

## Measuring the Impact of an Academic Literacy Programme at a South African University of Technology

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**ABSTRACT** Academic literacy programs have become an inherent feature of South African universities. They are a form of intervention aimed at helping first-year students boost their levels of academic literacy so that their chance of success at the university is enhanced. It is important therefore, that such programs are investigated for the impact they can make. In the present paper, a pre-post research design was employed to measure the impact of a course of academic literacy among students who were not simultaneously enrolled in any university course that could lead to them achieving incidental growth in academic literacy. In other words, at the time the study was conducted, the participants took this academic literacy course only. The results showed that there was a difference in the levels of academic literacy levels of these students after they had attended the course.

### INTRODUCTION

In recent years, the teaching of academic literacy, the ability to handle academic discourse in the language of teaching and learning, has become a norm at South African universities. This is a result of the admission by those involved that the majority of first-year students entering these universities lack the academic language ability required for successful engagement with university texts (Butler 2013; Boughey 2013; Van Dyk and Van de Poel 2014). The low levels of competence in academic literacy have not been “a problem... only to students from previously disadvantaged backgrounds. Language proficiency is low even amongst students whose first language is English and Afrikaans, which are still the main languages of teaching and learning at the tertiary level” (Rambiritch 2012). This has had “a detrimental effect on students’ academic development, leading to poor passes rates” (Rambiritch 2012). Butler (2006) has observed, “the difficulty of engaging successfully with tertiary study in South Africa through an additional language (English) that one has not acquired adequately is well documented”. Van Dyk (2005: 38) has added, “Low levels of academic literacy in the language of learning are widely seen as one of the main reasons for the lack of academic

success among South African undergraduate students with high academic potential”.

### Objectives of the Study

The role that academic literacy is believed to play in the success rate of university students logically accords a high-stakes status to academic literacy programs/courses. It is important therefore, that the intended impact of these programs/courses is established. It is often the case, however, that due to university students’ extraneous and simultaneous exposure to academic discourse and the ethical implications for the students involved that the impact of these courses is never empirically investigated. The aim of this paper was to close this gap. Its specific objective was to measure the impact of the academic literacy course offered by the Central University of Technology (CUT) in 2014 using non-registered participants from outside the university. In order to provide the right context for the study, the pursuit of this objective is, in the present paper, preceded by an attempt to provide a brief description of the notion of course impact, the construct underpinning the course involved, its content and the teaching methodology it employs.

### Literature Study

#### *Impact in Course Evaluation*

In the field of applied linguistics, the term ‘impact’ is mainly used to describe the conse-

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quences that language testing can have on stakeholders such as test takers, teachers, society and education systems. The idea of test impact originated from the position taken by Messick (1980, 1989) decades ago that a test should be administered to take decisions that will benefit the test taker. Such a test will, in Messick's (1980, 1989) view, have positive consequences for the test taker and will therefore possess what he calls consequential validity. Conversely, a test that is used to take decisions that will impact negatively the test taker falls short of satisfying Messick's (1980, 1989) consequential type of validity. Impact is, however, a term whose use should not necessarily be confined to the social implications of testing. Language curriculum and language policy are two other applied linguistics artifacts to which the idea of impact has applicability. Indeed, Weideman (2013: 1) has asked a pertinent question in support of this:

*How much reciprocity is there in the realms of language testing, language course design, and language policy making? Why do we not explicitly check whether the design of a course should be as responsibly and carefully done as a test? How can we learn from language policy development about making tests more accessible and accountable? What can test designers learn from course developers about specificity?*

In the case of language curricula in particular, the term 'impact' can be understood in terms of whether a course is effective in doing what it was designed to do. In this sense, a course that purports to teach academic literacy and which actually does this will have a positive impact on those who take it because as it was pointed out earlier, academic literacy is a factor in the success of students at university. Such a course would have what Messick (1980, 1989) calls consequential validity. In contrast, a course that purports to teach academic literacy but does not make a significant difference in the academic literacy growth of the students taking it will have a negative impact on such students. These students would be negatively impacted by participating in such a course because of the time and money they would expend in a course that is unhelpful to them and that would consequently retard the academic progress that they could possibly make. Most importantly, these students would fail and dropout as a result of low academic literacy levels regardless of their partici-

pation in the intervention. The course would therefore lack consequential validity.

