

# Targeted reading comprehension strategies instruction for raising reading levels in tertiary contexts

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(Received 25 September, 2011; Published online 13 February, 2012)

This small-scale action research within a tertiary music bridging programme with language, literacy and numeracy (LLN) embedded examined the effect of reading comprehension strategies instruction for raising adult reading levels. In particular, this study investigated the efficacy of targeted reading strategies instruction on improving the components of reading underpinning comprehension and critical reading of text. A cyclical model of action research methodology involving typical reconnaissance, implementation and evaluation phases was conducted, employing multiple mixed methods of data collection including reading testing and surveys. The results showed slight reading gains within the small student sample, and evidence of improvements across the targeted components of reading. These results suggested that targeted reading comprehension strategies instruction may be a valid approach for raising adult learner reading levels in tertiary contexts. However, further research with a larger sample size and in different disciplines is required. The action research process enabled the development and refinement of a reading pedagogical model that provides a framework for educators embedding literacies in foundation or mainstream tertiary programmes.

**Key Words:** reading comprehension, reading strategies, literacy, LLN, literacies embedding, targeted literacy strategies instruction, reading model.

## **1. Background: Adult literacy is a social issue in New Zealand**

### **1.1. Raising adult literacy in New Zealand through language, literacy, and numeracy (LLN) embedded instruction**

Raising adult literacy levels to ensure better life and work opportunities has become a key governmental objective in New Zealand. In 1996, the *International Adult Literacy Survey* (IALS) identified that one in five New Zealand adults had levels of literacy below that required for success in today's modern society and workplace (Ministry of Education, MoE, 2001, p. 1). This statistical evidence highlighted adult literacy as a social and economic issue, signalling the need for funding and targeted governmental policy. As a direct response, the Ministry of Education's 2001 Adult Literacy Strategy "More than Words" aims to raise the literacy level of New Zealanders enabling increased social, family and workplace participation (MoE, 2001, p. 2). Likewise, the 2006 *Adult Literacy and Life Skills (ALL) Survey* found that "approximately 1.1 million New Zealanders (43 percent of adults aged 16 to 65) have literacy skills below those needed to participate fully in a knowledge society ..." (Tertiary Education Commission, TEC, 2008b, p. 6). Again, these statistics highlighted literacy as a social issue requiring serious attention and targeted action.

Increasingly, the literacy demands of work and life in the 21<sup>st</sup> century knowledge-based economy extend beyond functional literacy. A high degree of “multi-literacies”, including critical literacy, information literacy and digital literacies are required to comprehend complex, hybrid texts, especially hypertexts. LLN embedded instruction in vocational tertiary programmes is recommended as one vehicle to bridge this gap between low adult literacy levels and the complex, multi-literacies demands of modern society (TEC, 2008b). Educational attainment is a key factor associated with acquiring higher levels of literacy (MoE, 2010). Through embedding LLN in all certificate level (New Zealand Qualification Authority, (NZQA), level 1-3) vocational programmes, the TEC is directly targeting New Zealanders with low literacy levels. Upskilling individuals in foundation education programmes will enable more New Zealanders to pathway to higher educational qualifications resulting in socio-economic benefits (TEC, 2008b).

## 1.2. Defining effective LLN embedded instruction

LLN embedding integrates “the development of language, literacy and numeracy (LLN) with vocational or other skills” (National Research and Development Centre for Adult Literacy and Numeracy, NRDC, Aug. 2005, p. 5). Best-practice LLN pedagogy is defined as learner-centred (NRDC, Aug. 2005), and contextualised to build vocational competence and new professional identities (NRDC, 2005; NRDC, Aug. 2005; NRDC, 2006; NRDC, 2008). Making as many links as possible between the vocational content and the underlying LLN skills is recommended (TEC, 2009). Best practice LLN pedagogical instruction views literacy learning as a “normal” part of the course, rather than as deficit-based (Bates, 2005; Black & Yasukawa, 2011). Deliberate acts of teaching result from performing a gap analysis between learners’ diagnosed LLN needs and the identified vocational course demands (Benseman et al., 2005). A range of local and international LLN research (Bates, 2005; Black & Yasukawa, 2011; Krsinich & Roberts, 2004; NRDC, 2006) recommends shared planning and team teaching between LLN advisors and vocational lecturers as an effective delivery model for LLN embedding. These best-practice research based LLN embedding pedagogical practices informed teaching and learning of literacies in this action research project.

## 1.3. Rationale and aims

This research study is situated at the Waitakere Campus of Unitec Institute of Technology, a polytechnic based in the Auckland region. Raising literacy levels in this community is a key objective of both local and central governments (Sutton & Vester, 2010; TEC, 2008b). This current project also aligns with institutional strategic objectives, with the music programme targeted as part of Unitec’s *Embedded Language, Literacy and Numeracy* initiative (Unitec, 2008). The Certificate in Music is a one semester bridging programme that if successfully completed, enables students to pathway directly into Unitec’s Diploma in Contemporary Music (Level 5). Learners on this programme are from diverse backgrounds. Therefore, educators cannot assume students have adequate reading skills to meet the demands of the programme, even though they meet programme entry requirements. Diagnostic literacy testing of Certificate in Music students between 2008–2010 indicated that approximately 50% of students had literacy needs on entry to the programme. Reading comprehension and critical reading were identified as key difficulties for these foundation students.

This small-scale action research project within a certificate level 3 music studies course with LLN embedded examined the effect of explicitly teaching reading comprehension strategies to develop learner comprehension and critical reading of text. The overall aim was to improve learner reading skills and to provide learners with knowledge of reading strategies that they could transfer to their further learning or to work within their vocational field. This pilot action research had a dual aim of developing an effective pedagogical model for embedding reading instruction for adults in mainstream tertiary courses. The research questions guiding this research were:

1. Does the explicit teaching of reading comprehension strategies within a level 3 music studies course with LLN embedded improve students’ reading levels?

2. In particular, does reading comprehension strategies instruction improve the reading skills that underpin adult learners' comprehension and critical reading of text?

