

Reading and the Unisa student: is academic performance related to reading ability?

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ABSTRACT

This article reports on research that examined the relationship between reading ability and academic performance amongst undergraduate students at Unisa. The findings form part of a larger study involving doctoral research into the inferencing abilities of students during the reading of expository texts. Inferential processing is central to reading comprehension because it involves the ability to perceive connections or relationships between entities in a text. The results indicate that undergraduate students at Unisa generally have distressingly low reading levels and slow reading speeds, and that inferencing ability during reading is strongly related to academic performance: the better students are at making inferences while they read, the better they perform academically. These results strongly suggest that urgent attention needs to be given to improving the reading ability of students at tertiary level, for reading constitutes the very process whereby learning occurs.

OPSOMMING

In hierdie artikel word verslag gedoen oor navorsing wat die verband tussen leesvermoë en akademiese prestasie van voorgraadse studente by Unisa uitlig. Die bevindinge vorm deel van doktorsale navorsing oor studente se vermoë om afleidings te maak by die lees van verklarende tekste. Die vermoë om afleidings te maak staan sentraal tot leesbegrip, omdat dit die vermoë om verbande of verwantskappe tussen entiteite raak te sien, behels. Die resultate dui daarop dat voorgraadse studente by Unisa oor onrusbarende lae leesvlakke en stadige leesspoed beskik, en dat die vermoë om afleidings te maak by lees 'n sterk verwantskap toon met akademiese prestasie: hoe meer studente in staat is om afleidings te maak terwyl hulle lees, hoe beter is hulle akademiese prestasie. Die resultate toon dat dringende aandag onverwyld gegee moet word aan die leesvermoë van studente op tersiêre vlak, omdat leer juis tydens die leesproses plaasvind.

INTRODUCTION

Reading is important in the learning context not only because it affords readers independent access to information in an increasingly information-driven society, but more importantly because it is a powerful learning tool, a means of constructing meaning and acquiring new knowledge. Students need to be good readers in order to be able to "read to learn". If students have not properly mastered this learning tool, then their potential for success in the learning context is handicapped from the start. As a distance learning institution, Unisa necessarily relies primarily on print-based material for promoting learning. In order to access information in print-based material successfully and to learn from it, students need to be good readers. This naturally raises important questions such as: What are the general reading levels of students at Unisa? Is academic performance in a distance learning situation related to a student's reading ability?

Some disquieting answers to these questions are presented in this article, the purpose of which is to report on the general findings of research that was undertaken to examine the relationship between reading ability and academic performance amongst undergraduate students at Unisa. More specifically, the study looked at the students' inferential reading skills, ie the ability to perceive how information is connected in a text. But before reporting on the study, let us first take a brief look at the component processes involved in reading.

COMPONENT PROCESSES IN READING

Reading involves several component knowledge structures and processes that interact simultaneously during the reading process. In the literature a distinction is commonly made between two main types of process, viz decoding and comprehension. Decoding refers to the deciphering of printed symbols into language, and involves the oculomotor, perceptual and linguistic parsing aspects of reading activity relating to letter-sound correspondences, word identification and lexical access. Comprehension refers to the understanding process whereby meaning is assigned to the text as a whole. Both decoding and comprehension are important aspects of reading, and comprehension is not possible without decoding. However, skill in decoding does not necessarily imply skill in comprehension. Many readers may decode texts quite readily but still have difficulty understanding what it is that they have decoded (Daneman 1991; Yuill & Oakhill 1991). Comprehension is the *sine qua non* of reading and it is this which forms the focus of this article, specifically the inferential processing that is required for proper comprehension.

The role of inferencing during reading

A central premise in current theories of reading is that reading is a meaning construction process. But what does it really mean to construct meaning? Much of the information we derive from texts is not always stated explicitly but is deduced - via the making of inferences - from elements in the text and from our background knowledge of how the world, and texts, work. The inferences we are called upon to make during the reading process are not necessarily the deductive inferences associated with the traditional school of Aristotelian syllogistic reasoning, of the order:

(1) All men are mortal Aristotle is a man Therefore Aristotle is mortal.