### ***The Construct Underpinning the Course***

The academic literacy course offered at CUT in 2014 was designed and developed on the basis of the concept of academic literacy advanced by Van Dyk and Weideman (2004), who have described academic literacy as a university student's ability to do the following:

- ♦ Understand a range of academic vocabulary in context;
- ♦ Interpret and use metaphor and idioms, and perceive connotation, word play and ambiguity;
- ♦ Understand relations between different parts of a text, be aware of the logical development of (an academic) text, via introductions to conclusions, and know how to use language that serves to make the different parts of a text hang together;
- ♦ Interpret different kinds of text type (genre), and show sensitivity for the meaning that they convey, and the audience that they are aimed at;
- ♦ Interpret, use and produce information presented in graphic or visual format;
- ♦ Make distinctions between essential and non-essential information, fact and opinion, propositions and arguments; distinguish between cause and effect, classify, categorize and handle data that make comparisons;
- ♦ See sequence and order, do simple numerical estimations and computations that are relevant to academic information, that allow comparisons to be made, and can be applied for the purpose of an argument;
- ♦ Know what counts as evidence for an argument, extrapolate from information by making inferences, and apply the information or its implications to other cases than the one at hand;
- ♦ Understand the communicative function of various ways of expression in academic language (such as defining, providing examples, arguing); and
- ♦ Make meaning (for example, of an academic text) beyond the level of sentence.

### **The Content of the Course**

The content used to teach academic literacy in this course focuses on four attributes of val-

ue to CUT: innovation, sustainable development, entrepreneurship and community engagement. Each of these attributes constitutes the content of one of the four units of the course and each of the four units comprises four reading passages constituted by different genres (informative, persuasive/argumentative, comparison and contrast, and cause and effect) and four writing activities. Each unit has specific objectives that are recycled throughout the unit and are aligned with the overall construct of academic literacy underpinning the course. At the end of each unit, there are two final assignments (one individual and one group) that serve to consolidate learning and assess the students' writing.

### **The Teaching Methodology Used in the Course**

The teaching methodology used in the course is informed by research in the field of Teaching English to Speakers of Other Languages (TESOL). All reading passages are supported by strategies that help students understand the language and material through pre-, during-, and post-reading activities to increase comprehension and language awareness. All writing assignments are scaffolded in order to provide guided writing activities before students are expected to produce writing on their own. Reading and writing activities are recycled throughout the course so that the students have multiple opportunities to practice and learn these skills. Through the use of communicative activities and a learner-centered environment, the course is aimed to raise the academic literacy levels of students to give them a better chance of success at university.

### **METHODOLOGY**

In July 2014, the new academic literacy course offered to first year students at CUT since January 2014 was taught to a total of approximately 365 students at nine centers in the Northern Cape Province of South Africa, namely, Kimberly, Douglas, Prieska, Keimoes, Groblershoop, Upington, De Aar, Postmasburg and Kathu. This was an outcome of a Memorandum of Understanding signed between CUT and the Northern Cape Further Education and Training (FET) College. The agreement was that CUT would offer the course to students at the nine centers for the purpose of preparing them academically for ad-

mission to the college. The course was scheduled to run intensively from 8h00 until 16h00 for five consecutive days. This time frame is equivalent to the number of hours currently allocated this course on the CUT timetable in one semester. Specifically, the course focuses on academic literacy development with a specific focus on reading and writing in English as a second language for linguistically underprepared students entering a university for the first time. Its ultimate aim is to help first-year university students boost their academic literacy levels in English, the medium of instruction at most South African universities, so that their chance of academic success is improved. For the purpose of the Northern Cape project, however, only the reading focus of the course was pursued. Prior to the start of the course, nine English teachers were recruited and trained on the methodology informing the course.