## 2. Best-practice reading comprehension instruction for a tertiary context

### 2.1. Defining reading comprehension and critical reading

Reading comprehension is an active, cognitive process that involves the reader interpreting to make meaning of text. Although two major theories of reading were developed in the early 1970s, the reader-driven, psycholinguistic theory associated with whole-language approaches (Goodman & Goodman, 1979), and the text-driven, skills-based theory (Gough, 1972), neither of these theories alone provided an adequate model of reading for all readers. However, interactive models of reading (the interactive model, Rumelhart, 1977; the interactive-compensatory model, Stanovich, 1980; dual-coding theory, Sadowski & Paivio, 1994) that integrate contextual and skills-based approaches, more accurately represent the reading process. In interactive reading models, readers actively construct meaning using their language competency, prior knowledge of content and reading processes that interact with cues in the text at graphophonic, syntactic, and semantic levels (Campbell & Malicky, 2002; Ruddell & Unrau, 2004). These “sociocognitive interactive models” of reading (Ruddell & Unrau, 2004, p. 1466) emphasise the interaction between reader, text and teacher in the construction of meaning, and also account for the role of the reader's affective state as a variable in the comprehension process (Ruddell & Unrau, 2004). Stanovich (1994) argues that blending the direct teaching of analytical skills within a holistic, context-based programme more effectively meets the needs of all readers, especially struggling readers.

Critical reading requires “advanced”, higher-order comprehension skills, including the ability to analyze and evaluate text, to draw inferences, and synthesize from text in order to construct personal meaning. Critical reading is an interpretative activity that includes interpreting authorial intention, or text purpose, and identifying multiple perspectives in text. Effective critical reading instruction scaffolds students from surface level, shallow gathering and processing of information, to a deeper, more active and critical construction of meaning in text (Whitehead, 2005). For the purposes of this study, teaching critical reading in the music classroom develops students' ability to operate as “amateur music critics” (Abrahams, 2005, p. 62). A definition of critical reading as the development of higher order comprehension skills (Paul, 1993) fits with both the LLN embedding and music vocational objectives.

### 2.2. Reading comprehension strategies instruction: five key strategies

The reading literature highlights the effectiveness of reading comprehension strategies instruction for raising students' reading comprehension levels (Collins, 1991, 1993; Pressley, 2002; Pressley, 2006; Tovani, 2004). The goal of strategic reading comprehension instruction is to provide readers with the tools that effective readers use to make sense of text. Tovani (2004) defines a reading strategy as “an intentional plan that is flexible and can be adapted to meet the demands of the situation” (p. 5). Although there is a significant research bank on reading strategies instruction in school settings, there is less literature related to strategic reading instruction for adults (Campbell & Malicky, 2002), especially in LLN embedded contexts in New Zealand (Benseman et al., 2005). Thus, the current study draws heavily on research and literature from the school sector. Pressley (2006) recommends teaching a small repertoire of focal strategies to provide a foundation for teaching reading comprehension over time. The following five research-backed, cognitive strategies are commonly recommended for improving reading comprehension:

- *Prior knowledge activation*; using background knowledge to make predictions and respond to text, as well as the ability to draw on personal experience, are critical to inferencing and comprehension (Campbell & Malicky, 2002; Daniels & Zemelman, 2004; Hock & Mellard, 2005; Pressley, 2002, 2006).
- *Generating questions*; effective readers ask and answer questions to make inferences and elaborations, and to monitor their understanding as they read (Duffy, 2009).

- *Creating mental images*; teaching students to create pictures in their minds of text content while reading utilises the non-verbal imagery system to assist with text comprehension (Sadoski & Paivio, 2001).
- *Using text structure*; awareness of text organisational structures, and text types is essential for meaning creation (Dymock & Nicholson, 2007; Ruddell & Unrau, 2004).
- *Summarising*; involves identifying the main ideas, separating the big picture ideas from less relevant details, deleting or condensing information, and paraphrasing or integrating information into a summary (Hock & Mellard, 2005).

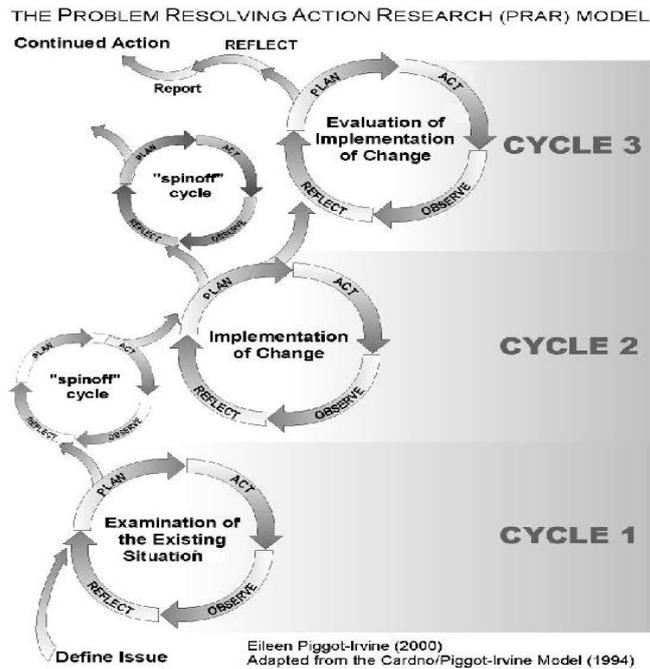
Hock and Mellard (2005) found that the more advanced strategies of “summarising and drawing inferences are the most important reading comprehension strategies for adult literacy outcomes” (p. 198), and that answering reader-generated questions is an important strategy for reading functional texts. Strategy instruction is most effective when reading strategies are explicitly taught, their use directly explained and modelled using think-aloud processes (Block & Duffy, 2008; Duffy, 2009; Hilden & Pressley, 2007; NICHD, 2000). Explicit instruction promotes meta-cognitive awareness of strategy application through an understanding of the “invisible” mental processing involved in comprehending text (Duffy et al., 1988) enabling transfer of learning across texts and contexts (Collins, 1991, 1993). Learners also require collaborative, scaffolded practice using a variety of industry-related texts (Bates, 2005; Brozo & Simpson, 2007; Buehl, 2009). Developing reading vocabulary, especially discipline-specific terminology, is also central to improving reading comprehension in vocational contexts (Buhel, 2007; 2009; Daniel and Zemelman, 2004). Learners need mentoring to become familiar with the “insider language” of a new professional or vocational discourse (Buhel, 2007).

