Chapter 6: Reading intervention programme

6.1 Introduction

Chapters 2, 3 and 5 have provided theoretical and empirical evidence that incorporating an affective dimension in a reading instruction programme is crucial. This chapter presents the details of the affective components integrated with the standard curriculum for the standard Academic Reading programme that was offered as an elective module to *Low Risk* first-year students. The standard module focused on cognition and metacognition, comprising strategy use, vocabulary development, and critical reading. Although these are important aspects of reading (which are dealt with in most reading textbooks), the students' reading profile given in Chapter 5, demanded a restructuring to cater for their affective needs. In addition to the absence of the affective, the workbook for this reading module leaned more toward theoretical explanations than practical work. This called for inclusion of more exercises and tasks, and more real-life, practical work to give students competence support and increase their self-efficacy, which was found to be lacking. Furthermore, all the texts used in the workbook are generic. In order to provide interesting, stimulating and relevant texts, which are motivating to students, discipline-related texts and extracts from students' textbooks were included in the teaching materials for the intervention.

At Risk students on the compulsory Academic Literacy module also went through the same intervention programme, although the syllabus for their standard first semester programme did not overtly focus on academic reading. The intervention groups (*At Risk* and *Low Risk*) did not receive any extra tutorials but had the same contact hours as the control groups.

Given that students improve their reading ability by reading frequently, an extensive reading section was included in the intervention programme. This was to provide students with the opportunity to read for pleasure and to enjoy the activity.

6.2 Intervention: enrichment and tasks

Since all students registered for the Academic Reading and Academic Literacy modules were subjected to the same major assignments the programme for the intervention groups could not be completely restructured. Thus it was only affectively enriched with additional

tasks and exercises, as shown in Appendices 4A and 4B. The sections in the Academic Reading workbook were augmented with additional tasks and exercises using generic, discipline-related and subject-specific texts within motivational practices, as proposed and applied by Guthrie and Wigfield (2000); Guthrie, Wigfield and VonSecker (2000); Guthrie, Wigfield, Barbosa et al. 2004. Specifically, the focus was on *autonomy support* (choice), *collaboration* (community of literacy), *real-world interactions*, *learning goals, rewards and praise*, *competence support* (strategy instruction) and *teacher support.* Below, the main sections of the workbook are discussed. In each section a brief summary of the current or standard workbook is given, followed by details of the enrichment programme for the intervention, which includes additional tasks and exercises within an affective approach that supports Guthrie and Wigfield's instructional practices for motivation and engagement. Sections 6.2.1 to 6.2.4 deal with the main components of the workbook, and 6.2.5 deals with an added component to further enrich the programme as a whole.

6.2.1 Section 1: Theories of reading, reading speed and background knowledge

Standard content

This section of the workbook introduces academic reading by giving the definition of reading and the various components involved in reading. This is followed by a discussion of the theories of reading, namely top-down, bottom-up and interactive reading. The role of background knowledge is explained with one fill in the gap exercise on predicting. The importance of reading speed is explained and a generic text is provided for speed reading practice. Finally, the various techniques of reading – scanning, skimming, comprehension reading and critical reading – are explained together with the four text types or the rhetorical modes: narration, description, exposition, and argumentation. These explanations are followed by a task that requires students to identify the dominant rhetorical mode of excerpts from larger texts.

Enrichment

The theoretical weight of the workbook is evident in the many explanations but few exercises in this section. For the intervention, additional exercises on background knowledge and prediction were added. The concept of SQ3R/SQRS (survey, question, read, recite, review or survey, question, read, summarise), corresponding to the three stages in the reading process (before, during and after), was introduced in this section.

Tasks

Using texts from a first-year Economics textbook, students were asked to write what they knew about the topic and to discuss the information with fellow students. They then skimmed the text, reading the first and last paragraphs and the first sentence of each paragraph, and then predicting what the text was about. After skimming and predicting, students read texts to confirm or refute their predictions. In other words, after skimming individually to activate their background knowledge on the topic, students compared their predictions with their discovery upon reading the text, and then discussed these findings in groups. The nature of these exercises enabled students to activate their background knowledge, practise prediction in reading, and engage in motivational activities, such as collaboration, learning goal and competence support, which develop self-efficacy.

Other activities on background knowledge included the following: (1) students wrote down how they generated background knowledge while reading textbooks and shared these ideas with fellow students; (2) students were given academic words and asked to generate words or concepts they associate with the keywords; (3) working in groups, students identified transitional and linking words in a given text, then categorized them according to their functions; (4) an economics text with every fifth word omitted was given to students to fill in the omitted words using background knowledge and prediction. (5) using vocabulary to activate background knowledge students chose a discipline-related text and wrote down 20 words they anticipated would occur in the text. After discussing the words and how they could be linked to the text, students sorted words into their appropriate word classes, and then read the text to confirm the predictions. The best performing student or group was rewarded with a book prize or given 5% towards the continuous assessment mark. These hands-on collaborative exercises were aimed at generating background knowledge, but also at holding students' interest and instilling motivation. Anticipation and prediction entails curiosity, which leads to motivation. The group work involved in these activities removes anxiety and apprehension and therefore opens students up for learning. The opportunity to choose texts from various options provided them with some autonomy, which is motivating. Besides, the tasks were undertaken in a relaxed, non-threatening environment.

To increase reading speed, students engaged in a matching activity, first using letters, then words, phrases and concepts. They were given extracts from their Economics textbook and

asked to scan for specific words. Thereafter, they skimmed the text to obtain an overview, and then read for comprehension and wrote down the reading time. Another activity to increase reading speed required students to read for a minute and markthe point where they stopped; then reread the same section for a minute again and mark the stopping point. The aim was to get students to read longer texts as they go over information read earlier. Generic texts were initially used, and then as students became used to the exercise, discipline-related texts were used. Students saw immediate results in reading speed: time used for reading text decreased, and students read longer texts on the second and third readings within the given one minute. As awareness of progress is motivating, the exercise was to help increase students' intrinsic motivation. In addition, extrinsic motivation was enhanced by rewarding the best performing five students for each activity with sweets, chocolates or books for correct answers and speed.

Another exercise for reading speed was for students to reread a text until they read an acceptable number of words per minute with 70% comprehension (this exercise was given as homework, but due to time constraints could not be followed up).

Texts for speed reading exercises were initially very simple narratives, a level below students' proficiency level. Generic and discipline-related texts with multiple choice questions were used. Students initially chose texts and topics they were comfortable with. Generic texts were introduced first and gradually replaced by discipline-related texts. Rereading builds fluency and enhances comprehension. Students were also encouraged to use ReadOn, a computer-based programme available at the Student Support Centre, for further practice to improve their speed and comprehension abilities. Unfortunately a follow-up was not done to find out whether students did use this facility, how many of them did and whether it was beneficial to them.

6.2.2 Section 2: Reading strategies

Standard content

This section of the standard workbook deals with reading strategies. It explains some of the strategies that good readers use for comprehension. Strategies such as identifying main ideas and topic sentences of paragraphs, highlighting, summarizing and making visual representations (e.g mind maps) are explained. These explanations are followed by a

number of exercises. Since the needs analysis showed students to be poor at using strategies in all language groups and literacy levels, while strategy use was identified as crucial for successful reading, these exercises were inadequate. Anderson (1991:468) sums up the important use of strategies:

> [S]trategic reading is not only a matter of knowing what strategy to use, but also the reader must know how to use a strategy successfully and orchestrate its use with other strategies. It is not sufficient to know about strategies; a reader must also be able to apply them strategically.

Enrichment

Anderson's (1999:72) six steps and corresponding questions for L2 strategy instruction were applied using motivational practices that lead to engagement (Guthrie & Wigfield 2000) in reading. The six strategy instruction questions, Anderson's explanations and the corresponding motivational practices are given in Table 6.1 below, in relation to a specific skill: main idea comprehension.

Table 6.1: Six steps to motivational strategy instruction (main idea comprehension)

Step	Guiding question	Anderson's explanation	Motivational strategy
1	What is the strategy?	Identification of main ideas An important reading strategy	**Learning goal** The strategy is explained to students
2	Why should the strategy be learned?	Main idea identification: Facilitates comprehension Assists in distinguishing between main ideas and supporting details Assists in the organisation of information	**Learning goal** Explanation of why strategy should be learned and mastered is given to students
3	How can the strategy be used?	To locate thesis statement and topic sentences	**Competence support** Students competence is enhanced by being given directions, and engaging in activities to locate thesis statements and topic sentences
4	When should the strategy be used?	Expository texts with new information	**Relevant texts** Expository texts from students text-book and discipline-related texts were used to make texts and activities relevant and significant to generate students' interest

5	Where should the reader look to facilitate the use of the strategy?	Reader should read first and last paragraphs, first sentence of each paragraph; ask questions such as: what idea is common in the text? What idea relates the parts to the whole? What opinion do all the parts support? What idea do the parts explain or describe?	**Competence support; Relatedness support: collaboration, teacher involvement**. The teacher/lecturer models the strategy with specific texts. Students use relevant texts to do exercises in pairs then on individual basis.
6	How does the reader evaluate the use of the strategy	Open class discussions on strategy use	**Competence support** through metacognition; **Relatedness suppor***t* through collaboration and teacher involvement

The steps, questions, explanations and motivational strategies were also applied to argumentative texts.