Furthermore, in order to determine the impact the course would have on the students, a non-standardized and internally developed test of academic literacy was administered to the participants at the beginning and end of the course. In other words, pre- and post-testing was conducted so that it could be established if there was growth in the academic literacy levels of the students at the end of the project. The test aimed to measure most of the academic literacy skills that are covered in the course. It consisted of a total of 43 objective and dichotomously scored items that were presented in multiple-choice and gap-filling formats. The items were unequally split between six sections, each of which focused on assessing one of the following academic literacy sub-constructs: vocabulary, main idea and inference, metaphor and idioms, cohesion and coherence, and comparison and contrast. The design/blueprint and specifications on the basis of which the test was developed are presented in Table 1.

As can be seen in Table 1, Section 1 of this test consisted of 10 items (items 1.1 to 1.10) that focused on assessing Vocabulary Knowledge, Section 2 focused on the assessment of Main Idea and Inference (the second and third columns in Table 1) and comprised 5 items (items 2.1 to 2.5), Section 3 consisted of 5 items (items 3.1 to 3.5) that focused on Metaphoric and Idiomatic knowledge, Section 4 comprised a total of 5 items (4.1 to 4.5) that were aimed at measuring knowledge of Cohesion and Coherence, Sec-

**Table 1: The blueprint/design and specifications of the test used for pre- and post-testing in the academic literacy development project in the Northern Cape Province**

<i>Prioritized objectives/skills</i>							
<i>Vocabulary</i>	<i>Main idea</i>	<i>Inferencing</i>	<i>Metaphors and idioms</i>	<i>Cohesion and coherence</i>	<i>Cause and effect</i>	<i>Comparison and contrast</i>	<i>Total</i>
1.1	2.1	2.2	3.1	4.1	5.1	6.1	
1.2	2.3	2.4	3.2	4.2	5.2	6.2	
1.3	2.5		3.3	4.3	5.3	6.3	
1.4			3.4	4.4	5.4	6.4	
1.5			3.5	4.5	5.5	6.5	
1.6					5.6	6.6	
1.7					5.7	6.7	
1.8					5.8	6.8	
1.9					5.9		
1.10					5.10		
23	7	5	12	12	23	18	100

tion 5 consisted of 10 items (items 5.1 to 5.10) aimed at assessing the ability to identify Cause and Effect and Section 6 comprised 8 items (item 6.1 to 6.8) that focused on assessing the ability to recognize Comparison and Contrast. The bottom row of Table 1 indicates the percentage space allocation for each of these six sections in the test. So, for example, the items in Section 1 and Section 6 constituted the highest percentage (23%) of test content each, while Sections 2, 3 and 4 had the lowest percentage (12%) of items in the test each.

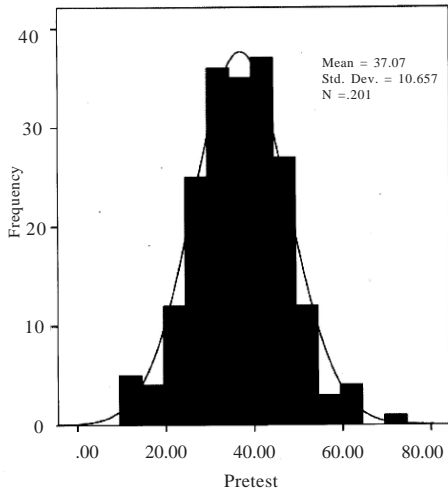
The focus of a pre-and post-research design is to compare the participants' means/averages in the same test pre- and post-intervention. If the post-test mean/average is higher than the pre-test mean/average, it indicates that the intervening treatment/instruction has had a desired impact on them. In the case of the academic literacy intervention offered in the Northern Cape, this would mean that the course had boosted the academic reading levels of the students. A high post-test mean/average would, however, be more meaningful if it was statistically significant. In second language research, the acceptable probability ( $p$ ) value for statistical significance is .05 or less. A  $p$ -value of .05 means that it is five percent probable that the results of a study were due to chance and not the variables investigated in such a study. This means, on the flip side, that the probability that the results of the study were due to the variables under study was ninety-five percent.

