined word.

Repeat this step for examples 2 and 3.

Complete the remaining examples by yourself.

Mark and correct all examples.

SET A

1. The horse had a deep broad, chest, powerful legs and knees not too high or too low. These were marks of speed.
2. When walking along a street a man walks on the kerb side of the lady. This dates from the time of the horse and carriage, and muddy roads.
3. We worked on slashing blackberries until Percy yelled from deep in the gully, "Righto son, we'll give this away now. You can wash out the super bags."
   If there was anything I hated more than clearing out the

gully it was washing out those.

4. Rivers can be used to get rid of waste and cities have a lot of this.

5. From the waist up he was like a man, but his legs were shaped like a goat's. He also had a tail but Lucy did not notice this.

6. "What are you doing big shot?" Joey asked.
"I have become the order writer now," Randy told him.
"When did this happen?" Al asked.

7. On the morning of 30 June 1908, something several kilometres above the earth exploded with the force of a nuclear bomb. This happened in Tunguska, Siberia.

8. As the sun got closer to the sun, its surface began to boil off. Some of this expanded around the comet and glowed. This is called the coma.

Now find Set B. In this set I want you to work as independentl as possible. If you have a problem I will help you individually. Instead of circling the words you must write the meaning in the space provided above the underlined word.

Orally correct examples after a reasonable time. All students should be given the opprtunity to respond.

SET B

Place the meaning of the underlined word in the space provided.

1. Some people suffer from hay fever. This is when pollen irritates the eyes and nose causing watery eyes and sneezing.

2. The seeds of pine trees have wings which make them spin like a helicopter, slowing their fall from the parent plant so the wind may take them further. It is very important for these seeds to be carried for long distances in this way.

3. There are people who get a sick thrill from seeing disaster scenes on television in which people are badly injured or killed. Perhaps these are the same people who stand and gape at the scene of an accident.

4. She looked at the wheel chair. She looked at Tessa. "This is for Steve," she said pointing to the wheel chair.

5. There was a lounge room, three bedrooms and a kitchen. The largest of these was the kitchen.

6. The atmosphere began to change when the first green plants grew on earth. These were simple plants that lived in water.

7. Jane held out the red shorts to her uncle. "See what I found in the boiler room. This will make good evidence for the police," Jane said.

8. "Go back and ask him for a castle. I should like that!" said the fisherman's wife.

9. One ice cream was vanilla and the other was dark smooth chocolate. It was difficult to choose between these.

10. Animals take air into their bodies so that the oxygen

can release energy from the food they have eaten. This is rather like air being used to burn fuel.

INDEPENDENT PRACTICE

Hand out the sheets for independent practice. You will complete this next sheet by yourself. Write the meaning of the underlined words in the space provided above .

GUIDED APPLICATION

SET A

1. The horse had a deep broad, chest, powerful legs and knees not too high or too low. These were marks of speed.
2. When walking along a street a man walks on the kerb side of the lady. This dates from the time of the horse and carriage, and muddy roads.
3. We worked on slashing blackberries until Percy yelled from deep in the gully, "Righto son, we'll give this away now. You can wash out the super bags."
   If there was anything I hated more than clearing out the gully it was washing out those.
4. Rivers can be used to get rid of waste and cities have a lot of this.
5. From the waist up he was like a man, but his legs were shaped like a goat's. He also had a tail but Lucy did not notice this.
6. "What are you doing big shot?" Joey asked.
   "I have become the order writer now," Randy told him.
   "When did this happen?" Al asked.
7. On the morning of 30 June 1908, something several kilometres above the earth exploded with the force of a nuclear bomb. This happened in Tunguska, Siberia.
8. As the sun got closer to the sun, its surface began to boil off. Some of this expanded around the comet and glowed. This is called the coma.

SET B

Place the meaning of the underlined word in the space provided.