Tasks

In implementing step 6, students explained the strategies they had used, which helped them become more aware of the strategies they were using, and also enabled others to learn from them. Exercises to improve strategy use included students' selection of discipline-related texts and application of the six steps explained above in their reading. In addition, students wrote down questions while reading to activate background knowledge. Afterwards, they listed the strategies they had used and explained why they used them. Finally students wrote brief summaries of the texts. The summaries were discussed, and the strategies used to obtain meaning were also discussed in groups. Presentations were made from each group and the lecturer evaluated and commented on each presentation. Students learn from their peers in these discussions, as they see the usefulness of the strategies. Again, due to time constraints, individual summaries could not be assessed by the lecturer.

To further assist students in their use of strategies, the lecturer read a text aloud, and modelled think-aloud protocols. For example, thoughts were verbalised, questions were asked and reading strategies were also mentioned. Students then read individually, following the teacher's modelling, and writing down questions as they read. Afterwards, students wrote down the strategies they had used while reading. Finally, in groups

students, discussed the strategies they used in terms of their appropriateness and effectiveness using the inventory expounded in Table 6.2.

Table 6.2: Example of inventory used for evaluating strategies

When I don't understand :	A word	a phrase	a sentence	a paragraph
I reread				
I read ahead				
I look it up				
I ask someone				
Skip it and read on				

The lecturer commented on the oral discussion that ensued in relation to the inventory responses.

In order to help students overcome their fears of using new strategies, and to instil self-confidence in them, immediate confirmation was given to a group or an individual student. Whenever difficulties were encountered by students in their reading, the lecturer went through the process/steps with the student. Once the analysis or steps were completed, immediate confirmation was given to reassure the student that the analysis was correct. This was done in order to increase students' confidence in strategic reading. Students from poor reading backgrounds usually need constant reassurance and reinforcement in the process of revising old strategies to adopt new ones. This nurturing was frequent at the beginning and gradually reduced as students became comfortable in using strategies for comprehending academic texts. To develop the confidence and the security involved in problem-solving during reading at tertiary level, students needed to work gradually from the group level to individual applications. These applications made use of a number of generic and discipline-specific texts, and the two rhetorical modes favoured at tertiary level: expository and argumentative.

These exercises, besides providing practice for developing competence, were also aimed at providing learning goals: first, students were given clear steps to follow; second, it was explained to students why strategy should be learned; and third, discipline-related texts were introduced, as students became more comfortable with the strategies. Furthermore, scaffolding in the format of gradual introduction of more challenging texts and tasks was introduced, as it reduces anxiety and increases motivation. First, less difficult texts were

used, with a gradual shift to challenging texts. Second, short generic texts progressively shifted to longer subject-specific texts; third, class and group work gradually changed to peer work and then to individual work for assessment. Since the distinction between main ideas and supporting details is a major challenge for students, yet an important aspect of comprehension, important ground was deemed to have been covered

6.2.3 Section 3: Academic vocabulary

Standard content

Section 3 in the standard workbook deals with vocabulary building; the use of contextual clues and word parts, to determine the meaning of words. Similar to the other sections, there are very few exercises in this section of the workbook for practice. Also, the exercises comprise single sentences: e.g. students identify the meaning of words using clues in each sentence. As discussed earlier, the exercises are purely cognitive-oriented and do not have any affective dimensions**.**

Enrichment

Exercises using whole paragraphs were included and instruction was grounded in developing positive affect. Students chose from a list of given topics and engaged in brainstorming on core vocabulary for the topic. Thereafter, students grouped words into related concepts. In groups, they compared their lists, deleted unrelated words and grouped relevant words into parts of speech. Students also discussed the semantic relationship of words to the topic and or theme. Finally, they silently read the texts individually to confirm or adjust predictions. They also established which words had actually been used in the texts, and identified the part of speech.

Tasks

To use texts that are relevant and interesting to students, they were requested to write down themes that were of interest to them, as well as some topics from their various disciplines. The lecturer then selected texts related to the topics and/or disciplines for the activities. The activities included guessing the meanings of words using contextual clues.

Students were also required to complete Gerry's Academic Vocabulary Exercises, electronically through the Unit for Academic Literacy's website. The exercises required students to complete sentences in a cloze test by selecting the appropriate word from

Coxhead's Academic Word List (AWL). An example of the test is included as appendix 5. They completed the cloze test exercises in all ten AWL groups, and submitted them as part of their portfolios. These exercises were done electronically and were aimed at increasing students' interest while providing them with the opportunity to learn important academic words to be used in writing assignments in their various disciplines. Although research indicates that students acquire the bulk of their vocabulary through wide reading (Bus 2001), a practical approach, as undertaken in these online exercises on the AWL, is necessary for academic vocabulary development, especially for weak L2 readers (Scheepers 2008). Most of the students reported enjoying the task, and about 90% of them obtained 100% for the tasks. The high scores in this particular task enabled students, even the weak students, to feel successful and increased their self-efficacy. The experience of frequent success raised students' interest and instilled high motivation and positive attitudes, as predicted by Dornyei (2001b:57). It is expected that the interaction with the various academic words would help increase students' vocabulary and enhance their reading comprehension. Questions relating to these expectations were raised in the interview sessions with students and are reported on in Chapter 8.

6.2.4 Section 4: Critical reading

Standard content

This section introduces students to critical reading – an important aspect of reading that is crucial at tertiary level. However, as with all sections in the workbook, exercises for practice are inadequate and are not linked to the affective. Bloom's taxonomy of cognitive levels is explained with examples of verbs given for each level. The distinction between fact and opinion is also given, with different types of opinions explained. Inference generation should have been given more emphasis. Although inferencing is required for successful reading at higher education levels, second language readers, especially first-year students, struggle with this aspect of reading (Perfetti 1993; Pretorius 2000, 2002). Interviews with students (Chapter 8) revealed that a number of ISAL speakers had had little experience in this type of reading, either at school level or on a personal level.

Other critical reading topics in the workbook include the distinction between bias and prejudice, fact and opinion. The writer's stance (i.e. attitude, tone, use of hyperbole, understatement and irony) is explained with two very basic and low-level exercises. Evaluating arguments in texts is briefly mentioned with a single example of an illogical

argument. Caution is also given on the use of spurious arguments. However, no explanation, guidance or exercises to assess students' understanding are given.

As critical reading constitutes a crucial part of academic reading and poses challenges for L2 readers it was given careful consideration. The section is divided into three parts: inferencing, writer's stance, and evaluating arguments. The enrichments and tasks for each section are discussed below.

6.2.4.1. Inferencing

In terms of inferencing, notes were made available on Clickup (blackboard learning). Follow-up explanations on the different types of inferencing (anaphoric, thematic, text-semantic, textual, vocabulary and academic,) as identified by Pretorius (2000:93), were provided in class. These aspects of critical reading received intensive focus (many practice exercises), since various research studies, such as Daneman (1991), Holmes (1987), Franks, Mulhern and Schillinger (1997) and Oakhill (1984) (presented in Pretorius 2000:66) have shown a relationship between reading ability and the ability to make logical inferences. As a result of the crucial, yet challenging, nature of this aspect of reading, exercises were mainly done in groups to reduce anxiety. This enabled students to share ideas (community of literacy) and enabled weak students, particularly those for whom this was a novel exercise, to learn mutually from one another. This assumption was confirmed by students during interview sessions.

Tasks

Students were given texts and asked to draw conclusions based on inferencing. They were required to identify clues in the texts that led to the conclusions. A general class discussion was then undertaken on the list of clues and conclusions drawn by each group. Collaborative problem-solving was the main approach for the tasks. For example, students were required to select a text, discuss clues, draw conclusions, and make presentations to the class. The best group was always rewarded with sweets and chocolates. Another activity required students to find and cut out a newspaper cartoon. They discussed the inferences and the theme of the cartoon, and exchanged it with another group to find out if the other group had identified the same inferences and theme. They then discussed the differences in inferencing and provided possible reasons. This activity provided students with a real-life situation. It presented inferencing on a lighter note to enable students to

easily grasp the concept. Thereafter, discipline-related texts were used for inference generation exercises. The motivating classroom practices, such as collaboration (group work) and choice (selecting own text), raised interest and laid the foundation for engaged reading.

6.2.4.2 Writer's stance

With regard to the writer's stance (i.e. tone and attitude, use of facts and opinions) guidelines and explanations were given in class and also made available electronically. Given that a number of students rarely engage in critical reading, due to cultural background, educational and/or social background, a number of exercises were provided for this section. Furthermore, since texts and tasks that are below students' ability level decrease their motivation (Guthrie, Wigfield, Humenick, et al. 2006), tasks, that were at students' level or slightly above, were included to increase motivation. Some exercises were done in groups and discussed in class, while others were given as homework for individual assessment.