Such syllogistic inferences are governed by specific rules of logic and they are context-free, because the premises entail the conclusion. But consider now the following short text, taken from a first-year sociology textbook:

(2) Carceral organizations were rare in medieval times. Jails and dungeons sometimes existed, but they were few and far between, and were not places where convicted criminals served fixed sentences. People were kept in them as a means of stifling political opposition, to be tortured in order to extract information, or to await trial. The mentally ill either lived within the community, or were forced to roam the countryside. There were no asylums or mental hospitals. The situation has changed considerably in the intervening eight centuries. Carceral institutions have been built in great numbers since the turn of the nineteenth century. (Giddens 1993).

Even if we have never seen the term carceral organisation before, based on our expectations that when two or more sentences follow each other in a text, they are somehow linked, we can infer that jails and dungeons are somehow linked to carceral organisations. Based too on the fact that things that are mentioned in the same paragraph are usually about the same topic, we can further infer that because reference to mental hospitals occurs in the same paragraph as reference to jails and dungeons, that jails, dungeons and mental hospitals are instances of carceral organisations. Based too on our general knowledge of how the world works and what people do, we can generalise further by inferring that carceral organisations must therefore be organisations that restrict the freedom of certain people, such as criminals and the mentally disturbed. Furthermore, even if we don't know what or when medieval times refers to, from the reference to the situation having "changed considerably in the intervening eight centuries", we can risk the guess that medieval times refers to a period of time 800 years ago.

These are just some of the inferences that we can make when reading this paragraph, and in making such inferences we are constructing meaning and making sense of the information in

the paragraph. Making these connections helps us understand the text in the way that the author intended us to understand it. This kind of meaning construction during reading not only enables text comprehension but also results in the acquisition of new knowledge, be it new lexical or conceptual knowledge relating to a specific subject, or simply new general background knowledge.

As the above example shows, the information that we derive from a text cannot all be explicitly mentioned; it would make texts too tedious, repetitive and long. Understanding a text must perforce go beyond the sum of the sentences in the text. This going beyond the sum of the sentences, filling in the gaps between text elements, linking information across textual units, is referred to as inferencing. Inferences perform text-connecting functions during reading. Indeed, in the early days of artificial intelligence and the modelling of language comprehension on computers, Schank (1976) declared inferencing to be "the core of the understanding process", and text comprehension has itself been described as "an inferential activity" (Rickheit, Schnotz & Strohner 1985).

The ability to make connections, to perceive possible relationships, to see likely links between text entities is a cornerstone of language processing (eg Singer 1988). In reading, this ability to construct meaning via the making of inferences is particularly important, since the reader does not have access to other modalities that help meaning construction, such as intonation, speaker gestures, facial expressions or asking a speaker to repeat or clarify what has just been said.

Because inferences perform essential text-connecting functions during reading, a reading test that probes the inferencing abilities of students should give a reliable indication of the extent to which the students can effectively and meaningfully access information from print-based learning materials and construct a mental representation of the meaning of the text. If students can construct coherent representations of the texts they read for learning purposes, then they have a better chance of understanding their content subjects and passing their examinations. Thus, the way in which reading skill was assessed in this study was via the ability of students to draw inferences during the reading of expository texts, and the reading scores thus obtained were then related to the students' final examination scores in a subject for which they were registered, ie to their academic performance. Further details about the kinds of inferences that were used in the reading tests are provided later, when the analytic framework of the study is described.

Reading speed

Research into reading ability during the past few decades has established that there is a relationship between reading speed and reading comprehension. In order to put the results from the reading inference tests into a broader context, a small sample of students were also tested to determine their reading speeds. Although readers who read too fast often miss out important information, research does suggest that reading at too slow a rate not only reduces enjoyment of reading but also jeopardises efficient comprehension (Anderson 1999). Because reading rates vary, depending on reading level (eg unskilled versus or skilled readers), text type and genre (eg narrative versus expository), reader familiarity with the topic, and purpose of reading (eg pleasure versus study reading), it is difficult to reach consensus on an optimal reading rate for different age groups and reading levels. Nuttall (1986:56) states that a reading speed of 300 words per minute is the norm for adult L1 (first-language) readers of English with average education and intelligence reading a narrative text, while Dubin and Bycina (1991) suggest that 200 words per minute is the minimum required for proper comprehension. Higgins and Wallace (1989, in Anderson 1999:3) propose that 180 words per minute is a threshold between mature and immature reading, and that reading speeds below this level compromise comprehension. Segalowitz, Poulsen and Komoda (1991, in Anderson 1999:2) argue that the reading rates of bilingual L2 (second-language) readers are usually about 30 percent slower than L1 reading rates. Some researchers suggest that L2 readers who study through the second language should try to approximate L1 reading speeds (Jensen 1986, in Anderson 1999:3).