### **3. Methods: Action research for implementing pedagogical change**

#### **3.1. Characteristics of action research and the Problem Resolving Action Research (PRAR) model**

Due to the transformational nature of action research, it is a suitable methodology for implementing pedagogical change initiatives such as LLN embedding. At Unitec Institute of Technology, a multi-project action research approach is used by the Academic Literacies Team as one vehicle for implementing and sustaining LLN embedding initiatives across the institute (Schwenger, 2011). Using teacher-practitioner action research enables an investigation of practice with the overall goal of transforming education through change (Foulger, 2010; McNiff, 1988). One key inherent characteristic of the action research process that promotes change and informed decision-making is its emphasis on critical reflection (McNiff, 1988). In addition, collaborative dialogue and dialogic interaction between teacher-practitioners are vital resources that assist critical reflection within the inquiry process (Cardno, 2003; Piggot-Irvine, 2009).

Piggot-Irvine’s Problem Resolving Action Research (PRAR) model was utilised in this study and for all research projects evolving from Unitec’s Action Research Project Group. The PRAR model involves three cycles of plan-act-observe-reflect through the three key phases of the research: reconnaissance, implementation of change, and evaluation of the implementation phase (Figure 1). Piggot-Irvine (2009) describes the action research process as “an interactive (cyclic) process of plan, act, observe, reflect, which keeps cycling until the issue that prompted it is resolved” (p. 13). The PRAR model enabled a systematic and structured inquiry approach within this study, which was a ‘pilot’ in that it performed one complete action research cycle with the potential for on-going cycles.



**Figure 1.** The Problem Resolving Action Research (PRAR) model. (Source: Piggot-Irvine, 2002. Reprinted with permission.)

Action research is an appropriate methodology for teacher-practitioners to research and improve their educational practice and solve workplace problems in context (Mills, 2000; Lim, 2007; Zuber-Skerritt, 2000). According to Sagor (2005), action research involves “an investigation conducted by the person or the people empowered to take action concerning their own actions, for the purpose of improving their future actions” (p. 4). The current action research inquiry tested the hypothesis that: *strategic reading comprehension instruction in a certificate in music course with LLN embedded will raise reading levels, and improve comprehension and critical reading of text.* Inquiry of this type is generally termed “quasi-experimental research” as it tests a hypothesis without a control group (Sagor, 2005, p. 6). The current action research project blended qualitative and quantitative methodologies in a mixed methods design that allowed triangulation of data to enhance the research validity. The mixed method design used is in-line with Lim’s (2007) recommendation for “a balanced model” of action research based on rigorous evidence (p. 3).

Where this action research project diverged from the norm was as a methodological approach to reading instruction research. Typically reading research adopts a scientific paradigm due to the need for accurate, reliable and objective measures of reading gains. Experimental approaches using multiple testing, quantitative data analysis and rigorous standards, including the use of control groups, achieve the “gold standard” of reading research (Denzin, Lincoln & Giardina, 2006). Despite this expectation, the systematic action research approach using mixed methods of data collection, including reading testing, upheld the rigor of the reading instruction research in this project.

### 3.2. The participants

A class of eighteen students enrolled in the Certificate in Music programme were invited to participate in the action research project with 14 students out of 18 agreeing to participate and signing ethics consent forms. The 14 adult students consisted of 12 males and 2 females, ranging in age from 16 to 55. These students identified their ethnicity as 43% NZ European, 36% Pacifica, and 21% Maori. One student had enrolled under the Youth Guarantee Scheme, which provides vocational training for 16-17 year olds in LLN embedded vocational programmes.

### 3.3. Data collection methods across the action research phases

Reconnaissance data to determine student reading levels and needs were collected through two diagnostic assessments: a contextualised music diagnostic on entry to the programme, and an on-line reading diagnostic assessment in week 2 using the Assessment Tool (AT) for adult literacy<sup>1</sup>. Further data were collected through a survey of student reading attitudes and behaviours. Use of these three mixed methods of data collection provided rich comparable sources for triangulation (Cohen, Manion & Morrison, 2007). The data collected were interpreted and analysed to inform the planning of a reading instruction programme. During the implementation phase, the programme was delivered and observations made regarding its efficacy, resulting in small changes to planned action. The evaluation phase included further data collection including AT reading assessment in week 14, and student completion of a written survey. A comparative data analysis was then performed to evaluate the efficacy of the reading comprehension strategy instruction for raising reading levels. Finally, reflection and evaluation of the action research project determined adaptations to the reading instruction model and recommendations for future actions.

### 3.4. A description of the data collection tools

#### 3.4.1. *The contextualised reading diagnostic*

The contextualised reading diagnostic involved the students reading a music industry related text. The text was challenging, at step 5-6 on the learning progressions reading framework for adult literacy. The assessment examined students' understanding of contextualised vocabulary, comprehension of main ideas in text, knowledge of text type and text structure, and critical reading, including identifying purpose and audience.

#### 3.4.2. *The Assessment Tool for Adult Literacy and Numeracy*

The Assessment Tool for Adult Literacy and Numeracy (AT) is a nationally designed assessment tool for adult literacy and numeracy. For the purposes of this project, students were tested using the full on-line adaptive reading assessment to measure their comprehension, critical reading and understanding of contextualised vocabulary. The AT is linked to the Learning Progressions for adult literacy and provides a benchmark of adult reading levels from Step 1 to Step 6 on a scale from 0 – 1000. Because the assessment is on-line and is marked automatically by the tool, marker subjectivity is eliminated.