Tasks

Generic as well as discipline-related texts were used for exercises. Generic texts were read and the writer's stance (tone, attitude, and possible bias) as well as his/her presentation of facts and opinions were discussed in groups, in a non-threatening environment. Students were also asked to select their preferred texts from a number of discipline-related texts, and in groups discussed the writer's tone, stance, attitude, the presentation of facts and opinions. Afterwards they had to present their responses as part of their portfolio. These discussions were always undertaken in a relaxed, non-threatening environment, where students were free to share their views and ask for assistance if necessary. The general picture was similar to that of students engaged in an experiment of problem-solving in a science laboratory; only, in this case it was in a lecture hall and the hands-on problem-solving activity that the students were engaged in was reading-oriented and was aimed at developing their academic reading ability. The non-threatening environment, the options and choice given with texts, the rewards given to the best performing student or group of students, together with the collaborative problem-solving activities that go hand in hand with peer and teacher support, were all aimed at enhancing students' self-efficacy, intrinsic and extrinsic motivation, and developing appropriate use of strategies for conceptual learning.

6.2.4.3 Evaluating arguments

In relation to evaluating arguments, notes and explanations of various fallacies in argumentation were made available electronically. Follow-up discussions were done in class. Students were made aware of faulty arguments to be avoided, and were given examples of logical arguments. Given that argumentation is the required mode of student writing at tertiary level, a number of practice exercises were given. Exercises were done collaboratively before individual homework was given, and texts were on general topics as well as discipline-related.

Tasks

Students were asked to collect faulty arguments from their readings, for discussion in class. In addition to providing them with competence support, this project gave students a hands-on practical activity, which was motivating for them. These instructional techniques allow for autonomy support (students select texts themselves), which is motivating; collaboration and community of literacy, which provides for social literacy; and competence and teacher support in and out of class (weak students who obtained less than 40% in tasks were given further explanations and extra exercises). It also assisted in the promotion of intrinsic motivation and the development of extrinsic motivation (rewards were given for recognition and challenge, in order to instil extrinsic motivation and hopefully lead to internalisation).

6.2.5 Extensive reading

Additional enrichment

The second part of the intervention programme comprised extensive reading. Extensive reading or wide reading was included for developing and automatising efficiencies in reading, such as increasing speed, acquiring and applying background knowledge, increasing vocabulary, and mainly instilling joy and pleasure. Due to the poor reading habits of students and their low affective levels for reading, the extensive reading section was necessary. Besides, research indicates that students develop reading skills and automatise reading efficiencies through wide reading. Whereas intensive academic reading – using generic, discipline-related and academic texts – provided competence (strategies), background knowledge activation, academic vocabulary knowledge, increased comprehension, and critical analysis, the purpose of the extensive reading was mainly to instil joy and pleasure, and to develop students' interest in reading.

Extensive reading tasks

In order to instil a love of reading in students and to increase their intrinsic motivation for reading, extensive reading (reading for pleasure) was added to the programme. This form of reading also enables students to read across genres and topics and to develop the efficiencies required for successful reading. Students were required to read various (non-academic) texts to enhance comprehension and increase reading speed. Although the inventory for the extensive reading was presented as part of students' portfolio for evaluation and grading, other rewards (e.g. books, sweets, chocolates) were also given to the best performing students. Students were required to start their reading using less challenging texts (texts that meet their level of competence) and progress to a higher level of competence (texts at a level beyond their level of competence). Students were required to do extensive reading every week. They started with shorter texts of a minimum of 50 pages for the first two weeks and progressed to novels or longer texts of a minimum of 100 pages per week for the rest of the term/semester. They were also required to make inventories using the template in Table 6.3 below:

Table 6.3: Template for extensive reading

Date	
Title	
Author	
Type of text	
Reading time	
Number of pages	
Comments	

*Type of te*xt referred to the genre. Students were encouraged to read across genres. The number of pages and reading time gave an indication of progress in students' reading speed. Students were to comment on any cognitive, metacognitive or affective challenges and developments. The comments were intended to reveal challenges faced by students while reading (e.g. the frustrations, difficulties, boredom) and the positive experiences (e.g. increase in speed, joy, pleasure, excitement, and involvement in the readings). In essence, students were to provide cognitive, metacognitive and affective reflections on their readings. These reflections were presented as part of their portfolios.

6.3 Synopsis

The affective support given to students can be summarised in five categories: *competence support* for *self-efficacy*, *relatedness support*, *learning goal*, *relevant texts*, and *autonomy support.* Blended learning (online and face to face) added variety to the programme. Online activities, in addition to providing competence support, were also aimed at developing curiosity and interest in students to increase motivation. The motivational practices below were the main focus, although others were included as deemed necessary in class.

- **Competence support** was given during direct instruction, as this leads to awareness and appropriate strategy use, both of which promote *self-efficacy* and *motivation*.
- **Relatedness support** was given during collaboration. Collaboration was applied when students were involved in group tasks. These collaborative activities enabled students to learn from their peers, as collaboration is associated with higher cognitive engagement (Niemiec, Lynch, Vansteenkiste, Bernstein, Deci & Ryan 2006). Collaboration also enables students to engage in community of literacy, which fulfils the social aspect of reading (Guthrie & Wigfied 2000:417). Evidence of relatedness support was also shown in the lecturer's support; attention to students' learning process and demonstration of interest in students' welfare. These were done by identifying weak students and encouraging them to consult with the lecturer during consultation hours. Research indicates that students who receive support and believe that the teacher cares about their progress learn better (Deci & Ryan 2000:59; Dornyei 2001b:32-34; Niemiec & Ryan 2009:133).
- **Learning and knowledge goals,** for example explaining the link between task and outcome; and encouraging students to focus on learning and work diligently, even when tasks are only for practice purposes, were emphasized by the lecturer, as this is known to influence students' intrinsic motivation. The aim was to instil *intrinsic motivation* that would propel them to read independently beyond their prescribed academic texts. Students were informed that some of the exercises would not be included in the continuous assessment semester mark, but were encouraged to perform tasks diligently, as the exercises were to assist in developing their

academic reading proficiency. Marks awarded for such tasks and projects enabled students to become aware of and to assess their level of academic reading proficiency. Different rewards were given to the best performing group or student, in order to enhance and internalise *extrinsic motivation.*

- **Relevant and stimulating texts** were used for illustrations and modelling in various tasks and activities. These texts consisted of extracts from textbooks, and stimulating, discipline-related texts to increase students' interest and motivation.
- **Autonomy support** was given in the form of students given choices and ownership to increase motivation. Students chose texts from a number of options, and provided extracts from textbooks for practice and instruction. For extensive reading, students chose their own texts, according to their reading proficiency level and interest.

It should be added that these practices were undertaken in a non-threatening, relaxed environment. Students were free to interact with their peers and with the lecturer during class. This environment, and the bonding that resulted between students themselves and between the students and the lecturer, were positively evaluated by students during interview sessions (Chapter 8).

From the framework expounded above, the following guidelines are given for a reading intervention that aims to increase motivation:

- Academic texts should be taken from different disciplines, and should be stimulating to students. Activities on these texts should also activate background knowledge and build vocabulary (academic vocabulary and subject-specific terms and concepts). This does not preclude the use of interesting generic texts.
- Teaching strategies should involve cognitive (e.g. synthesis, summary) metacognitive (e.g. monitoring, rereading, evaluating comprehension) and affective (e.g. interest, motivation) moves.
- Teaching for comprehension and strategy use should include the identification of main ideas and supporting details.
- Teaching critical reading should include critical analysis and critical thinking skills, such as inferencing and evaluation.

- Teaching should be scaffolded – (1) group work or class discussion before pair and individual work (2) short, generic texts at the beginning, and later, longer discipline-related and academic texts.
- Teaching should be done with texts that students appreciate and enjoy (using a needs analysis or texts on current issues, and texts from disciplines). Texts should be interesting or serve the purpose of the reading.
- Students should be rewarded for progress, and rewards should vary.
- Moderately challenging texts (not too easy and not too difficult, but at the appropriate level of proficiency) should be used.
- Students should see progress: reading speed and comprehension exercises provide immediate feedback.
- A variety of instructional techniques should be used – projects, group work, pair work, individual work, direct instruction, electronic instruction, portfolios.
- Activities, tasks and projects should be relevant to students' goals and interests. An instructional intervention that seeks to enhance motivation, and leads to engagement in reading for conceptual learning among L2 students at tertiary level, should preferably include a number of these instructional techniques.
- Finally, needs (academic success in the subject field, and reading and comprehension of academic texts), strategies (summary writing, synthesising and evaluation), interests (topics that interest students) and ability (texts at reading proficiency level) should influence teaching materials, including choices within and between generic texts, discipline-related texts, subject-related texts).

The structure of the intervention in relation to time allocation for each item and the motivational gains are included as Appendices 4A and 4B for *Low Risk* and *At Risk*, respectively.