In the light of the issues discussed so far, the main research questions that inform this article are:

- How successful are students at making inferences during reading?
- Is there a relationship between the making of inferences during reading and academic performance?
- What are the reading speeds of undergraduate students?

METHODOLOGY

For ease of presentation, the analytic framework of the study is first dealt with, followed by a description of the subjects and the methodological procedures.

Analytic framework

Based on work done in text linguistics on text-based and reader-based factors that affect the coherence of texts (eg Armbruster, Anderson & Ostertag 1987; Crombie 1985; Fahnestock 1983; Hubbard 1993), an inference taxonomy comprising different categories of text-based inferences applicable to expository texts was set up. Text-based inferences do not rely directly on background knowledge but can be derived from information already given in the text (eg by utilising given linguistic and/or semantic/content clues and by integrating information across sentences/paragraphs).

In all, a taxonomy of six main categories of inference was established, each with their subcategories. These main categories, as reflected in Figure 1, are briefly described below.

Figure 1: Inference taxonomy

Inferences

Anaphoric inferences	Vocabulary inferences	Text-semantic inferences	Thematic inferences	Academic inferences	Textual inferences
pronominal lexical	word meaning	temporal whole-part causal contrastive	main versus secondary ideas	research	discourse structure

The inferences in the first category, anaphoric inferences, basically involve the ability to keep track of repeated references in a text, either through repetition of the same word, or via use of another lexical or grammatical item to refer to an already given antecedent. Consider the underlined example in the text below:

(3)A small amount of alcohol can result in changes in a person's mood and behaviour. A blood alcohol level of about .05% can make a person feel a sense of release from tension and inhibitions. This mild euphoria is the aim of many people who drink moderately. However, this feeling of happiness drops as the alcohol level increases; there is an increasing loss of control because alcohol acts as a depressant on functions of the brain. (Jordaan & Jordaan 1998).

The underlined noun phrase *This mild euphoria* refers back to an antecedent idea introduced earlier in the text, as indicated by the italics. Similarly, the underlined noun phrase *this feeling of happiness* in the following sentence refers back to *This mild euphoria*. The ability to resolve anaphors during reading enable readers to keep track of referents and arguments introduced into a text (eg Pakenham 1980; Webber 1980).

The second category, vocabulary inferences, as the name suggests, involve the ability to work out the meanings of unfamiliar words when clues occur in the text. For example, if a reader does not know what the word euphoria means, there are at least two clues in the text above that can guide the reader in developing an emergent meaning of the word.

Text-semantic inferences involve the ability to keep track of temporal sequences in a text, to perceive the cause-effect relations between entities and the way in which parts are related to wholes, and to keep track of contrastive arguments in a text. A contrastive relation involves an unexpected or opposing point to what has been stated, a concession or qualification to a previous statement, or a denied implication. It is typically signalled by conjunctives such as yet, however, although, on the one hand ... on the other hand, and so on. For example, in the text above, the euphoric effects of alcohol on behaviour are first described, after which the contrasting depressant effects, signalled by the sentence starting with However ..., are described.

Thematic inferences involve the ability to distinguish main from supporting ideas. Main ideas are not always explicitly stated but need to be inferred from the text, and the ability to make such inferences is typically associated with skilled reading. The test items on academic inferences tested whether the students could make inferences about the nature of scientific research from the references in their texts. Finally, textual inferences refer to the ability of readers to make inferences about the macro organisation of a text (ie the way in which a writer presents information in paragraphs).

This taxonomy provided the framework for a systematic examination of the inferencing abilities of first-year students during the reading of expository texts. The inference items in the test were further divided into low-inference and high-inference categories. These categories were operationalised in terms of criteria such as clausal distance between relevant text entities, number of textual/linguistic clues, semantic opacity, and degree of abstraction involved in the inference.

