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Core Academic Language Skills in Grade 6 South African Learners

A PhD including publications

Marco V.W. MacFarlane

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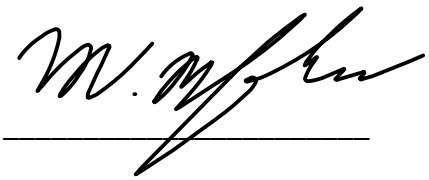
Supervised by Prof Sharon Moonsamy, Prof Laura Dison, Dr Anwynne Kern

2024

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology at the University of the Witwatersrand.

Declaration

I declare that this thesis is my own, unaided work. It is being submitted for the Degree of Doctor of Philosophy in Psychology at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at another university.

Signed: 

Marco MacFarlane

Date: 15 March 2024

Acknowledgements

Taking the final steps on this academic journey leads me to reflect on all the people that have supported, inspired, and tolerated me on this long road.

First to my wife, for her inspiration, her support, her great insight and her steadfast belief in my ability when my own reserves had long since depleted.

Second to my daughter, whose birth motivated me to begin this endeavour, and whose life has made me determined to complete it.

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Last, but certainly not least, I must thank my supervisors for their guidance during the many years that this project entailed. I began this work in 2015 with Prof Heila Jordaan, and I am incredibly thankful for how Prof Jordaan was able to shape the project as she did. The thesis took far longer to complete than we anticipated – and two years lost to COVID-19 did us no favours – and so unfortunately Prof Jordaan retired before the final submission of this piece. My three other supervisors who stepped in, Prof Moonsamy, Prof Dison, and Dr Kern have been dynamic, flexible, and incredibly encouraging as the weight of the years of work threatened to sink my resolve.

I am left only with gratitude and admiration for you all.

Abstract

This research validates a construct that describes cross-disciplinary Core Academic Language Skills (CALS) for use in South African schools, and argues for its use as an underpinning instructional framework. The construct was derived from a novel instrument aimed at testing a constellation of school-relevant English language skills which was developed and validated for use in the United States. The unitary construct tested by this instrument was dubbed CALS and it aimed to describe the set of skills that comprise academic language proficiency. CALS has been described as "knowledge and deployment of a repertoire of language forms and functions that co-occur with oral and written schooling tasks across disciplines" (Uccelli et. al, 2015a, p. 1077). The overall aim of this research was to ascertain if the CALS construct can be used to validly assess learners from different linguistic backgrounds in South Africa, and further if the fully operationalised skillset can be used as a basis for instruction in the discrete academic language skills described.

A range of national and international assessments have shown that South African learners perform at the lower end of the spectrum on language and mathematical skills, and it seems that the disparity between the language status of the population and the language of schooling is a core determinant of the poor scores attained by South African learners.

This thesis was completed by publication, with four linked articles that addressed each of the related sub-questions. In order to determine if the CALS construct was appropriate for use in South Africa, the first article (Chapter 3) localised and piloted a version of the CALS instrument for use in South Africa – resulting in the CALS-I-ZA assessment instrument. The second article (Chapter 4) deals with the crucial question of whether the CALS construct is related to academic outcomes in South Africa – and this chapter shows the link between the

scores obtained on the CALS-I-ZA and the Gauteng provincial Common Examinations. The predictive relationship between CALS and Academic Results (as proxied by the Common Examinations) was shown to be robust. The final empirical part of the work (Chapter 5), investigates if the CALS-I-ZA instrument shows a different pattern of functioning when used to assess first-language English learners (L1) and non-first-language English learners (L2). Surprisingly, the CALS-I-ZA instrument showed robust functioning and a strong predictive relationship with school outcomes when used to assess both L1 and L2 learners. Chapter 6 represents the final article in this thesis which consists of a brief meta-analysis of the previous work on CALS detailed in this thesis as well as by other researchers working on this construct. This article makes the argument for a cautious use of CALS as the basis for a form of CALS-informed instruction that could be employed for use in South African classrooms, while retaining a critical awareness of the deeply problematic nature of the mismatch between the Language of Learning and Teaching (LoLT) and the linguistic profile of the majority of South African learners.