Having provided the above framework and guidelines for a reading programme that focuses on the affective, and having outlined the enrichment practices and tasks that were applied in class, it is necessary to add that due to institutional (time) constraints a number of tasks and activities were omitted. Furthermore, as students had to do the tasks assigned for the Academic Reading module and the Academic Literacy module, there was not adequate time to handle all the tasks and exercises planned for the intervention. However, interviews with students (as reported in Chapter 8) revealed that students nevertheless

perceived gains in their reading ability and reading habits. The main issue of the intervention programme is that due to institutional constraints not all the enrichment exercises included in the programme outline (Appendices 4A and 4B) could be done. However, as indicated by the results from the quantitative study (Chapter 7) as well as the qualitative research (Chapter 8) students' reading ability and affective levels in reading did seem to benefit despite these shortfalls.

6.4 Conclusion

This chapter discussed the enrichment programme, in relation to the standard programme, with emphasis on the types of tasks and exercises that were added to provide the types of support that would enhance the affective component of reading instruction: competence support, relatedness support, autonomy support, learning goal and teacher support. The next chapter reports on the results of the questionnaires that were administered before and after the intervention.

Chapter 7: Quantitative analysis of the pre- and post-intervention questionnaires

7.1 Introduction

The details of an intervention programme to develop students' reading ability using an integrated approach that is based on engagement was presented in the previous chapter. This chapter evaluates its efficacy in enhancing students' affective levels and strategy use in reading. A survey questionnaire was administered before and after the intervention to both the control and intervention classes. The data were analysed using t-tests, and the findings are discussed in answer to the fourth research question, *How effective is a reading intervention programme that uses an affective approach?* Although the overarching research methodology has been presented in Chapter 4, specific methodological issues that pertain to the quantitative dimension of the study are reported here. The chapter presents the research procedure and instrument, followed by the findings and analysis based on descriptive and inferential statistics, including effect sizes, and concludes with a discussion of the findings.

7.2 Methodology

To answer the fourth research question stated above, a questionnaire on socio-affective factors, reading habits and strategy use was administered to students. The aim was to elicit students' responses on their perceived affective levels, reading habits and strategy use before and after the intervention.

7.2.1 Participants

As indicated in § 4.3.2, participants were first-year students at the University of Pretoria who had enrolled for the Academic Literacy and Academic Reading modules in 2010. Students who were taking the compulsory Academic Literacy module had been identified by the Test for Academic Literacy Levels (TALL) to be *At Risk* or at *High Risk* of failure academically (detailed description given in Chapter 4). This group is referred to as the *At Risk* group. The other group of students who were enrolled for the elective Academic Reading module was identified by the test as having low or no/negligible risk, referred to as the *Low Risk* group. For each group, *At Risk* and *Low Risk*, two classes comprising

intervention and control were used for the study. Four classes therefore participated, two of which were control classes and the other two intervention classes. Students in the control groups followed the standard programme they were registered for. The *Low/No Risk* control group on the Academic Reading programme were given theoretical explanations on reading theories and reading strategies with very few exercises and little opportunity for practice, and had no affective focus. The *High/At Risk* group's standard programme for the Academic Literacy module consisted of exercises on speaking and listening skills, as well as guidance on, and participating in collecting information, drawing graphs and tables and analysing the information.

Although there were 323 students in the combined classes, only 195 questionnaires were used in the final analyses. The reason for the difference is given in Chapter 4 (cf. § 4.3.2). The 195 questionnaires consisted of 76 in the *At Risk* group (41 intervention, 35 control) and 119 in the *Low Risk* group (49 intervention, 70 control). The distribution is given in Table 7.1 below.

Table 7.1: Distribution of questionnaires used for the study according to students class and group

	Control class	Intervention class	Total
High/At Risk group	35	41	76
Low/No Risk group	70	49	119
Total	105	90	195

7.2.2 Procedure

Students completed the pre-intervention questionnaire during one class period in the first two weeks of the first quarter of the academic year in 2010. The post-intervention questionnaire was completed after the intervention at different times by the two groups. The *Low Risk* group completed the post-intervention questionnaire during one class period in the last week of the first quarter (7 week module), whereas the *At Risk* group completed the post-intervention questionnaire during one class period in the last lecture week of the second quarter, which is the end of the first semester (14 week module). Due to incorrect or incomplete data, a number of questionnaires could not be used. Also, since the pre- and post-intervention questionnaires had to be matched, those that could not be matched were

discarded. The unmatched questionnaires resulted from the fluidity of the classes. Although students in the intervention classes were advised not to change classes, if possible, one could not prohibit new students from joining the class. There was thus a large number of post-intervention questionnaires that could not be used because there were no matching pre-intervention questionnaires. Class registers were kept and the responses of students who had attended less than 50% of the classes were also discarded.

Research ethics were adhered to. Students were requested to read and sign the informed consent section, which was included with the questionnaire. The letter informed them about confidentiality, and assured them that they would not be disadvantaged in any way by their responses (cf. § 4.9).

7.2.3 Instrument

As explained in §4.5.2, the pre-intervention questionnaire consisted of a 5-point Likert scale (positive to negative), comprising 65 questions divided into nine categories, as was used for the 2009 questionnare discussed in Chapter 5. The nine categories dealt with eight socio-affective factors and one cognitive/metacognitive factor, which is strategy use. The categories were: *reading experience, reading environment/social literacy, perceptions of reading capabilities/self-efficacy, interest, attitude, strategy use, intrinsic motivation, extrinsic motivation,* and *reading habits* (see Appendix 1 for a copy of the questionnaire). The first two sections of the pre-intervention questionnaire (*past reading experience,* which included past school and childhood reading experiences, and *social literacy*, which included family and social reading experiences) were deleted from the post-intervention questionnaire, as the questions elicited fixed past experiences (e.g Were you read to as a child?). The post-intervention questionnaire therefore consisted of 56 questions divided into seven sections. The pre- and post-intervention questionnaires were therefore compared on seven categories viz: *interest in reading, attitudes towards reading, self-efficacy or perceptions of reading ability, intrinsic motivation, extrinsic motivation, reading strategies* and *current reading habits.*

The categories have been discussed in detail in Chapter 4, but are briefly presented with Cronbach Coefficient Alpha reliability figures below.

1. *Interest in reading* ascertained students' level of passion and pleasure in reading. A high interest in reading will invariably lead to frequent reading activities that will develop students' reading proficiency. The Cronbach Alpha for reliability was 0.84 for the pre-intervention questionnaire and 0.83 for the post-intervention questionnaire.

2. *Attitude towards reading* determined the perceptions that students have of reading, the ease with which they settle down to read and the importance and usefulness of reading. The Cronbach Alpha reliability was 0.83 for the pre-intervention questionnaire and 0.86 for the post-intervention questionnaire.

3. *Perceived reading capability* or *self-efficacy* was to find out the extent to which students perceived themselves as readers and whether they believed they have the ability to handle reading tasks successfully. Self-efficacy has been known to correspond with reading ability and academic performance. The Cronbach Alpha reliability was 0.88 for the pre-intervention questionnaire and 0.89 for the post-intervention questionnaire.

4. *Intrinsic motivation* determined students' curiosity, and involvement in reading. Students with high intrinsic motivation become engaged readers and develop their reading proficiency. The Cronbach Alpha was 0.85 for the pre-intervention questionnaire and 0.89 for the post-intervention questionnaire.

5. *Extrinsic motivation* ascertained the level of external influences on students' motivation for reading. Extrinsic motivation assists in increasing the amount and frequency of reading. The Cronbach Alpha was 0.85 for the pre-intervention questionnaire and 0.80 for the post-intervention questionnaire.

6. *Strategy use* determined whether students use appropriate reading strategies. Proper orchestration of appropriate reading strategies leads to high reading comprehension and high self-efficacy. The Cronbach Alpha was 0.64 for the pre-intervention questionnaire and 0.66 for the post-intervention questionnaire.

7. *Reading habits* determined the current reading behaviour of students: how frequently they read, the kind of texts they read, and whether they read for pleasure. Positive reading

habits develop reading proficiency. The Cronbach Alpha was 0.68 for the pre-intervention questionnaire and 0.67 for the post-intervention questionnaire.

The overall Cronbach coefficient alpha for the pre-intervention questionnaires was 0.83, and 0.84 for the post-intervention questionnaires. Cronbach's Alpha ranged between 0.64 and 0.89 for the pre-intervention questionnaires and between 0.67 and 0.89 for the post-intervention questionnaires. The reliability index of the criteria was therefore satisfactory.