#### 3.4.3. *The Attitudes to Reading Survey*

The *Attitudes to Reading Survey* is based on the standardised survey in the TEC “Read with understanding” support book and is “designed to gain a better understanding of learners’ attitudes to reading and their reading behaviours and habits” (TEC, 2008a). Students indicated specific difficulties they encounter whilst reading, and identified the reading strategies they currently use.

#### 3.4.4. *Student Survey*

The *Student Survey* (Appendix A) was a confidential written survey which used a combination of open and structured questions to provide descriptive evaluative data of the students’ opinions of the reading instruction they had received during the 12 week intervention phase. The questions ranged from very general, free open-ended questions regarding students’ opinions of the overall success and enjoyment of the instruction, as well as possible improvements to the instruction that could be made, to more specific free short answer questions that required students to name reading strategies and texts that were beneficial. The final section of the survey was structured using a check answer multiple choice list with multiple-answer mode and follow up questions that required students to select aspects of the instruction they found positive and to select from a range of improvements to the course that could be made.

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<sup>1</sup> While the Assessment Tool itself is not publicly accessible, more information about it can be found at: <http://literacyandnumeracyforadults.com/Assessment-Tool-Support/Assessment-Tool-Quick-Links>

## 4. Results

### 4.1. Analysis of reconnaissance data to identify students' literacy needs / gaps

#### 4.1.1. The contextualised music diagnostic

Thirteen of the 14 students completed the contextualised music diagnostic at the pre-enrolment interview. Of these 13 students, five had difficulty reading the music text independently. This assessment indicated that students had significant reading needs in the following areas: comprehension of main ideas in text (9 of the 13); critical reading (7 of the 13); understanding contextualised vocabulary (5 of the 13); and knowledge of language and text features (5 of the 13).

#### 4.1.2. The Assessment Tool results

Eleven of the 14 students undertook testing with the majority (6 out of 11) sitting at steps 3 or below on the adult learning progressions for reading. This indicated an everyday, functional level of reading that does not include the reading of complex texts with specialised vocabulary (TEC, 2008a). This finding also highlighted a significant gap between the demands of the industry-related texts at step 5-6 and the group's median reading levels. The AT testing confirmed the results of the contextualised reading diagnostics. As shown in Table 1, analysis of individualised student reports by item errors and coding within categories showed the following most significant reading needs: drawing inferences or interpreting text, locating information in text, and identifying main ideas and support for main ideas in text. Understanding contextualised vocabulary also posed a significant level of difficulty. These identified reading needs are also consistent with reading literature arguing that reading comprehension and vocabulary development are the most pressing needs of adult foundation learners (Benseman et al., 2005; Hanifin, 2008).

**Table 1.** Student reading needs identified by AT testing.

The sub-skills of reading	Number of errors
Identify purpose and audience	7
Identify text type / text features	6
Infer / interpret text	58
Identify main ideas and support for ideas	16
Locate information in text	24
Understand vocabulary in context	13

#### 4.1.3. The Attitudes to Reading Survey results

The survey results indicated that students read on a regular daily basis, albeit the majority of texts read were websites, text messages and social networking sites. Students read books regularly with religious books highlighted as important in the daily lives of these adult learners. The majority of students, seven of the 12, indicated positive affective factors towards reading, and four of the students expressed confidence in their reading ability. Seven of the 12 students only felt "okay" in relation to their reading confidence. Students identified "understanding hard words" (vocabulary), "remembering what you've read" (comprehension / retention), "finding out what's important" (comprehension) and "working out what it means" (comprehension), as their main reading difficulties. Although descriptive, this information corresponded with and confirmed the results of the diagnostic reading assessments. The survey data indicated that the students are strategic readers utilising a range of reading comprehension strategies with mental imaging, identifying main ideas, and prediction the most commonly used.

## 4.2. Intervention phase: change in action

### 4.2.1. Planning the reading intervention

Within the Certificate in Music programme, music content knowledge and skills are the primary focus. For this reason, integrating regular reading instruction into the programme required negotiation between the music lecturer and LLN lecturer, and the development of integrated learning objectives. Reading instruction occurred in the weekly music studies course and involved one hour per week of reading teaching over a 12 week time frame. Students also read outside class for pleasure and did a significant amount of reading, particularly on-line reading and research inquiry, to complete course-related assessments. For these reasons, the quantity of reading varied considerably, but was significantly more than the limited amount performed in class.

### 4.2.2. The intervention – outlined

The main focus of instruction centred on reading comprehension strategy instruction, although learning contextualised vocabulary, as well as critical reading of text were included. Students read a variety of music industry texts. Best practice reading comprehension strategy instruction was delivered through team teaching by the LLN and music lecturers. Interactive and collaborative reading and vocabulary activities from the TEC “Teaching Adults to Read with Understanding” support book (TEC, 2008a) were used to practise the key reading strategies. Table 2 provides an overview of the reading strategies instruction embedded within the music programme.

**Table 2.** A framework for explicit reading comprehension strategies instruction.

Key principles	Examples
1. Contextualisation: vocational texts	Music interviews, reviews, biographies, DVDs, reference texts, promotional texts
2. Reading comprehension strategies instruction	Explicit, direct teaching and scaffolded practice of key reading strategies: name, explain, model, practice
3. Five key reading comprehension strategies	Using text structure, summarization, activating prior knowledge, questioning text, mental imaging
4. Critical reading & text interpretation	Interpretative activities: asking & answering inferential questions, identifying text type, purpose & audience. Identifying bias, agenda, fact & opinion, and multiple perspectives in text, reader response.
5. Contextualised vocabulary learning	Identifying key words, using context to predict meaning, direct explanation, structural analysis strategies, writing word definitions.
6. Interactive peer learning & multi-sensory approaches	Group work using multi-sensory: kinaesthetic-tactile-visual interactive activities, and graphic organisers.