Keywords:

Academic Language, CALS, CALP, BICS, Second Language English; Content Based Instruction; Curriculum Based Instruction

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Chapter 1: Introduction and Literature Review

Introduction

This research set out to validate a construct that describes cross-disciplinary Core Academic Language Skills (CALS) for use in South Africa, and to argue for its use as an underpinning instructional framework. The construct was originally developed for use in the United States by Uccelli, et al (2015a; 2015b) but despite its promise as a fundamental building block of academic Language Proficiency – its functioning outside of the context of the United States needed to be established. Both in the United States (Abedi & Herman, 2010; Martiniello, 2008) and in South Africa (Department of Basic Education, 2023) it is clear that English language proficiency conveys a consistent advantage to learners in terms of school results.

Cummins' (1979; 2000) distinction between Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) has long alerted researchers and educators to the presence of different categories of language use – in very broad terms the colloquial and academic categories. While this distinction is useful, it is "limited by its inability to specify the precise language skills that require attention in classroom instruction, assessment, or future research" (Uccelli, et al, 2015b, p. 340). Essentially CALP is a categorical description of a skillset that requires operationalisation – and CALS represents a robust set of empirically measurable operationalised skills that provide the precise description of some of the skills that make up the larger construct of CALP. With an operationalised construct for Academic Language Proficiency, it becomes possible to directly assess such skills, and further to offer direct instruction in such skills.

Initially it was crucial to localise and pilot the original CALS instrument (the CALS-I) on a sample of Grade 6 South African learners. This showed that the CALS construct remained robust when used in the South African context. The learners' results on the localised CALS instrument (the CALS-I-ZA) were compared against matched results obtained on the Gauteng Common Assessments, a provincial assessment of learner achievement run annually by the Department of Basic Education. This established the strength of the relationship between CALS and academic performance, and further showed that the CALS-I-ZA remained robust for learners from diverse linguistic backgrounds.

The results of the empirical component of the research have ultimately been used as the groundwork for an argument in favour of a 'CALS-Informed Instruction' approach to pedagogy, in which school-appropriate forms of language usage are explicitly embedded and taught across content subject areas rather than confined to language classes alone. The CALS construct – while demonstrating clear utility in the South African context – is ultimately approached with caution, however, as its use does not address the fundamental mismatch between the Language of learning and teaching (LoLT) in South Africa and the linguistic status of South African learners.

While this thesis ultimately recommends the use of CALS-informed instruction – it does so through the lens of socio-cultural pragmatics – a view that sees language as inseparable from the social context in which it was developed, and further argues that language is deployed pragmatically in certain contexts (Halliday, 2004; Heath, 1983, 2012; Ninio & Snow 1996; Ochs, 1993; Ravid & Tolchinsky, 2002; Snow & Uccelli, 2009). This context-bound understanding of language usage is crucial for the overall argument regarding the deployment of CALS-informed instruction in South Africa – because it acknowledges that

different language forms and functions are appropriate based on the context in which they are deployed. Given the hegemonic status of English in the South African schooling system – the underlying theory of socio-cultural pragmatics allows the argument to be made that CALS can pragmatically be used to improve learners' performance in this context, while still critically analysing and highlighting the inherent problems and injustices associated with the linguistic mismatch in the system.

Rationale

By far the central motivating factor for this research was the fact that the post-Apartheid education system in South Africa exhibits a dramatic mismatch between the LoLT and the home language/s of South African learners. English remains a minority language within South Africa, being spoken as a home or first language (L1) by just 8.1% of the population (Statistics South Africa, 2020), yet some 92% of all public schools use English as the language of instruction (Department of Basic Education, 2010). This linguistic mismatch has been associated (among other factors) with overall poor school outcomes for South African learners in general, and learners from an African language background in particular (Department of Basic Education, 2023). Since the final results of schooling (in terms of attained marks on examinations) are a central determinant of a learner's subsequent pathway in life – whether they grant access to university study, further training, or success in the labour market (Mou, 2023) – there are pressing reasons to find ways of addressing the language mismatch and ameliorating its effects.