7.3 Results of the quasi-experiment

In presenting and analysing the data, the two groups, *At Risk* and *Low Risk*, are reported on separately. This is due to a number of reasons. First, the duration of the intervention differed: seven weeks for the *Low Risk* group, as this was the duration of the module; and fourteen weeks for the *At Risk* group, as their module spanned across a semester. Secondly, the two groups were registered for two different modules. The *Low Risk* group were taking the Academic Reading module, which made it more convenient to apply the reading intervention. The *At Risk* group were registered for a general Academic Literacy (AL) module. Although reading is included in the AL programme, it is only taught in the second semester. The intervention was undertaken in the first semester, when the AL programme focussed mainly on gathering information and presenting it graphically. It was therefore more challenging to apply the reading intervention to this group, as the standard programme had to be followed as well. Thirdly, as the two groups differed in affective levels, as shown in the 2009 study (Chapter 5), affective issues were strongly emphasised in the affectively enriched programme for the *At Risk* group, whereas strategy instruction was more predominant in the affectively enriched programme for the *Low Risk* group. For instance, there was a relatively higher level of informality and distribution of rewards in the *At Risk* group than in the *Low Risk* group. A detailed comparison of the affective levels, reading habits and strategy use of the two groups (*At Risk and Low Risk*) is discussed in Chapter 5.

To determine the efficacy of the intervention, students' responses to the pre- and post-intervention questionnaires were compared for significant differences using t-tests. T-tests were used, as there were two groups of equal variance and adequate sample size.

7.3.1 Presentation and analysis of pre-questionnaires

Levene's test for variance or homogeneity was conducted on the pre-intervention questionnaires to compare control and intervention classes to determine if there were any differences before the start of the intervention. The test determined the homogeneity of the groups. There were no significant differences between control and intervention classes in either *At Risk* or *Low Risk* group. The results of the Levene's test are given in Table 7.2.

Table 7.2: Levene's test for homogeneity for intervention and control classes in High/At Risk and Low/No Risk groups

Categories	High/At Risk (n=76)				Low/No Risk (n=119)			
	Mean	SD	F	p-value	Mean	SD	F	p-value
Reading experience								
Intervention	**2.74**	**0.69**	**0.106**	**0.93**	**2.04**	**0.66**	**0.841**	**0.84**
Control	**2.73**	**0.83**			**2.01**	**0.63**		
Social literacy								
Intervention	**2.80**	**0.79**	**0.481**	**0.55**	**2.68**	**0.76**	**0.716**	**0.99**
Control	**2.69**	**0.83**			**2.68**	**0.74**		
Interest in reading								
Intervention	**1.87**	**0.66**	**0.535**	**0.80**	**2.04**	**0.79**	**0.146**	**0.62**
Control	**1.92**	**0.81**			**2.12**	**0.90**		
Attitude towards reading								
Intervention	**1.67**	**0.48**	**0.414**	**0.79**	**1.93**	**0.74**	**0.595**	**0.94**
Control	**1.70**	**0.63**			**1.92**	**0.74**		
Self-efficacy								
Intervention	**2.24**	**0.79**	**0.439**	**0.66**	**1.95**	**0.42**	**0.006**	**0.48**
Control	**2.32**	**0.75**			**2.02**	**0.72**		
Strategy use								
Intervention	**2.26**	**0.69**	**0.953**	**0.62**	**2.52**	**0.51**	**0.418**	**0.53**
Control	**2.33**	**0.67**			**2.59**	**0.57**		
Intrinsic motivation								
Intervention	**2.25**	**0.58**	**0.800**	**0.51**	**2.24**	**0.65**	**0.970**	**0.34**
Control	**2.34**	**0.60**			**2.36**	**0.67**		
Extrinsic motivation								
Intervention	**2.51**	**0.86**	**0.508**	**0.08**	**2.72**	**0.97**	**0.002**	**0.56**
Control	**2.18**	**0.77**			**2.63**	**0.68**		
Current reading habits								
Intervention	**2.43**	**0.69**	**0.938**	**0.06**	**2.67**	**0.71**	**0.745**	**0.53**
Control	**2.71**	**0.65**			**2.58**	**0.70**		

df = (74) for each analysis in High/*At Risk* group.

df = (117) for each analysis in *Low Risk* group except for *self-efficacy* df = (113.5) and *extrinsic motivation* df = (79.7).

Considering the mean scores, students in both intervention and control classes of the *At Risk* group had interest in reading and had positive attitudes towards reading. However, their past reading experience, social literacy, extrinsic and intrinsic motivation, reading habits and strategy use border on the negative. In other words, students displayed poor reading experience, poor social literacy interaction, low extrinsic and intrinsic motivation

for reading, poor reading habits and inappropriate use of reading strategies. There were no marked differences between the classes, as results did not show any significance at 5%. On the whole the intervention and control classes for the *At Risk* group were similar in their affective levels, reading habits and strategy use. In other words, both the intervention and control classes started off at a comparable level. The same was found for the *Low Risk* group.

Considering the mean scores above, students in both classes of the *Low Risk* group had positive attitudes towards reading. However the mean scores were high for other affective factors, indicating poor reading experience, low social literacy interaction, low interest, low self-efficacy, low extrinsic and intrinsic motivation, poor reading habits and inappropriate use of reading strategies. The results of the pre-intervention questionnaires from the *Low Risk* group did not indicate any significant differences between the control and intervention classes, as shown above. Given the above p-values, the intervention and control classes of the *Low Risk* group were similar in their affective levels and strategy use in reading.

Mean scores indicate that students in both *At Risk* and *Low Risk* groups showed similarity in their positive *attitude* towards reading. However, with regard to *interest* the *At Risk* group was relatively more positive than the *Low Risk* group, though the differences were minimal (*At Risk*: 1.87, 1.92; *Low Risk*: 2.04, 2.12). Nevertheless, for the other seven categories, the *Low Risk* group had relatively lower mean scores and could therefore be said to be relatively more positive on *reading experience, social literacy, self-efficacy, strategy use, extrinsic* and *intrinsic motivation* and *current reading habits*, than the *At Risk* group. Despite the differences between the *Low Risk* and *At Risk* groups (which was expected), the control and intervention classes of each group started off at comparable affective levels.

7.3.2 Presentation and analysis of post-intervention data

The fourth research question on the efficacy of the intervention was supported by the hypothesis that after receiving instruction using an affective approach, students in the intervention classes will show improvements in their affective levels.

Given that for each group the responses of the control and intervention classes were similar at the beginning of the intervention, the questionnaires were administered again at the end of the intervention. The nine sections of the pre-intervention questionnaires were reduced to seven, as the first two sections, *past reading experience* and *past social literacy interaction*, could not be influenced by the intervention. Two tests were administered. First, paired t-tests were used to determine differences between pre- and post-intervention questionnaires for each group. Second, independent t-tests were administered to determine the level of improvement across the groups. For both tests effect size procedures were also applied.

7.3.2.1 Descriptive statistics: Presentation of pre- and post-intervention results

The mean scores of the post-intervention questionnaire showed that there were differences between the pre- and post- results in the intervention classes. The intervention classes had more positive responses than the control classes. As the scale of the questionnaire ranged from positive 1 to negative 5, the lower the mean figure, the relatively better the response. The mean scores for pre- and post-intervention responses in the control and intervention classes of both *At Risk* and *Low Risk* groups are given in Table 7.3 below.

Table 7.3: Pre-and post-intervention means for High/At Risk and Low/No Risk groups

Categories	**High/At Risk (n=76)**				**Low/No Risk (n=119)**			
	Pre-intervention		**Post-intervention**		**Pre-intervention**		**Post-intervention**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Interest								
Intervention	**1.87**	**0.66**	**1.57**	**0.53**	**2.04**	**0.79**	**1.64**	**0.42**
Control	**1.92**	**0.81**	**1.93**	**0.76**	**2.12**	**0.90**	**2.08**	**0.87**
Attitude								
Intervention	**1.67**	**0.48**	**1.53**	**0.57**	**1.93**	**0.74**	**1.67**	**0.47**
Control	**1.70**	**0.63**	**1.72**	**0.72**	**1.92**	**0.74**	**1.85**	**0.71**
Self-efficacy								
Intervention	**2.24**	**0.79**	**1.88**	**0.48**	**1.95**	**0.42**	**1.72**	**0.42**
Control	**2.32**	**0.75**	**2.37**	**0.79**	**2.02**	**0.72**	**1.80**	**0.70**
Strategy use								
Intervention	**2.26**	**0.69**	**1.89**	**0.43**	**2.52**	**0.51**	**2.25**	**0.42**
Control	**2.33**	**0.67**	**2.20**	**0.56**	**2.59**	**0.57**	**2.55**	**0.62**
Intrinsic motivation								
Intervention	**2.25**	**0.58**	**1.72**	**0.41**	**2.24**	**0.65**	**1.98**	**0.47**
Control	**2.34**	**0.60**	**2.27**	**0.53**	**2.36**	**0.67**	**2.44**	**0.77**
Extrinsic motivation								
Intervention	**2.51**	**0.86**	**2.01**	**0.61**	**2.72**	**0.97**	**2.50**	**1.10**
Control	**2.18**	**0.77**	**2.15**	**0.78**	**2.63**	**0.68**	**2.75**	**0.96**
Current reading habits								
Intervention	**2.43**	**0.69**	**1.82**	**0.46**	**2.67**	**0.71**	**2.22**	**0.51**
Control	**2.71**	**0.65**	**2.61**	**0.60**	**2.58**	**0.70**	**2.60**	**0.62**

Mean scores for the post-intervention results indicate that the intervention classes (*At Risk and Low Risk*) had more positive responses indicating better affective levels, strategy use and reading habits than in the pre-intervention questionnaires. The mean scores also show that the control group had generally worsened or merely retained their pre-intervention affective levels in the post-intervention questionnaires.