### 4.2.3. Observations and reflections on the interaction in progress

Around week five of the intervention, the lecturers realised that the intervention time frame constrained implementation of a balanced instructional reading programme. One hour of reading instruction per week was insufficient, and it was clear that a 12 week time frame would also be insufficient to significantly raise reading levels for these adult learners. As a response, the lecturers reduced vocabulary teaching and adopted a tighter focus on reading comprehension strategies and critical reading of text. In addition to the five key reading strategies, they added skimming and scanning to locate explicit information to better meet the specific needs of these

learners. Increased instructional time was not possible due to the constraints of the LLN embedded vocational context; therefore, this tighter focus of instruction was a practical solution.

### 4.3. Evaluation phase results: reflection on change

The evaluation phase involved two forms of data collection: AT reading testing and a student survey, both completed in week 14 of the course. Students' reading was reassessed using the AT full on-line adaptive reading assessment with 11 of the original 14 students performing the testing. A comparable analysis of the students pre-test results with the post-test results examined overall improvements in reading levels for the group. Analysis and coding of students' "incorrect responses" on the individual assessment reports led to a comparative analysis of students' reading errors within the component skills of reading.

#### 4.3.1. The Assessment Tool for Adult Literacy (The AT) overall results

The AT results are linked to the learning progressions (reading) for adult literacy with results on a scale of 1 – 1000 with an average margin of error of +/- 30. As can be seen from Table 3, the average reading score for the group rose from 609 to 623, an improvement of +14, which remains within the margin of error of the test. Similarly, the median rose by +21, which also remains within the margin of error, as did the maximum score: a result of -14. The lower quartile remained virtually unchanged. There were however, significant shifts in the minimum learner score and in the upper quartile of +45 and +51, respectively.

**Table 3.** The AT – Overall achievement statistics

Cert. in Music	Pre-test reading	Post-test reading
No. of learners	11	11
Maximum learner score	786	772
Upper quartile	647	698
Median	592	613
Average	609	623
Lower quartile	576	575
Minimum learner score	406	451

The individual results of the majority of the students remained unchanged within the margin of error. Two students showed significant improvement, and a further two students showed a significant drop in reading level. Of the two students who showed significant improvement, one student with results of +78 had previously been employed in the building industry and substantially increased his quantity of reading whilst on this course. The other student whose reading significantly improved by +45 was a Tongan student with English as an Additional Language. The two students with significant drops in reading level included one student who performed the assessment under noisy non-test conditions (-61), and a further student (-70), who had allegedly been using pure amphetamines, the drug "P".

#### 4.3.2. Using the AT results to analyse changes across the components of reading

Analysis and coding of student reading errors according to question intent on the individual student reports of the AT enabled the identification of a number of patterns. As can be seen in Table 4, students showed significant improvement across all the components of reading other than inferencing / interpreting text, and understanding contextualised vocabulary. Students at the lower steps, steps 1-3, made a variety of errors within all categories of the components of reading. Basic comprehension skills, for example locating explicit information in text and identifying main ideas, presented difficulty for learners on steps 1 to 4, but did not pose problems for learners at higher steps. However, at steps 5 to 6, the advanced higher order comprehension skills of making inferences, as well as understanding complex contextualised

vocabulary, continued to pose difficulty. This cohort of students reduced their reading errors across all basic comprehension skill areas. At the highest steps on the progressions, learners made fewer incorrect responses overall. As text complexity increased, learners made fewer errors in basic comprehension skill areas and more errors in the advanced level comprehension skill areas: inferencing / critical text interpretation, and understanding complex, contextualised vocabulary.

**Table 4.** The AT results: A comparative analysis of student reading errors.

The sub-skills of reading	Number of pre-test errors	Number of post-test errors
Identify purpose and audience	7	3
Identify text type / text features	6	4
Infer / interpret text	58	61
Identify main ideas / support for ideas	16	11
Locate information in text	24	14
Understand vocabulary in context	13	20

#### 4.3.3. Survey results – student feedback

Twelve students completed the confidential written questionnaire (appendix A) providing evaluative feedback on the reading instruction received. Responses to question 1 indicated that strategic reading instruction in LLN embedding contexts is beneficial for both EAL learners and for learners with English as their first language. One EAL learner wrote that “*reading is very important, it’s help me a lot*”, and in a similar vein, a native English speaker wrote, “*I read ok, but I learnt new words and concepts...*”. Question 2 results indicated that the majority, nine of the 12 students, learnt reading strategies that were helpful. Seven of the 12 students named specific strategies, with identifying main ideas (3) and scanning to locate specific information (2), as being the two strategies most beneficial. Half of the students cited the music course, or reading more than usual due to the demands of tertiary study, as the main reasons for their reading improvement. One student wrote, “*Usually I do outdoor work ... being in a school environment I read a lot more*”.

Three out of the 12 students didn’t think their reading had improved. One of these students felt this was because his reading was already at a high level (step 6). Two further students were disengaged during the reading instruction. A reason cited for this disengagement included the comment that, “*people don’t do the course to learn to read*”. The majority of the students commented positively on the course texts, nine of the 12 students, and 50% of the students commented that the course is “*fine as it is*” or “*it’s all good*”. Seven of the 12 students indicated that they enjoyed collaborative reading in groups, while 50% of the students enjoyed the inclusion of diverse music text types, including the use of cultural texts (5 of the 12). The majority of students (8 out of 12) indicated that learning reading strategies for reading on-line, and more on-line reading of texts in class (5 out of 12) would be an improvement to the current reading instruction.

## 5. Discussion of key findings

### 5.1. Reading comprehension strategy instruction: an effective approach for raising reading levels in tertiary contexts

The AT testing provided objective evidence to demonstrate the efficacy of the reading strategies intervention, adding to previous reading comprehension strategies studies with adult literacy learners (Campbell & Malicky, 2002; Hock & Mellard, 2005). The significant improvement shown within the upper quartile range (Table 3), and the increase in the minimum reading level, indicated efficacy of the overall intervention, albeit of a limited amount. Whilst only a small

proportion of the students' individual results showed significant improvement, and the majority remained unchanged, the two negative individual results can be explained in terms of testing under non-test conditions for one, and alleged use of pure amphetamines (P) for the other. For the remainder of the students, the individual learner results do indicate an overall positive movement in reading levels. This finding was confirmed by the survey feedback, which indicated that the majority of students, 75%, believed that their reading level had improved during the intervention.