Subjects

The subjects were Unisa undergraduate students and consisted of the following two groups:

1. A group of between 23 and 47 Sociology I students who attended tutorial lectures at the Thuthong Centre, Unisa Sunnyside campus, presented and supervised by two lecturers from the Sociology Department. The students were tested on four different occasions by the researcher, in cooperation with the Sociology lecturers. Each test session involved a period of about 80 minutes. The four test sessions included:

- a) A test on anaphoric inferencing;
- b) A reading comprehension test that comprised inferential questions dealing mainly with text-semantic and thematic relations but also other inference categories;
- c) A vocabulary inferencing test;
- d) A short reading questionnaire.

The tests with these students formed the pilot study. The academic performance of the students was based on their performance in their final Sociology examination. The results showed, not unexpectedly, that many of the students who attend the Thuthong centre tend to be academically weaker students. In other words, the weaker students were over-represented in this sample, and this was reflected in the results. Due to fluctuating attendance at

the tutorial lectures, not all 47 Sociology students wrote all the tests; only 17 of the students completed all four tests.

2. A reading comprehension test, as part of a voluntary but credit-bearing "assignment", was sent to 5 000 students enrolled for Psychology I during 1998. This assignment included items that probed the students' home background, study habits, study strategies, affective factors, attitudes towards their study material and courses, and reading comprehension. A total of 1 240 students responded to the reading comprehension test. Unlike the other inferential tests, this reading comprehension test was a "one-off" comprehension test in which all the items were inferential questions. Because an in-depth profile of the inference skills of each subject could not be built up from a single test only, it was decided to give a broad inference test that would sample inference responses from a variety of the inference categories that had already been set up in the pilot study. Unlike the other inference tests, there were no controls regarding the time it took the students to complete the test nor the sources they used to help them answer the questions. What this test lacks in depth it makes up for in the possibility of broader scope for generalisation, for it hopefully reflects responses from a wider, more representative group of Unisa students than the Sociology students at the Thuthong Centre. The academic performance of these students was based on their performance in their Psychology examination.

* The speed reading test was administered on an individual basis to 24 Psychology and Sociology students at the Thuthong Centre. All of them volunteered to do the test because they were interested in finding out how fast or slowly they read. In return, the students were given advice on how to improve their reading speed and general reading ability.

Test materials and procedures

In order to replicate the naturally occurring text conditions of the students, it was important to use test material that reflected the kinds of expository texts that students regularly read for their course work. The texts that were used in the reading test were all taken from social and human science textbooks used in undergraduate Sociology and Psychology courses, viz

Giddens, A 1993. Sociology. 2nd edition. Cambridge: Polity Press.

Haralambos, M & Holborn, M 1995. Sociology: themes and perspectives. 4th edition. London: Collins Educational.

Lauer, R H 1996. Social problems and the quality of life. 4th edition. Dubuque: Wm C Brown.

Jordaan, W & Jordaan, J 1998. People in context. 3rd edition. Johannesburg: Heinemann.

The series of reading tests that the Sociology students wrote were administered by the researcher during the Sociology lectures, and although no time limits were placed on the completion of the tests, the time it took each student to complete the tests was recorded. With regard to the Psychology students, the test was printed in A4 booklet form and posted to the students in July. The students were requested to complete the answers in their own time at home and to post back the assignments by the end of August. The fact that the students completed the tests at home means that there was no control over factors such as the time it took them to complete the tests or whether they consulted other sources for responses to the questions. However, these conditions prevail when students prepare their assignments or learn for examinations; the test conditions therefore replicate those of a typical distance-teaching situation. These test results thus make for an interesting contrast with those resulting

from the more controlled conditions under which the Sociology students wrote their inference tests.

Reliability of test

In order to test for reliability of inference test items, the Alpha (Cronbach) model Reliability Analysis Test, available on SPSS, was applied to the reading inference responses. The reliability test was administered to all those responses from the Psychology students where all the inference questions had been answered. This comprised a total of 703 of the 1 242 responses. An Alpha index of .78 was obtained, which is considered a satisfactory reliability index.

RESULTS

Of the 1 242 Psychology responses initially marked and coded, all those respondents who did not complete the last 10 items of the test were excluded from the data analysis. This left a total of 1 113 responses that were included in the statistical analyses.

Inferencing results

In order to address the first research question, namely How successful are students at making inferences during reading?, a mean score was computed for both groups of Sociology and Psychology students, as reflected in Table 1 below.