1. Some people suffer from hay fever. This is when pollen irritates the eyes and nose causing watery eyes and sneezing.
2. The seeds of pine trees have wings which make them spin like a helicopter, slowing their fall from the parent plant so the wind may take them further. It is very important for these seeds to be carried for long distances in this way.
3. There are people who get a sick thrill from seeing disaster scenes on television in which people are badly injured or killed. Perhaps these are the same people who stand and gape at the scene of an accident.
4. She looked at the wheel chair. She looked at Tessa. "This is for Steve," she said pointing to the wheel chair.
5. There was a lounge room, three bedrooms and a kitchen. The largest of these was the kitchen.
6. The atmosphere began to change when the first green plants grew on earth. These were simple plants that lived in water.
7. Jane held out the red shorts to her uncle. "See what I found in the boiler room. This will make good evidence for the police," Jane said.

8. "Go back and ask him for a castle. I should like that!" said the fisherman's wife.

9. One ice cream was vanilla and the other was dark smooth chocolate. It was difficult to choose between these.

10. Animals take air into their bodies so that the oxygen can release energy from the food they have eaten. This is rather like air being used to burn fuel.

INDEPENDENT PRACTICE

In the space provided above each underlined word write the meaning of that word.

"Hurry up, Jumper Jane. Are you dreaming again?"

Jane didn't like it when Uncle Bill called her that.

But Jane kept on thinking of the sound she had heard back in apartment twelve. Maybe it was a three year old. That was the age of her little brother. All little kids sounded the same when they were afraid.

Could someone have shut him up in the apartment?

Jane did not say any of these thoughts out loud. Uncle Bill would say she watched too much television. She did like T.V. mysteries, that was true.

Uncle Bill picked up a beat up teddy bear from near the garbage can. "I wonder who could have thrown this away?"

"Now will you believe me. There was a kid in that apartment."

THE WIND

Wind carries water vapour and rain and is one factor responsible for the climate of an area.

For example, the regions near the equator are the hottest parts of the world, with a very heavy rainfall. Since warm air can hold a lot of water vapour the atmosphere is very humid, or damp. These conditions support the rainforests.

The landscape may also influence the winds and change the climate. Mountains force winds to rise and cool so that the water vapour turns to rain or snow. This results in the air being cool and dry when it comes down on the other side of a mountain. As the air falls it warms and soaks up water. This causes a dry area to be created.

The wind can be a friend or an enemy. Many fast winds begin as air currents inside clouds. The air moves up and down in the clouds and begin to spin. This gets faster until a funnel of air dips down to touch the land. This is a tornado which causes a great deal of damage.

In cold countries, the wind may be different. Still cold air can feel comfortable but even a light wind can make you feel very cold. This is a wind - chill, and can cause frostbite.

APPENDIX F

Table Showing Data for All Participants in this Study

Subject	Group	Sex	GAPADOL Score Years	A.R. Pretest Score	PAT Pretest Score	A.R. Posttest Score	PAT Posttest Score	Withdrawal
1	A.R.	male	11.7	31	17	49	16	
2	U.C.	male	8.6	41	13	24	14	
3	U.C.	male	11.11	43	17	49	16	
4	U.C.	male	11.8	52	29	54	21	
5	U.C.	male	8.4	32	20	34	16	
6	U.C.	female	10.8	46	19	60	21	
7	A.R.	male	8.7	46	5	53	10	
8	U.C.	male	9.3	47	16	52	17	
9	U.C.	female	10.11	51	14	52	12	
10	U.C.	female	10.7	27	7	-	-	non attend
11	A.R.	male	11.1	51	22	59	22	
12	A.R.	male	10.4	26	11	43	16	
13	A.R.	male	11.0	27	7	51	10	
14	A.R.	male	11.4	48	17	57	19	2 wks only
15	A.R.	male	7.6	17	10	17	12	2 wks only
16	U.C.	male	11.0	40	13	51	13	
17	U.C.	male	12.1	61	25	57	22	
18	U.C.	male	9.5	28	7	-	-	left sch.
19	A.R.	male	8.5	21	13	-	-	left sch.
20	A.R.	male	8.6	-	-	-	-	withdrew
21	A.R.	male	7.2	47	21	53	23	2 wks only
22	A.R.	male	11.6	52	21	61	22	2 wks only