Alongside the mismatch between the LoLT and the home languages of the majority of South African learners, South African learners perform poorly on international standardised tests (Department of Basic Education, 2023) with particularly low scores being attained by

learners whose home languages are not English or Afrikaans. It is clear from the above that there is a crisis in South African education, and that the linguistic mismatch is a large part of what informs this trend of poor performance. In particular, it is academic performance that seems to be diminished by this linguistic mismatch, and thus it is one of the central variables of concern in this research. The work of Cummins (1976, 1979, 2000) was initially consulted to understand the distinction between colloquial language – in Cummins' terms Basic Interpersonal Communication Skills (BICS) – and the language skills required in the classroom – Cognitive Academic Language Proficiency (CALP). The distinction between these two constructs has been influential in a great deal of language research – and indeed BICS and CALP are even explicitly referenced in the South African national curriculum statements (Department of Basic Education, 2011). While intuitively appealing and well supported by research – BICS and CALP remain categorical variables, that is they represent broad categories of skills, but do not define and operationalise the individual skills that they encompass.

It was for this reason that the work of Uccelli et al (2015a; 2015b) was consulted and ultimately used as the basis for this thesis – for it represented the first time that an empirically robust skillset had been operationalised to describe some of the skills within the broader category of CALP. This construct was dubbed Core Academic Literacy Skills (CALS) in order to signal that it represented an empirical skillset that was understood to be fundamental or *core* to attaining and using language academically – while not implying that the skillset was exhaustive (Uccelli et al, 2015a; 2015b).

Given the explicitly operationalised nature of the CALS construct, it holds great promise as a tool for assessing academic language skills. Beyond the sphere of assessment, however,

there is also the possibility that a fully operationalised construct of academic language could also provide the framework for direct instruction in this crucial skillset. As argued in this thesis – what has been rendered explicitly testable must simultaneously be rendered explicitly teachable. As such, having shown the utility of CALS as an assessment construct in South Africa this thesis concludes with an argument for CALS-informed instruction – direct instruction in CALS that can be interwoven into everyday classroom instruction whether in language classes or in classes for other disciplines.

Research Questions

There were two central research questions that guided this study:

1. Does the CALS construct remain valid when deployed as an assessment construct in South Africa?

And:

2. What are the possible pedagogical implications of CALS for the South African schooling system?

In order to answer these questions, several sub-questions needed to be answered – particularly around the first question which required empirical investigation. In order to answer Question 1 – several sub-questions were generated:

1.1 Does that CALS construct function similarly in South Africa when compared against its functioning in the United States?

1.2 Does the CALS construct predict academic performance for South African learners?

1.3 Is there any differential functioning of the CALS construct when used to assess L1 or L2 South African learners?

These questions guided the initial empirical portion of the research, as they formed the crucial backbone that would allow for the subsequent claims and arguments made by the thesis. The initial questions – which provide strong evidence that the CALS construct functions robustly in South Africa and predicts academic performance in both L1 and L2 learners – lay the groundwork to make the larger argument for the use of CALS as both an assessment and pedagogical tool in South Africa. Question 2 is answered in the fourth article that appears in this thesis (Chapter 6) relying on the evidence gathered in the previous three articles to be able to advance the central argument for the use of CALS in South Africa.

Theoretical Framework

Fundamentally, CALS has been developed within, and has emerged from, a socio-cultural pragmatics point of view (Halliday, 2004; Heath, 1983, 2012; Ninio & Snow 1996; Ochs, 1993; Ravid & Tolchinsky, 2002; Uccelli et al, 2015a; 2015b). This view sees language as being embedded in, and developing from, the society and culture or context in which it is used. Further, socio-cultural pragmatics sees behaviours like language use as pragmatic responses to the culture or society in which they are expressed – and indeed understands this usage as culturally bound (Uccelli et. al, 2020). Thus language use becomes appropriate based on the context and purposes for which it is used – there are no correct or incorrect ways of expressing ideas in language without a contextual frame to judge those expressions against.