Table 1: Mean inference scores of different student groups

Student group	N	Mean inference score
Psychology	1 113	52.8%
Sociology	17	52.9%

What is striking about these results is the remarkable consistency in inferencing scores across the different student groups, despite the fact that the Psychology students had a different test from the Sociology students.

The second research question explored the relationship between the making of inferences during reading on the one hand and academic performance on the other hand. The variable

"academic performance" was categorised into groups of respondents, depending on their final examination mark for Sociology 1 and Psychology 1. Initially there were four academic groups, but because the Fail group turned out to be such a large group amongst the Psychology students (638 students) , it was subsequently divided into two groups, as shown below. The five groups were as follows:

Group 1:	Fail I:	students who received 0-39% in the Psychology examination; (N=355)
Group 2:	Fail II:	students who received 40-49% in the Psychology examination; (N=283)
Group 3:	At Risk:	students who received 50-59% in the Psychology examination; (N=185)
Group 4:	Pass:	students who received 60-72% in the examination; (N=178)
Group 5:	Distinction:	students who received 73% or above (students with 73-74% can be adjusted upwards to a 75% distinction pass) (N=132)

A one-way ANOVA was used to explore the relationship between the Fail, At Risk, Pass and Distinction groups in terms of their overall inference scores. The analyses yielded a highly significant effect, $F(4, 1128) = 74.73$, $p < .00$. A Scheffé test ($p < .05$) showed significant differences between all the groups except the two Fail groups.

Table 2 below reflects the mean inference scores for each of the academic groups of Psychology students and Sociology students. As can be seen, there are clear differences in inferential ability across the different academic groups with both groups of students.

Table 2: Mean inference scores of different groups according to academic performance*

	Fail I (0-39%)	Fail II (40-49%)	At Risk (50-59%)	Pass (60-72%)	Distinction (73+%)
Psychology	44.6	50.4	55.2	60	70.1
Sociology	39.5		57.8	61.6	-

*The mean scores are expressed as percentages.

The relationship between the kinds of inferences made during reading and academic performance was also probed. In order to examine this relationship, all the inference test items used in the Psychology reading test were cross-categorised into low-inference and high-inference categories. The low-inference questions were regarded as fairly "easy" in terms of criteria such as proximity between items of information from which the text-based inference was drawn, and number and transparency of text-based clues. The high-inference questions involved greater processing effort and a greater degree of abstraction or generalisation from the given text-based information. The differences in the mean low-inference and high-inference scores between the different academic groups are displayed in Table 3 below.

Table 3: Mean low- and high-inference scores according to different academic groups*

N =	Group 1 (Fail I) 355	Group 2 (Fail II) 283	Group 3 (At Risk) 185	Group 4 (Pass) 178	Group 5 (Distinction) 132	Overall Mean 1133
Low inference	60.3	63.6	68.6	69.3	79	66
High inference	43	46	52.2	56	72.3	49

* The mean scores are expressed as percentages.

The relationship between scores on high- and low-inference items and academic performance was further explored by means of one-way ANOVAs, with four levels in the dependent variable, viz. Fail (the two fail groups were combined), At Risk, Pass and Distinction. The analysis with regard to low-inference items yielded a significant effect, $F(3, 1129) = 10.04$, $p < .00$. A Scheffé test ($p < .05$) showed significant differences between three of the four groups (the At Risk, Pass and Distinction groups) but not between the Fail and At Risk groups. In other words, the differences between these latter two groups with regard to low-inference items were not greater than the differences within these groups. The analysis of the one-way ANOVA with regard to the high inference categories yielded a highly significant effect, $F(3, 1129) = 11.85$, $p < .000$. A Scheffé test ($p < .05$) showed significant differences between all four groups.

Further statistical analysis was then undertaken to address the research question, viz To what extent does text-based inferencing predict academic performance? Data from the whole questionnaire were collated by lecturers in the Psychology department (Janeke & Kruger, in press) and grouped into eight independent variables, viz. the living conditions of the students (eg how many people per household, access to electricity, radio, computers, etc); matric results; study habits; attitude to content work; perceived usefulness of course material; level of motivation; locus of control; and reading inference score. Using a linear regression model, it was found that the reading inference score was most strongly correlated with the examination results, and of all the variables it accounted for the most variance in the examination scores (24 percent of the variance). In other words, reading inference was the strongest predictor of academic performance of all eight independent variables.