It was difficult to determine whether the strategic reading comprehension instruction directly caused rises in reading levels, or whether improvements were due to increased exposure to text within the tertiary learning environment. The student survey was mixed in this regard, with students identifying both reading strategies instruction and more reading practice as dually responsible for improvements in reading levels. It is the AT individual learner reports, however, that indicate the effectiveness of reading comprehension strategy instruction for improving students' reading skills across the components of reading. The significant improvements in students' ability to identify main ideas and support for ideas, to locate important information, to understand text purpose and audience, and to identify text types and text features are in direct response to explicit reading comprehension strategy instruction that focussed on these reading skills.

Understanding specialised vocabulary and inferring and interpreting text are advanced reading skills that are required to read extended, complex texts. As the AT texts increased in complexity, the need for critical thinking, inferencing and interpreting skills also rose. Therefore, it is not surprising that the reading strategy instruction did not demonstrate a significant overall improvement in these components of reading. This is in line with the reading literature that views text interpretation and critical reading as advanced, higher order comprehension skills (Paul, 1993). For this reason, reading comprehension strategy instruction and critical reading activities are valid and vital for inclusion in reading instruction at all levels of tertiary education. Due to the diverse needs of adult learners, teaching a range of targeted comprehension strategies selected from a hierarchy of basic to advanced comprehension skills is recommended.

## **5.2. A pedagogical model for embedded reading instruction in LLN contexts**

A tight instructional focus and the use of targeted strategies instruction are necessary due to the systemic and contextual constraints of working in LLN embedded contexts. Whilst a balanced approach to reading instruction is recommended (Pressley, 2006), this may not be realistically achievable within a 16 week semester time frame. Reading comprehension strategies instruction is at the heart of effective reading instruction; however, a limited range of core targeted strategies is recommended. Additional reading strategies and a more balanced reading programme can be implemented, if time permits. Strategy selection should be determined through a gap analysis identifying students' diagnosed reading needs in relation to programme and contextual demands.

Students positively evaluated the learner-centred, pedagogical approaches used, especially the co-operative group work. The use of industry related, and culturally responsive texts was a positive aspect of LLN embedded reading instruction for these learners. The main priority improvements recommended by the students were an increased focus on strategy instruction for reading digital texts, as well as student self-selection of texts. These findings reflect the centrality of digital texts in the lives of these students, and the need for explicit teaching of reading strategies to read new multi-media texts. Reading and strategy practice could be increased through inquiry learning projects within a blended e-learning environment. Student evaluation and lecturer critical reflection on embedded reading instruction through the action research process have enabled the further development and refinement of the reading pedagogical model shown in Figure 2.

<b>Critical reading &amp; interpretative activities</b>	<b>Contextualised &amp; fully embedded: vocational discourses, skills, terminology &amp; texts</b>	<b>Reading vocabulary and word-level strategies</b>
	<b>Three - five targeted reading comprehension strategies</b> <i>Skimming &amp; scanning, applying background knowledge, using text structure, summarisation, generating questions, mental imaging</i>	
	<b>Blended e-learning: printed and digital texts</b>	
	<b>Learner-centred: collaborative, culturally responsive, multi-sensory, inquiry learning</b>	

**Figure 2.** A pedagogical model for embedded reading instruction in tertiary contexts.

## 6. Conclusion

Reading comprehension strategy instruction is well-established as a reading methodology in the compulsory education sector (Collins, 1991, 1993; Pressley, 2002, 2006; Tovani, 2004). This action research project utilised targeted reading comprehension instruction as an approach for raising adult reading levels in tertiary contexts. Directly targeting learners' identified needs within the components of reading resulted in slight overall reading gains. However, the contextual realities, especially the limited time frames and the primary focus on vocational skills and content, required considerable negotiation. In particular, longer time frames and space within fully embedded vocational programmes for consistent attention to developing learner reading skills are necessary to achieve more substantial reading gains. Even with targeted reading instruction, only limited gains are likely within a one semester programme. Action research methodology enabled a systematic, evidence-based investigation (Zuber-Skerritt, 2002) of the proposed reading model, resulting in refinements to the pedagogical model for embedded reading instruction (Figure 2). The reading intervention was repeated with a further cohort of Certificate in Music students in a subsequent semester with generally positive results, but formal action research was not conducted. To increase the validity and reliability of the findings of this current action research project, replication with a larger sample size is planned. A second cycle of action research across two certificate programmes: music and business will follow.

## Acknowledgements

I would like to thank Eileen Piggot-Irvine (Unitec), Margaret Franken and Sue Dymock (University of Waikato) for their support during this research project.

## References

- Abrahams, F. (2005). Transforming classroom music instruction with ideas from critical pedagogy. *Music Educators' Journal*, 92(1), 62-67.
- Bates, G. (2005). Government of Western Australia Department of Training and Workforce Development. *Getting Started: The course in applied vocational study skills*. Retrieved July 18, 2008, from <http://vetinfonet.det.wa.edu.au/adultliteracy/docs/getting%20started%2005.pdf>
- Benseman, J., Sutton, A., & Lander, J. (2005). Auckland Uniservices. *Working in the light of evidence, as well as aspiration – a literature review of the best available evidence about effective adult literacy, numeracy and language teaching*. *Learning for Living*. Retrieved August 10, 2009, from [http://www.educationcounts.govt.nz/publications/tertiary\\_education/27773/5727](http://www.educationcounts.govt.nz/publications/tertiary_education/27773/5727)