## RESULTS

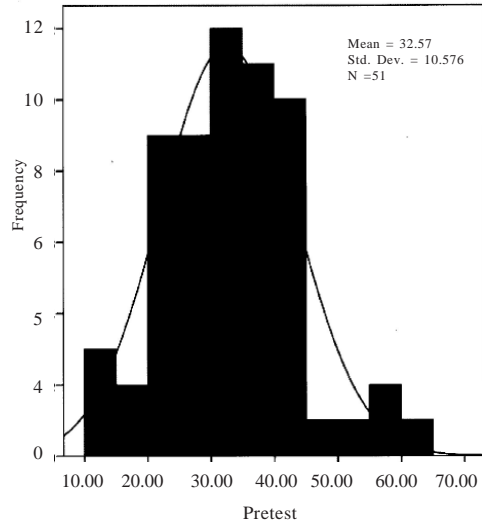
The frequency distribution, means and standard deviation of the scores from randomly sampled six of the nine centers that participated in the project were first analyzed. The results of this analysis are presented in the form of histograms in Figures 1 and 2.

As can be seen in Figures 1 and 2, the mean score for the participants at the six centers selected for measuring the impact of the reading development project in the Northern Cape was 37.07 in the pretest and 46.37 in the posttest. This means that the participants performed better in the test after participating in the project than they did in the same test prior to the start of the intervention. This can be interpreted to mean that the intervention made a positive difference in the academic reading levels of the participants and that this difference/growth amounted to 9.3 percent (posttest mean minus pretest mean). In order to determine if this difference was statistically significant, a paired-samples  $t$ -test was run. The outcome of this test was  $t(180) = 6.396$ ,  $p = .000$ . What this means is that the  $t$ -test score was 6.396 and that this score was statistically significant ( $p = .000$ ), meaning that the difference in the pretest and posttest performance of these students was a probable result of the intervention and that the probability that this happened by chance was unlikely.

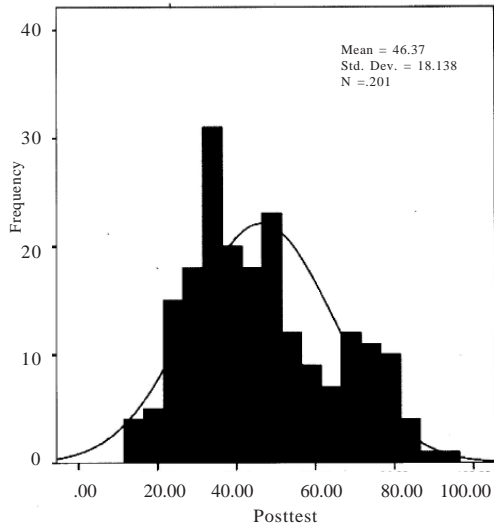
In the case of the present study, it was necessary also to determine the effect size of the difference in the performance referred to above. The



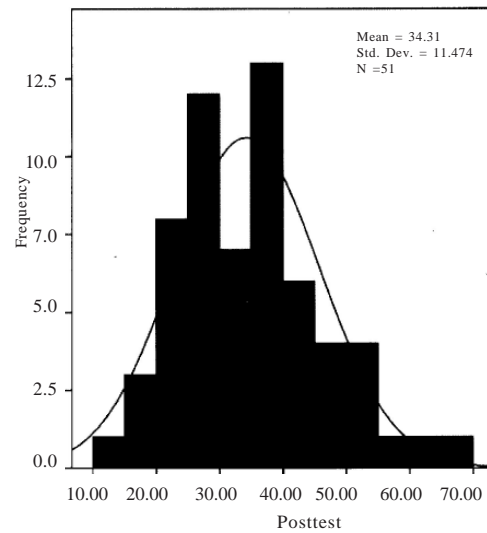
**Fig. 1.** The frequency distribution, mean and standard deviation of the pre-test scores for Kimberly, Douglas, Prieska, Keimoes, Groblershoop and De Aar