To summarise the findings, there were clear and consistent differences in inferencing ability between the different academic groups, with inferencing skills improving the higher the academic group. The results indicate that inferencing ability during reading is a fairly robust predictor of academic performance.

Results of reading rates

Given a 30 percent slower reading rate for L2 readers, the undergraduate students at Unisa should, minimally, be reading at between 140 and 160 words per minute. However, the average reading speed of the 24 students who were tested at the Thuthong Centre was 96,9 words per minute, while the average comprehension rate was 40,4 percent. The reading speed of these students ranged between a maximum reading speed of 151 words per minute, with a 70 percent comprehension level, and a minimum speed of 53 words per minute, with a minimum comprehension rate of 20 percent. The obtained average reading speed indicates that the students are reading at well below recommended speeds, and with disquietingly low comprehension levels.

DISCUSSION

Inferential processes during reading essentially involve the linking of different ideas in a text and relating newly encountered information to information encountered previously, implicitly or explicitly, either earlier in the text or else in long-term memory.

The mean inference score of 53 percent obtained from the inference test strongly suggests that our undergraduate students do indeed have problems reading expository texts in meaningful and effective ways. It is instructive to compare these results with the three levels of reading performance commonly identified from standardised reading tests (cf Lesiak & Bradley-Johnson 1983:8):

Independent level:	At this level the student can read with 95 percent word recognition accuracy and 90 percent comprehension accuracy. The student at this level is regarded as a skilled, independent reader.
Instructional level:	At this level the student can read with 95 percent word recognition accuracy and 75 percent comprehension accuracy. Although the student can cope at this level, she or he can profit from instruction.
Frustration level:	At this level, the student reads with 90 percent or less word recognition accuracy and 50 percent or less comprehension accuracy. The student is unable to handle relevant reading material at this level.

As can be seen, the average reading score of the Unisa students falls within the frustration level, where students with 50 percent or less comprehension accuracy are regarded as being unable to handle relevant reading material commensurate with their maturity levels and/or the functional demands of their learning or work context (which, in this case, is the reading of expository texts at tertiary level). Although one must be cautious in extrapolating results from standardised reading tests to a reading test based purely on inference items (used as an index of comprehension accuracy), the results do suggest that many of our students at Unisa are reading at frustration level and require help in improving their reading skills.

The consistent pattern of inferencing ability that emerges from the results clearly indicates that the better a student's inferencing ability during reading, the better his or her chances of academic achievement. This pattern indicates that students in the Pass and Distinction groups, especially the latter group, are students for whom reading is an effective learning tool. They are competent at using text-based clues for seeking patterns of meaning and relationships in texts and this enables them to build up a rich representation of the meaning of a the text. This rich meaning construction in turn enables them to construct new knowledge from their texts. Thus they "get richer" in the learning context. In contrast, students who have difficult making inferences during reading have difficulty linking up information in texts, which means that they have difficulty understanding the texts they read, which is subsequently reflected in their academic performance. This outcome is not surprising, given that academic performance depends to a large extent on the ability to independently access information from the written word and to construct meaning from it, thereby also constructing new knowledge in the process.

The fact that the weaker students engage in less inferential activity and that they are also less successful in engaging in higher-order, more complex forms of inferential processing naturally raises the question: does this pattern arise because these students are not good at inferencing in general, or is it because they are not good at making inferences during the reading process in particular? In other words, does the weaker students' difficulty with inferencing reflect a global reasoning problem or a more specific text-processing problem? The findings from this study point to the latter option. In other words, these students are not effectively constructing meaning via inferencing while they read. Indeed, there was plenty of evidence (eg from incorrect inferences that students gave, and from my work with five case-study students whose reading strategies I tracked over a period of three months as they

worked through their textbooks in preparation for their assignments and examinations) that the students readily engaged in the making of inferences. The problem that they have relates more specifically to the making of inferences within a text-based context (ie during reading), and utilising linguistic and semantic clues in the texts as a basis for making inferences. This finding is consistent with research into differences between skilled and unskilled readers (eg Holmes 1987; McCormick 1992; Winne, Graham & Prock 1993).