- Black, S., & Yasukawa, K. (2011). *Beyond deficit approaches to teaching and learning: Literacy and numeracy in VET courses*. Melbourne, Australia: ACAL. Retrieved from <http://avetra.org.au/wp-content/uploads/2011/05/62.00.pdf>
- Block, C. C., & Duffy, G. G. (2008). Research on teaching comprehension: where we've been and where we're going. In C. C. Block & S. R. Parris (Eds.). *Comprehension instruction: Research-based best practices* (pp.19-37). New York: Guilford Press.
- Brozo, W. G., & Simpson, M. L. (2007). *Content literacy for today's adolescents: Honouring diversity and building competence*. New Jersey: Pearson Merrill Prentice Hall.
- Buehl, D. (2007). A professional development framework for embedding comprehension instruction into content classrooms. In J. Lewis & G. Moorman (Eds.). *Adolescent literacy instruction: Policies and promising practices* (pp. 192-211). Newark, DE, USA: International Reading Association.
- Buehl, D. (2009). *Classroom strategies for interactive learning*. Newark, DE: International Reading Association.
- Campbell, P., & Malicky, G. (2002). The reading strategies of adult basic education students. *Adult Basic Education*, 12(1), 3-19.
- Cardno, C. (2003). *Action research*. Wellington: New Zealand Council for Educational Research.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education*. (6<sup>th</sup> ed.). New York: Routledge.
- Collins, C. (1991). *Reading instruction that increases thinking abilities*. Retrieved November 10, 2009, from <http://www.abacon.com/collins-block/articles.html>
- Collins, C. (1993). Strategy instruction in a literature-based reading program. *The Elementary School Journal*, 94(2), 139-151.
- Daniels, H., & Zemelman, S. (2004). *Subjects matter: Every teacher's guide to content-area reading*. Portsmouth: Heinemann.
- Denzin, N. K., Lincoln, Y. S., & Giardina, M. D. (2006). Disciplining qualitative research. *International Journal of Qualitative Studies in Education*, 19(6), 769-782.
- Duffy, G. G. (2009). *Explaining reading: A resource for teaching concepts, skills and strategies*. New York: Guildford Press.
- Duffy, G. G., Roehler, L.R., & Herrmann, B.A. (1988). Modeling mental processes helps poor readers become strategic readers. *The Reading Teacher*, 41(8), 762-767.
- Dymock, S., & Nicholson, T. (2007). *Teaching text structures: A key to non-fiction reading success*. New York: Scholastic.
- Foulger, T. S. (2010). External conversations: An unexpected discovery about the role of the critical friend in action research inquiries. *Action Research*, 8, 135-452.
- Goodman, K. S., & Goodman, Y. M. (1979). Learning to read is natural. In L. B. Resnick & P. A. Weaver (Eds.). *Theory and practice of early reading* (Vol. 1, pp. 137-154). New Jersey: Erlbaum.
- Gough, P. B. (1972). One second of reading. In J. F. Kavanaugh & I. G. Mattingly (Eds.). *Language by Ear and by Eye* (pp. 331-358). Cambridge, MA: MIT Press.
- Hanifin, T. (2008). "It's more than reading and writing": The nature and extent of adults' literacy issues. In J. Benseman & A. Sutton (Eds.). *Facing the challenge: Foundation learning for adults in Aotearoa New Zealand* (pp. 125-135). Wellington: Dunmore Publishing.
- Hilden, K. R. & Pressley, M. (2007). Self-regulation through transactional strategies instruction. *Reading and Writing Quarterly*, 23, 51-71.
- Hock, M. & Mellard, D. (2005). Reading comprehension strategies for adult literacy outcomes. *Journal of Adolescent & Adult Literacy*, 49(3), 192-200.

- Krsinich, K., & Roberts, W. (2008). *'Two heads working together': A model of integrating foundation skills into other courses*. In J. Benseman & A. Sutton (Eds.). *Facing the challenge: Foundation learning for adults in Aotearoa New Zealand* (pp. 125-135). Wellington: Dunmore Publishing.
- Lim, P. T. H. (2007). Action research for teachers: A balanced model. *Proceedings of the Redesigning Pedagogy: Culture, Knowledge and Understanding Conference 2007*. Singapore. Retrieved November 29, 2010, from <http://conference.nie.edu.sg/2007/paper/papers/OTH154.pdf>
- McNiff, J. (1988). *Action research: Principles and practice*. London: Routledge.
- Mills, G. E. (2000). *Action research: A guide for the teacher researcher*. New Jersey: Pearson Education.
- Ministry of Education. (2001). *Adult literacy strategy*. Wellington: Author.
- Ministry of Education. (2010). *Adult literacy and numeracy in New Zealand – key factors: An analysis from the Adult Literacy and Life Skills Survey*. Retrieved November 12, 2010, from [http://www.educationcounts.govt.nz/data/assets/pdf\\_file/0011/78815/78448-AdultLiteracyKeyFactors-05072010.pdf](http://www.educationcounts.govt.nz/data/assets/pdf_file/0011/78815/78448-AdultLiteracyKeyFactors-05072010.pdf)
- National Institute for Child Health and Development (NICHD). (2000). *National reading panel report: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Retrieved November 12, 2010 from <http://www.nichd.nih.gov/publications/nrp/smallbook.cfm>
- National Research and Development Centre for adult literacy and numeracy (NRDC). (2005). *Skills for life quality initiative, research resources, embedded teaching and learning*. Retrieved July 18, 2008, from [http://www.nrdc.org.uk/publications\\_details.asp?ID=60#](http://www.nrdc.org.uk/publications_details.asp?ID=60#)
- National Research and Development Centre for adult literacy and numeracy (NRDC). (August, 2005). *Research report: Embedded teaching and learning of adult literacy, numeracy and ESOL, seven case studies*. Retrieved July 18, 2008, from [http://www.nrdc.org.uk/publications\\_details.asp?ID=21#](http://www.nrdc.org.uk/publications_details.asp?ID=21#)
- National Research and Development Centre for adult literacy and numeracy (NRDC). (2006). Research report "You wouldn't expect a maths teacher to teach plastering ..."  
*Embedding literacy, language and numeracy in post-16 vocational programmes – the impact on learning and achievement*. Retrieved July 18, 2008, from [http://www.nrdc.org.uk/publications\\_details.asp?ID=73#](http://www.nrdc.org.uk/publications_details.asp?ID=73#)
- National Research and Development Centre for adult literacy and numeracy (NRDC). (2008). Summary report: *The learner study: The impact of the Skills for Life Strategy on adult literacy, language and numeracy learners*. Retrieved October 8, 2009, from [http://www.nrdc.org.uk/publications\\_details.asp?ID=158](http://www.nrdc.org.uk/publications_details.asp?ID=158)
- Paul, R. W. (1993). *Critical thinking: How to prepare students for survival in a rapidly changing world*. Santa Rosa, CA: Foundation for Critical Thinking.
- Piggot-Irvine, E. (2002). *The problem resolving action research (PRAR) model*. From Rhetoric and Practice in Action Research. Paper presented at the annual conference of the British Educational Research Association, University of Exeter, United Kingdom. Retrieved November 30, 2010, from <http://www.leeds.ac.uk/educol/documents/00002471.htm>
- Piggott-Irvine, E. (2009). Action research as an approach to development. In *Action research in practice*. E. Piggot-Irvine (Ed.), (pp. 11-34). Wellington: New Zealand Council for Educational Research.
- Pressley, M. (2002). Comprehension strategies instruction: A turn-of-the-century report. In C. C. Block & M. Pressley (Eds.). *Comprehension instruction* (pp. 11-23). New York: Guilford Press.
- Pressley, M. (2006). *Reading instruction that works: The case for balanced teaching*. New York: Guilford Press.