**Fig. 3.** The frequency distribution, mean and standard deviation of the pre-test scores for the students in Douglas



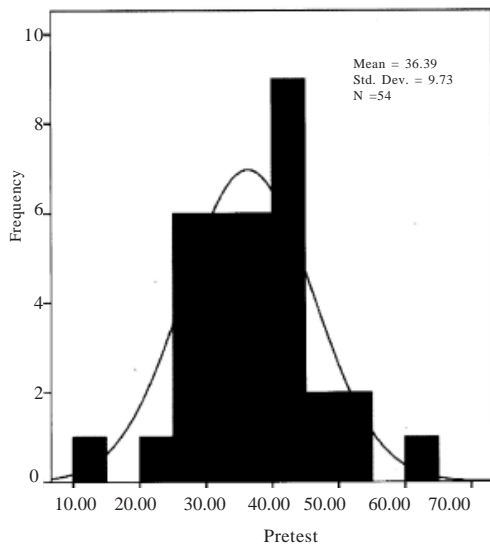
**Fig. 2.** The frequency distribution, mean and standard deviation of the post-test scores for Kimberly, Douglas, Prieska, Keimoes, Groblershoop and De Aar



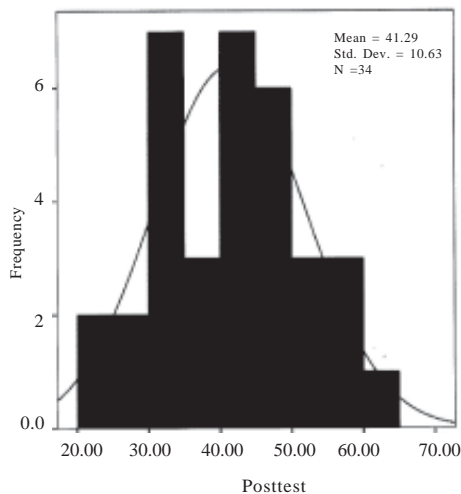
**Fig. 4.** The frequency distribution, mean and standard deviation of the post-test scores for the students in Douglas.

statistical procedure chosen to determine this was Cohen's *d*. The Cohen's *d* value for these results was found to be .69. Cohen (1988) has categorized effect sizes into small, medium and large. The effect size for the results of the present

study falls within the medium and large range (Cohen 1988). The results of the present study show therefore that there was significant growth in the reading levels of the participants after their involvement in the academic literacy course



**Fig. 5. The frequency distribution, mean and standard deviation of the pre-test scores for Kimberly**



**Fig. 6. The frequency distribution, mean and standard deviation of the post-test scores for Kimberly**

whose impact was investigated. These were evident in the difference in their performance pre- and post the intervention. This was further confirmed by the statistically significant results of the t-test as well as the effect size of these results.

A related finding of this study, which is also important to mention is that the smaller the group

the greater was the gain on reading development. This is particularly evident in the magnitude of the difference in performance between small and large groups pre- and post-intervention. The frequency distribution of the pre- and post-intervention scores obtained in two of the centers is used to demonstrate this from Figures 3 to 6.

## DISCUSSION

The results of this study show that the course whose impact was evaluated made a significant difference in the academic literacy levels of the participants. This was evident in their performance pre- and post-intervention; their mean score in the posttest was higher than that of their pretest performance. This finding is lent credence by the fact that the study involved participants that were not simultaneously taking an academic course that could result in them incidentally growing in their ability to cope with academic English. In other words, the impact of the intervention was immune from any possible dilution by the participants' exposure to academic English through an academic course.

At a time when the teaching of academic literacy is such a serious business on the South African higher education landscape and where measuring the impact of its teaching can hardly be divorced from interference by other incidental sources of academic literacy development, the results of the present study are an important milestone in the current efforts to measure the impact of academic literacy teaching.