7.3.2.2 Inferential statistics: Paired t-test and independent t-test Analysis of differences between control and intervention classes

This section discusses the statistical results of the paired t-test (comparing pre- and post-intervention questionnaires of students to determine differences within groups) and independent t-tests (differences in post questionnaires to determine level of improvement between groups). Results of the paired t-test for both *At Risk* and *Low Risk* groups are discussed together (§7.3.2.2.1), whereas the results of the independent t-test for the groups are presented separately, first for the *At Risk* group and then for the *Low Risk* group (§7.3.2.2.2).

7.3.2.2.1 Paired t-test

There were no marked differences in the pre and post-intervention questionnaires of the control classes. However, as Table 7.4 shows, there were significant differences in six of the seven categories for the intervention classes, viz: *interest* (*At Risk,* p=0.0018; *Low Risk,* p=0.0001), *self-efficacy (At Risk,* p=0.0003; *Low Risk,* p=0.0002), *strategy-use (At Risk,* p=0.001; *Low Risk,* p=0.0005), *intrinsic (At Risk,* p=0.0001; *Low Risk,* p=0.0012) and *extrinsic (At Risk,* p=0.0017) *motivation* and *reading habits (At Risk,* p<0.0001; *Low Risk,* p<0.0001). The *Low Risk* intervention group showed a significant difference for attitude (p=0.0055) but the *At Risk* group did not, and the *At Risk* group showed significant difference for extrinsic motivation whereas the *Low Risk* group did not. Paired t-test results showing p-values are given in Table 7.4 below.

Table 7.4: Results of paired t-test for control and intervention classes in High/At Risk and Low/No Risk groups

Categories	High/At Risk (n=76)		Low/No Risk (n=119)	
	Paired t-	p-values	Paired t-	p-values
Interest				
Intervention	**3.35**	**0.001****	**4.32**	**0.000****
Control	**-0.12**		**0.44**	
Attitude				
Intervention	**1.45**	**0.153**	**2.91**	**0.005****
Control	**-0.21**		**0.73**	
Self-efficacy				
Intervention	**3.95**	**0.000****	**4.1**	**0.000****
Control	**-0.4**		**2.22**	**0.029***
Strategy use				
Intervention	**3.56**	**0.001****	**3.76**	**0.000****
Control	**1.61**		**0.48**	
Intrinsic motivation				
Intervention	**5.55**	**0.000****	**3.45**	**0.001****
Control	**0.9**		**-0.86**	
Extrinsic motivation				
Intervention	**3.37**	**0.001****	**1.6**	**0.117**
Control	**0.33**		**-1.28**	
Current reading habits				
Intervention	**5.11**	**0.000****	**5.36**	**0.000****
Control	**0.1**		**-0.24**	

t (t-values); p (p-values)

* p= p<0.05; **p= p<0.01

These results are further elaborated on with effect sizes in section 7.3.3. below.

7.3.2.2.2 Independent t-test

This section presents analyses of the improvement scores from the independent t-test, first for the *At Risk* group and then for the *Low Risk* group. The results for the *At Risk* group showed statistically significant differences between control and intervention classes on five of the seven categories: *interest* (t(74)=2.36,p=0.021), *self-efficacy* (t(74)=2.82,p=0.006), *intrinsic motivation* (t(74)=3.57,p<0.001), *extrinsic motivation* (t(74)=2.63,p=0.010), *and current reading habits* (t(74)=3.09,p=0.002). The category of strategy use was not significant at 5% (p=0.092). There was no statistically significant difference between the control and intervention classes of the *At Risk* group on their attitude towards reading. However, whereas the mean scores showed improvement for the intervention class (M= 0.13) the control class recorded a decreased mean of -0.019. In other words the improvement in attitude of the intervention class in the *At Risk* group, though not statistically significant, was more positive in terms of the mean scores. It seems that the positive attitude of the students at the start of the year decreased, possibly, as

tertiary workload increased. On the whole, whereas the affective levels of the intervention class in the *At Risk* group improved, those of the control class decreased, even sometimes worsening into negative figures, as shown in the mean figures. The results with significant p-values are given in table 7.5 below.

Table 7.5: Improvement scores for control and intervention classes in terms of values and means

Categories	**High/At Risk (n=76)**				**Low/No Risk (n=119)**			
	Improvement				**Improvement**			
	Mean	**SD**	**t**	**p-value**	**Mean**	**SD**	**T**	**p-value**
Interest								
Intervention	**0.302**	**0.57**	**2.36**	**0.021***	**0.395**	**0.64**	**-2.69**	**0.008****
Control	**-0.011**	**0.57**			**0.040**	**0.75**		
Attitude								
Intervention	**0.138**	**0.60**	**1.19**	**0.239**	**0.261**	**0.63**	**-1.42**	**0.157**
Control	**-0.019**	**0.53**			**0.069**	**0.78**		
Self-efficacy								
Intervention	**0.363**	**0.58**	**2.28**	**0.006****	**0.222**	**0.37**	**0.02**	**0.983**
Control	**-0.045**	**0.67**			**0.225**	**0.84**		
Strategy use								
Intervention	**0.365**	**0.65**	**1.7**	**0.092**	**0.277**	**0.51**	**-2.07**	**0.041**
Control	**0.134**	**0.49**			**0.038**	**0.68**		
Intrinsic motivation								
Intervention	**0.531**	**0.61**	**3.57**	**0.001****	**0.266**	**0.54**	**-2.68**	**0.008****
Control	**0.073**	**0.48**			**-0.081**	**0.78**		
Extrinsic motivation								
Intervention	**0.501**	**0.95**	**2.75**	**0.007****	**0.221**	**0.97**	**-2.11**	**0.036***
Control	**0.028**	**0.50**			**-0.122**	**0.80**		
Current reading habits								
Intervention	**0.601**	**0.75**	**3.09**	**0.002****	**0.44**	**0.58**	**-4.49**	**0.001****
Control	**0.010**	**0.64**			**-0.016**	**0.52**		

DF = (74) for each analysis in *At Risk* group except for extrinsic motivation. DF= (62.8)

DF = (117) for each analysis in the *Low Risk* group. t (t-values); p (p-values); * p= p< .05; **p= p<.01

In general, the control classes did not exhibit better affective levels and strategy use than the intervention classes. Where there was no statistically significant difference the mean figures show that the intervention class still improved. The intervention class for *At Risk* group had developed significantly higher interest (p=0.021), higher levels of self-efficacy (p=0.006), higher intrinsic and extrinsic motivation (p<0.001; p=0.007), and better reading habits (p=0.002).

The decreased affective levels of the control groups, shown in negative figures for the mean, indicate that the affective levels of this cohort of first-year students dropped during the first semester of their tertiary education. In contrast, the affective teaching approach that was used in the intervention classes increased students' affective levels. The

differences between the control and intervention classes, when all other factors have been controlled, indicate that the approach did benefit students in as far as their affective levels, reading habits and strategy use were concerned.

The improvement differences between the control and intervention classes of the *At Risk* group are further represented in Figure 7.1 below.

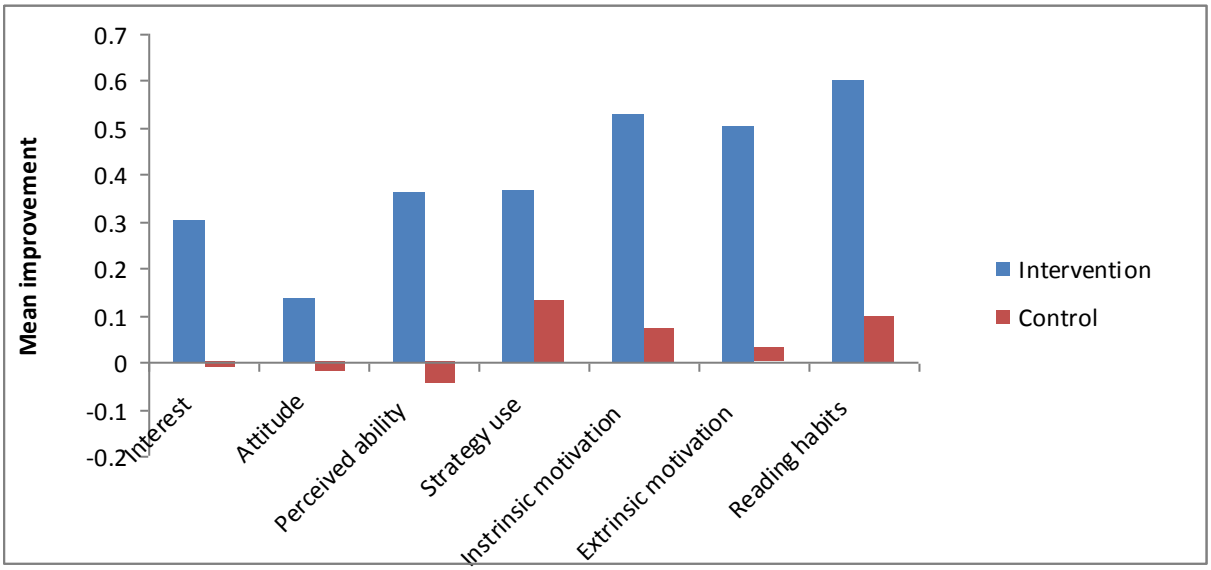

Figure 7.1: Chart showing improvement scores for intervention and control classes in the *At Risk* group