- Ruddell, R. B., & Unrau, N. J. (2004). Reading as a meaning-construction process: The reader, the text and the teacher. In R. B. Ruddell & N. J. Unrau (Eds.). *Theoretical models and processes of reading* (5<sup>th</sup> ed., pp. 1462-1521). Newark, D.E.: International Reading Association.
- Rumelhart, D. E. (1977). Toward an interactive model of reading. In S. Dornic (Ed.). *Attention and performance* (Vol. 6, pp. 573-603). Hillsdale, NJ: Erlbaum.
- Sadoski, M., & Paivio, A. (1994). A dual coding view of imagery and verbal processes in reading comprehension. In R. B. Ruddell, M. R. Ruddell & H. Singer (Eds.). *Theoretical models and processes of reading* (4<sup>th</sup> ed., pp. 582-601). Newark, DE: International Reading Association.
- Sagor, R. (2005). *The action research guidebook: A four-step process for educators and school teams*. Thousand Oaks, CA: Corwin Press.
- Schwenger, B. (2011). *Researching strategies and interventions: Action research and enquiry processes as vehicle for embedding literacy and numeracy*. Nelson, New Zealand: NMIT. Retrieved from <http://ako.aotearoa.ac.nz/download/ng/file/group-3740/schwenger---researching-strategies-and-interventions.pdf>
- Stanovich, K. E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16(1), 32-71. Retrieved November 23, 2010, from <http://www.jstor.org/stable/747348>
- Stanovich, K. E. (1994). Constructivism in reading education. *The Journal of Special Education*, 28(3), 259-274. Retrieved December 5, 2010, from <http://sed.sagepub.com/>
- Sutton, A., & Vester, B. (2010). *Unlocking Auckland's potential: Adult literacy and numeracy skills in the new Auckland*. Comet working paper 035/10. Retrieved October 10, 2010, from <http://www.comet.org.nz>
- Tertiary Education Commission. (2008a). *Teaching adults to read with understanding using the learning progressions*. Retrieved May 10, 2009, from: <http://www.tec.govt.nz/Documents/Publications/Learning-progressions-read-with-understanding.pdf>
- Tertiary Education Commission. (2008b). *Literacy, language and numeracy action plan 2008-2012: Raising the literacy, language and numeracy skills of the workforce*. Retrieved October 10, 2009, from <http://www.tec.govt.nz/Documents/Reports%20and%20other%20documents/literacy-language-numeracy-action-plan-17-september.pdf>
- Tertiary Education Commission. (2009). *Working with youth to raise literacy and numeracy skills*. Retrieved October 10, 2009, from: <http://www.tec.govt.nz/Documents/Reports%20and%20other%20documents/youth-guarantee-working-with-youth-in-literacy-numeracy-programmes.pdf>
- Tovani, C. (2004). *Do I have to teach reading? Content comprehension, grades 6-12*. Portland, Maine: Stenhouse Publishers.
- Unitec, (Oct. 2008). *Embedded Language, Literacy and Numeracy*. Auckland: Unitec Institute of Technology.
- Whitehead, D. (2005). Learning to think through literacy: The use of text-linked literacy and thinking tools. *SYNERGY*, 3(1), 15-24. Victoria, School Library Association of Victoria.
- Zuber-Skerritt, O. (2002). Action research with organisations and university thesis writing. *The Learning Organisation*, 9(4), 171-179. Retrieved November 25, 2010, from <http://emeraldinsight.com/journals.htm>

## Appendix A. Student Survey (evaluation phase)

### Student evaluation – reading in the music course

*Please answer all questions and provide as much information as you can.*

1. Why do you think your reading level has improved this semester? (or why hasn't it?)  
What has helped your reading improve?
  
2. What reading strategies (or advice about reading) from this course have you found useful or helpful?
  
3. Which music texts have you enjoyed reading (or watching) in our tutorials?
  
4. How could we improve our teaching of reading music related texts in this course?
  
5. Indicate which of the following you have enjoyed during music studies tutorials:
  - music texts that reflect your culture
  - including a variety of different music text types
  - working in groups to read and discuss texts
  
- Other: \_\_\_\_\_
  
6. Which of the following would improve the teaching of literacy in the music studies course:
  - more on-line reading of music texts in class eg: all students using laptops
  - using more e-learning eg: blogging etc
  - students to select the texts themselves
  - learning reading strategies for reading and researching on the internet

Other: \_\_\_\_\_