The patterns that emerged from the results strongly suggest that the undergraduate students who are scoring poorly on inferencing skills manifest problems with meaning construction in overlapping ways. For example, the weaker students are less successful than their skilled counterparts at:

- integrating the meanings of successive sentences or paragraphs;
- identifying main ideas or overall gist in texts;
- resolving anaphoric references;
- inferring the meaning of unfamiliar words when linguistic/semantic clues do occur in the context;
- detecting inconsistencies in the text;
- perceiving how parts relate to wholes;
- perceiving causal and contrastive relationships between items of information in texts;
- making more abstract inferences from specific details.

Skilled reading is a very rapid and precise process, and skilled readers attend to and make use of cues in texts in order to construct meaning. Dependence on text cues is especially necessary for reading texts on unfamiliar content, which is typical of reading at university level. Because weaker students fail to attend to relevant clues in the text, they fail to make relevant connections between text elements, and this results in the construction, during reading, of inaccurate, fragmented and oversimplified representations of complex content matter. If weak students are having problems inferring and integrating information at various levels of text comprehension when they read to learn, then it is not surprising that they fail - the results of the study indicate that they do not properly understand what they read when they learn.

With regard to reading speed, given the amount of reading required at tertiary level, and given too that expository texts usually require repeated reading for full comprehension, it is advantageous for undergraduate L2 students to achieve reading speeds of at least 150-180 words per minute. All the students who were tested achieved scores well below this recommended reading rate. Slow reading speeds not only compromise comprehension but also result in diminished task persistence - slower readers read their texts less because it is such a time-consuming activity, and in reading less, they have fewer opportunities for meaning construction and learning.

The widespread and continued underperformance, at primary, secondary and tertiary level, of many students in South Africa who study through the medium of a second language is a worrisome situation. Naturally, there are many contributory factors to this situation, several of which are rooted in the country's socio-political history. Whatever the causes, the effects are the same: students with reading problems get caught in a negative cycle of failed reading outcomes and non-strategic reading styles, and if they are reading at frustration level and have to deal with texts well above their reading ability level, then leaving them to their own devices in the hope that problems will sort themselves out amounts to an abdication of educational responsibility. Many of our students come from disadvantaged communities and attended schools that failed to develop their reading skills. Many of our students also come from mainly oral communities where books and reading do not form an everyday part of their lives outside of schooling. If the socio-economic and cultural contexts of the students fail to support the acquisition of literacy practices that result in skilled reading, and if the primary and secondary school contexts have failed to ensure the development of these skills, then tertiary institutions would be hard pressed to justify turning a blind eye to the reading problems of their students, especially distance-education institutions that rely by their very nature on print-based material as a means of transferring learning and helping students to acquire new skills

and knowledge. With the ever-increasing trend towards distance learning institutions that is evident all over the country, the need for skilled reading is particularly compelling, given that most of the learning occurs through the medium of the printed word rather than the spoken word. Are such institutions attending to the reading needs of their students? Universities can no longer afford the luxury of ignoring the reading problems of their students, for reading is the fundamental medium through which learning occurs at tertiary level.

Reading is not simply a language skill, and improving the L2 proficiency of learners is not automatically going to lead to concomitant improvements in reading comprehension or academic performance. Although language proficiency and reading skills both draw on linguistic knowledge and skills, reading develops specific cognitive-linguistic skills that are not necessarily operative in oral forms of discourse. Universities need to implement core instructional programmes in reading, because independent learning can only take place when independent reading occurs. All the literature on reading instruction in general and inferencing instruction in particular has shown that reading instruction can and does make a difference (cf for example Bridge 1987; Dewitz, Carr & Patberg 1987; Pearson & Fielding 1992; Ruddell 1994).

In conclusion, the findings from the study indicate that urgent attention needs to be given to improving the reading levels of undergraduate students and to creating a culture of reading at tertiary level. Improved study packages, the creation of more reader-friendly texts, pedagogical shifts to student-centred teaching approaches and outcomes-based education are not going to be fully effective unless attention is also given to the development of reading skills. Explicit instruction in reading strategies and in inferencing can improve the reading levels of unskilled readers so that they can indeed grow rich from exposure to the print-based material in their distance-learning situation. Reading is not simply an additional tool that students need at tertiary level - it constitutes the very process whereby learning occurs. The longer we ignore the reading problem, the more the intellectual potential of current and future generations of students goes untapped.

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