Results of the *Low Risk* group, as shown in Table 7.5, showed significant differences between the intervention and control classes on five of the seven categories. Independent t-test analysis showed statistically significant differences between the control and intervention classes on interest ($t(117)=-2.69, p=0.008$), intrinsic ($t(117)=-2.68, p=0.008$) and extrinsic ($t(117)=-2.11, p=0.036$) motivation, strategy use ($t(117)=-2.07, p=0.041$) and reading habits ($t(117)=-4.49, p<0.001$). There were no statistically significant differences between the improvement of the control and intervention classes of the *Low Risk* group on *attitude towards reading* and *self-efficacy*. However, mean scores for the two categories showed differences in improvement for the intervention class. It is interesting to note that for the *At Risk* group, *attitude* was the only category that did not show a significant difference between the control and intervention classes, and was also not significant in the *Low Risk* group, as shown in Table 7.5 above. According to the mean scores given in

Table 7.2 above, students had responded positively to questions on reading attitude in the pre-intervention questionnaire, but this positive attitude did not increase. In general, students in the intervention class had improved significantly in affective levels compared to the control class. The improvement differences between the control and intervention classes of the *Low Risk* group are further represented in Figure 7.2 below.

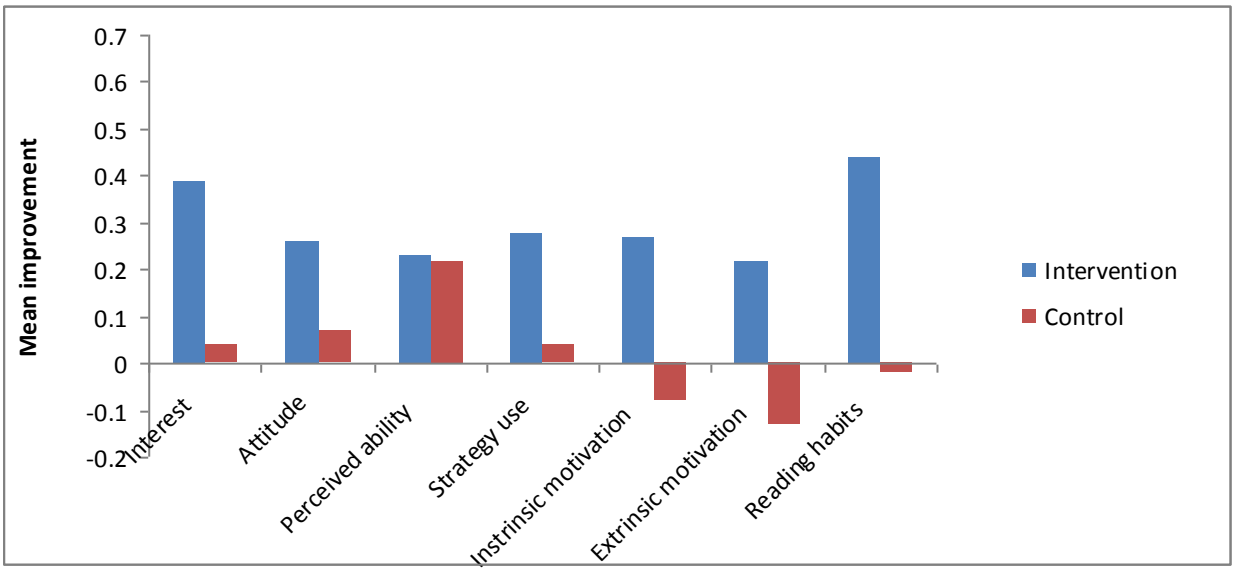

Figure 7.2: Improvement scores for the intervention and control classes of the Low Risk group

Given that five of the seven categories showed statistically significant improvements for the intervention class of the *Low Risk* group, and six out of seven for the *At Risk* group, it can be concluded that the affective teaching approach was effective in improving students' affective levels in reading. A table showing the p-values for both groups is given below.

Table 7.6: Table showing p-values for improvement differences between control and intervention classes in *At Risk* and *Low Risk* groups

	High/At Risk (p-values)	**Low/No Risk (p-values)**
Interest	**0.021***	**0.008****
Intrinsic motivation	**0.001****	**0.008****
Extrinsic motivation	**0.007****	**0.036***
Reading habits	**0.002****	**0.001****
Strategy use	**0.092**	**0.041***
Self-efficacy	**0.006****	**0.983**
Attitude	**0.239**	**0.157**

* p< .05, **p< .01

7.3.3 Differential performance (effect sizes)

To determine what effect the intervention had on students, an effect size procedure using Cohen's d was applied to each of the seven categories for *At Risk* and *Low Risk* groups. As this procedure is particularly valuable for "quantifying the effectiveness of a particular intervention" (Coe 2002) it was calculated to emphasise the size of the difference between intervention and control classes. In other words as indicated by Coe (2002) it allows the researcher to move from the simplistic idea of whether the intervention had worked or not to a far more sophisticated position of how well the intervention had worked in the context. Coe (2002) reports that Cohen places an effect size of 0.5 as medium and that of 0.8 as grossly perceptible and therefore large. Glass, McGaw and Smith (1981:104) argue that in education, if academic achievement can be raised by an effect size of even as little as 0.1, it could be perceived as a significant improvement. Table 7.7 shows effect sizes on each of the seven socio-affective variables for the intervention class in the *At Risk* and *Low Risk* groups while Table 7.8 shows effect size differences between the intervention and control classes. Considering that affective levels correspond with reading achievement, it could be concluded that the medium and large effect sizes achieved as shown in Tables 7.7 and 7.8 below, infer that a significant improvement had occurred in students' socio-affective levels. The effect sizes are given in the two sets of data presented below: Table 7.7 and the other in Table 7.8. Cohen's d analysis yielded the following:

Table 7.7: Results of paired t-test with effect sizes for intervention classes in the High/At Risk and Low/No Risk groups

Categories	**High/At Risk**		**Low/No Risk**	
	Cohen's d	**Effect size**	**Cohen's d**	**Effect size**
Interest				
Intervention	**0.499**	**M**	**0.622**	**M-L**
Attitude				
Intervention			**0.419**	**S-M**
Self-efficacy				
Intervention	**0.552**	**M**	**0.525**	**M**
Control			**0.315**	**S-M**
Strategy use				
Intervention	**0.632**	**M-L**	**0.585**	**M**
Intrinsic motivation				
Intervention	**1.041**	**L**	**0.465**	**M**
Extrinsic motivation				
Intervention	**0.670**	**M-L**		
Current reading habits				
Intervention	**1.013**	**L**	**0.720**	**M-L**

M (medium effect); L (large effect); S (small effect)

The figures given in the table above indicate that the effect of the intervention was significant, as the effect sizes in both *At Risk* and *Low Risk* groups were large or medium. While the Low Risk group had two small to medium effect sizes, the At Risk group had medium to large effect sizes in all categories. Given that the *At Risk* group recorded large effect sizes for intrinsic motivation and reading habits, in the paired t-tests, and the *Low Risk* showed medium and medium to large in both categories, it can be concluded that on those two categories the intervention made a difference in affective levels, particularly for the *At Risk* group.

It is interesting that in the *Low Risk* group the control class showed statistically significant difference between the pre- and post-intervention results on *self-efficacy*, and yielded an effect size of small to medium. This could be due to the fact that most of the students from the *Low Risk* group are from former model C schools and private schools where there is good education. As a result, they may have high self-efficacy even without an intervention, though this self-efficacy pertains to study in high school. These self-efficacy levels may begin to decrease as they proceed with tertiary studies, if they are unable to cope academically. Thus, there is a need to support students on affective and academic levels. The next set of data shows the effect sizes of the improvement scores.