To date, the few studies undertaken to measure generic academic literacy course impact have been unable to establish a definite difference made by these courses on students' academic literacy growth. For example, in a study by Van Dyk (2005), where a standardized test of academic literacy known as the Test of Academic Literacy Levels (TALL) was used to measure the pre- and post-intervention levels of academic literacy, some growth in the academic literacy levels of the participants was reported. Van Dyk (2005) warns, however, that these results should be interpreted with caution and suggests that a longitudinal study be undertaken to determine the impact of the intervention in a longer term. Also, while Van Wyk (2007) and Van Wyk and Greyling (2008) report growth in the academic literacy of their participants, Butler (2013) con-

cludes, that the impact of the intervention involved in those studies is not convincingly assessed.

Furthermore, several studies have been carried out to measure the impact of discipline-specific academic literacy courses as well. The first of these was undertaken by Parkinson et al. (2008) on a discipline-specific academic literacy course for science students. The second was by Carstens and Fletcher (2009) and focused on the impact of a writing intervention involving History students. The third was by Van Dyk et al. (2009) and focused on the impact of a writing intervention for health sciences students. Butler (2013) observes, however, that while these studies “offer theoretical justification for their specific approaches to the design of AL [Academic Literacy] interventions...very few offer evidence of the real impact of their proposals on the academic literacy development of students”.

### CONCLUSION

The ability of first-year students to handle academic discourse competently at South African universities has been questioned in recent years. This incompetence is believed to be a source of high failure and dropout rates among university students. The universities have, for this reason, introduced academic literacy programs to help deal with this challenge. If these programs aim to help students improve their ability to succeed at university, the difference they can make with regard to what they purport to do must be determined. Such programs positively impact the students enrolled in them if evidence can be generated that they make a measurable difference in the academic literacy levels of such students. These students will, as a result of this intervention, stand a better chance of succeeding at university study. The programs would therefore have a positive impact on the students ultimately. Otherwise, academic literacy teaching becomes fake and consumes time and money the students could spend on other useful academic activities. The aim of the present study was to determine the impact of an academic literacy course in a context where the participants had no extraneous exposure to academic discourse other than in the program itself. A pre- and posttest research design was used to determine if the students' levels of academic literacy had been boosted after they had taken the

course. The finding was a statistically significant difference in the performance of the participants pre- and post-intervention. Also, the finding was that the effect size of this difference was large enough for one to conclude that the course was effective in doing what it was designed to do.

### RECOMMENDATIONS

It is necessary that the present study is replicated using a standardized test of academic literacy whose psychometric properties are well established and which shares the same construct with the course under study in order to promote the validity of such studies. Also, future studies should focus more broadly on measuring the degree to which academic literacy impacts overall success at university. This is particularly necessary in the light of the existence of other possible determinants of academic success such as, for example, intelligence, hard work and socio-economic background among others.

### LIMITATIONS OF THE STUDY

The first limitation of this study is that the test used to measure the impact of the course was a newly developed one, which still had to be piloted and revised for better reliability. The commonly used procedure for establishing test reliability is computing a Cronbach's alpha for a test. Cronbach's alphas of .70 and higher have been recommended especially for high stakes tests. The Cronbach's alpha for the test used in this study was .66. This low reliability value might be accounted for by the diverse nature of the skills that are believed to constitute the construct of academic literacy on the basis of which this test was developed. Cronbach's alpha is a measure of the degree to which performance in test tasks correlates with the total score and therefore shows evidence of internal consistency. The diverse and comprehensive nature of the construct of the academic literacy test used in this study was therefore unlikely to enable it to score high on a measure of internal consistency such as Cronbach's alpha. As shown in the results section (see Figs. 3 to 6), an observation was made that testified to the fairly consistent manner wherein the test measured the gains in academic literacy among all the participants; the smaller the group the greater was the gain on reading development. The second limitation of the study was that it only generated evidence for growth

in academic literacy levels among the participants. Academic literacy is never taught for the mere sake of it. So far, efforts taken to help students improve their ability to cope with academic discourse have had the academic success of such students as the target. Unfortunately, the study does not provide this very important information. Ultimately, it is the ability of the students to graduate in scheduled time that an academic literacy course should help improve.

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