Table 7.8: Results of independent t-test (improvement scores) with effect sizes for intervention classes in the High/At Risk and Low/No Risk groups

Categories	**High/At Risk**		**Low/No Risk**	
	Cohen's d	**Effect size**	**Cohen's d**	**Effect size**
Interest				
Intervention	**0.550**	**M**	**-0.505**	**M**
Attitude				
Intervention				
Self-efficacy				
Intervention	**0.657**	**M**		
Strategy use				
Intervention			**-0.388**	**S-M**
Intrinsic motivation				
Intervention	**0.832**	**L**	**-0.503**	**M**
Extrinsic motivation				
Intervention	**0.641**	**M**	**-396**	**S-M**
Current reading habits				
Intervention	**0.720**	**M-L**	**-843**	**L**

M (medium effect); L (large effect); S (small effect)

Compared to their peers in the control class, the *At Risk* group showed large improvement in *intrinsic motivation* and medium to large improvement for *reading habits*. The *Low Risk* group had large effect size for reading habits as well. Besides strategy use, which was not significant for the *At Risk* group, but showed small to medium effect size for the *Low Risk* group, the other categories showed medium effect sizes in both *At Risk* and *Low Risk* groups. Thus effect sizes show that not only had the affective levels of the intervention students improved more than the control classes, but the improvements displayed medium and large effect sizes.

7.4 Discussion

In general, students in the intervention classes improved significantly in affective levels compared to the control groups. The fact that the intervention classes in both *At Risk* and *Low Risk* groups showed significant improvement on the category of *interest*, indicates that students in these classes developed relatively higher interest in reading after the intervention. A high interest in reading meant higher motivation to read. According to Deci (1992:43) "interest is a powerful motivator" and can lead to enjoyment, involvement and absorption. These payoffs are also features of engagement. It can therefore be assumed that the deep interest that students had developed in reading had also increased their motivation to read and that they read with enjoyment, involvement, absorption and consequently, engagement.

The significant improvement in reports of self-efficacy of the intervention class of the *At Risk* group indicates that students had developed positive perceptions of their capabilities to read texts. Self-efficacy is a strong predictor of reading proficiency and academic success (Grabe & Stoller 2002:56; Guthrie & Wigfield 2000:408; Mills et al. 2007), and therefore one could assume that these students had improved in their reading proficiency, as well as their academic performance. Improvement in self-efficacy for the intervention class of the *Low Risk* group was not statistically significant. However, mean scores showed that the intervention class had improved. Worthy to note is the fact that this *Low Risk* group had started off with relatively higher self-efficacy reports than the *At Risk* group, which was not surprising, as they were supposed to be relatively more academically literate than the *At Risk* group. The minimal improvement in self-efficacy of the intervention class could be that the initial self-efficacy which pertained to their high school

achievement had dropped at the start of tertiary studies and was only beginning to improve at the time of administering the questionnaire.

The fact that attitude did not show significant differences in both *At Risk* and *Low Risk* groups compared to their peers calls for further investigation into the attitude factor. However, it should be noted that all four classes started off with positive attitudes as shown in pre-intervention questionnaires. Of course this self-report on attitude was based on their feelings and perceptions at pre-intervention time at the beginning of the university year, before they had had intensive instruction at tertiary level. Nevertheless, the fact that the improvement was not statistically significant after the intervention could be explained in light of Mathewson's (2004) model, which posits that certain factors mediate the attitude-behavior relationship. Also Yamashita (2004) found that, in relation to Mathewson's tricomponent view of attitude, students had improved on the affective, but not on the evaluative component. It could be that the number of questions on the affective component was inadequate to show statistically, significant results. In addition, the intervention period may have been too short to influence students' reading attitude. McKenna's (2001) model posits that it takes much longer for attitude to manifest in behavior. A similar argument of time constraints could be presented for the non-significant improvement on *self-efficacy* for the *Low Risk* group. Although a significant difference was recorded for strategy use, which should have improved self-efficacy, the improvement in the use of strategies may not yet have been internalised to influence self-efficacy levels due to the short duration of the intervention.

The statistically significant improvement in intrinsic and extrinsic motivation of the intervention classes meant that students in these classes had become more absorbed, interested, involved and engaged readers (Deci 1992; Deci & Ryan 2000 Guthrie & Wigfield 2000). They were also motivated by external influences such as marks, praises and other rewards. According to Deci and Ryan (2000), extrinsic motivation can become internalised and integrated into the self, resulting in intrinsic motivation. From this point of view, it could be assumed that students' improvement in intrinsic and extrinsic motivation had propelled them into becoming engaged readers who read with absorption, involvement and interest.

The fact that students had significantly improved in their strategy use could indicate that they had obtained a higher level of self-efficacy, which could lead to higher motivation and frequency in reading. Frequent reading or increased reading amount leads to engaged reading and improves reading proficiency, and consequently academic success (Guthrie & Wigfield 2000; Wigfield, Guthrie, Perencevich et al. 2008). In addition, the use of appropriate reading strategies could greatly assist students in reading comprehension (Anderson 1991; Anderson 1999) and critical reading (Grabe 2008). Comprehension challenges at tertiary level such as those involving inferencing skills may therefore become less challenging for these students.

The statistically significant improvement in the reading habits of the intervention classes could be attributed to the extensive reading that these students had to undertake. This meant that students had stated developing positive reading habits. In other words, students were reading for pleasure more frequently than they did before the intervention. Pleasure reading and frequent reading increases vocabulary, develops reading speed, provides background knowledge and develops reading efficiencies which are required for comprehension and critical reading (Anderson 1996; Day 2010; Elley 1996; Grabe 2008; Grabe & Stoller 2002; Greaney 1996; Guthrie, Wigfield, Humenick, Perencevich, Taboada, & Barbosa 2006; Stanovich & Cunningham 1993).

In as much as students had improved their affective levels, with substantial effect sizes, and assumed to have achieved the necessary reading development that relates to their affective levels, the intervention instruction, using an affective approach, could be said to have been beneficial and effective. Students' affective levels for reading had improved and it is envisaged that their reading ability had also improved.

The high statistically significant improvement difference between the control and intervention classes recorded for reading habits could have been due to the extensive reading the intervention classes had to undertake. Students in the intervention class were required to read a specified number of pages of non-academic texts (e.g. stories in magazines, novels, anthologies of short stories, etc.) per week and complete an inventory to compile a portfolio, together with other academic tasks (Chapter 8 discusses the qualitative data that includes feedback on the extensive reading project). The fact that students were reading more suggests a positive change in reading habits, which further indicates the efficacy of the teaching

approach used in the study. Extensive reading helps to develop and improves students' reading ability, as has been reiterated by several researchers (Grabe & Stoller 2002; Horst 2005; Nishono 2007; Pulido 2009). Thus, developing students' reading habits to improve their reading ability is an important endeavour in reading instruction.

In addition to using the results of the pre-intervention questionnaires to ascertain the comparability of the control and intervention classes before the start of the intervention, the results also shed light on the affective levels of the students as a whole. From the results given in tables 7.2 and 7.3 above students' affective levels were low initially, except for their attitudes towards reading, which were positive in both *At Risk* and *Low Risk* groups, and their interest in reading, which was positive for the *At Risk* group. Although affective levels were low in both groups, the mean figures show that the affective levels of the *Low Risk* group were better than those of the *At Risk* group, which was not surprising as students in the *Low Risk* group were considered more academically literate and therefore expected to have higher affective reading levels than the *At Risk* group. These results corroborated the 2009 results. Statistical results for the 2009 cohort showed that the *At Risk* group had relatively lower affective levels for reading than the *Low Risk* group. Both groups, however, needed to improve their affective levels for reading, and this indeed seemed to have happened after the intervention.

7.5 Conclusion

It was expected that there would be a measure of improvement in all classes, as the control classes were also receiving the normal instruction in reading and in academic literacy. Also the fact that students had been through a term/semester of instruction in other subjects, general academic improvement is expected to have occurred, which could enhance their affective levels. However, the question was whether there were differences in the level and amount of improvement between the control and intervention classes. Did the intervention classes improve more than the control classes and were the improvements statistically significant? Tables 7.2 to 7.7 show statistically significant improvements for the intervention classes on five of the seven categories. Where the improvements were not statistically significant, mean scores show that the intervention classes had improved, whereas in some instances the control classes had decreased into negative figures. This shows that first-year students' affective levels could drop after the start of academic work.

Affective support is needed to stabilise and develop students' affect towards reading, especially their self-efficacy, which has been proven to predict reading proficiency (Erlich et al. 1993; Guthrie & Wigfield 2000:408; Mills et al. 2007:436) and academic success (Pretorius 2000; 2007). This prediction is also confirmed with the 2009 cohort of students, as discussed in Chapter 5. Students' self-efficacy levels strongly predicted their reading ability in both the 2009 and 2010 studies. The medium and large effect sizes that were obtained also show the extent to which the intervention was effective in improving students' reading habits, strategy use and affective levels towards reading.

This chapter has presented a quantitative analysis to determine the efficacy of the intervention. The results of paired and independent t-tests show statistically significant improvement in affective levels, reading habits and strategy use for the intervention classes. Effect size procedures emphasised and confirmed these improvements by yielding medium or large effects. Thus not only was the intervention shown to be effective but also highly effective according to the quantitative data presented. The next chapter discusses the efficacy of the intervention using more insightful qualitative data, based on students' responses to interviews.