At the outset of this thesis, socio-cultural pragmatics shaped the work as a project that was driven by a desire to unearth practical interventions that could be deployed in the deeply unequal (in more than just a linguistic sense) South African school system. Because of the overwhelming orientation of the system towards English as the LoLT, there was a clear motivation to deal with this educational constraint by looking for techniques that could improve academic outcomes for South African learners – particularly the majority for whom English was not their mother tongue. Because of the confluence of the desire to improve academic outcomes and the linguistic mismatch that characterises the South African schooling system – the research was designed to examine if the CALS construct could validly assess learners of various linguistic backgrounds in South Africa and could provide a framework for CALS-informed instruction in academic language skills.

Until recently, the constellation of skills that make up the construct of academic language have been poorly defined (Uccelli et al, 2015a). While there is general agreement that academic language and its usage are qualitatively distinct from colloquial language, this understanding has generally been implicit and post-hoc in nature. While the work by Uccelli et al (2015a) that has begun to describe and test a set of sub-skills that seem to underlie the construct of academic language is promising, it remains limited in terms of its generalizability and its possible application in terms of pedagogy. This study, when all four linked articles are understood as a whole, intends to address these limitations and progress the construct of academic language from one that has been rendered testable into one that is ultimately teachable.

A primary limitation of the initial work by Uccelli et al (2015a; 2015b) is that it remained unclear whether the individual skills identified remain robust when tested in different

cultural settings. While L1 and L2 learners were part of the original study, it is possible that a construct that is robust when tested in Massachusetts will function differently in a setting such as South Africa – a country with perhaps a more diverse language profile and a different socio-economic profile. Nonetheless it remained a promising and indeed likely outcome that the identified skills will provide valuable information on how South African learners are acquiring academic language. This information is currently unavailable, and indeed several researchers have noted the need for such explicit description and testing of such skills in South Africa and beyond (Jordaan, 2011; Owens, 2008; Scarcella, 2011).

The overall trajectory of the project was to use the data gathered on academic language in South Africa and provide information that will inform pedagogy. By making the skills that are fundamental to the use of academic language explicit, the information generated by this thesis allows teachers to embed explicit references to the language and reasoning manoeuvres required within their specific disciplines. It is fundamental to the construct that CALS represents a skillset that is distinct from vocabulary and distinct from disciplinary knowledge. Indeed, CALS are understood to underlie and facilitate the successful deployment of appropriate language forms and functions in a school setting across the gamut of subject offerings. This kind of explicit and empirically robust information has been unavailable to educators in South Africa (and indeed anywhere), and remains a frontier for research and development.

This research makes an important contribution to knowledge about the academic language skills of South African learners. It further provides both a robust instrument that assesses such skills within the South African context, and also important data about the utility of such skills in South African classrooms. The differences between the performances of the

language groups (L1 and L2), both on the CALS-I-ZA and the Common Examinations, provide concrete data for use by educators and policymakers alike. Such data can lead to interventions that are tailored for learners in different contexts and will militate against the use of generic intervention strategies that are blind to contextual factors. The CALS-I-ZA instrument provides data that can allow for targeted interventions for specific linguistic sub-skills. The instructional programme argued for focuses on ways in which each set of skills could be strengthened, both individually and as a constellation of skills. Further, the argument also highlights the possibility of using the skills in CALS to explicitly strengthen academic language use in a cross-curricular manner. While CALS has been shown to be fundamentally associated with a learner's academic success in an English-language based education system, caution is urged before CALS is seen as a panacea for improving academic results in South Africa.

Towards the end of the thesis, however, a new understanding of the foundational theory of socio-cultural pragmatics began to take shape. It began to become clear that in the desire to find 'practical interventions' to assist in addressing the language mismatch in the South African schooling system – emphasis had been placed on the *pragmatic* elements of the larger theory. Addressing challenges in a system that prevails as part of a historical trajectory that spans hundreds of years of conquest and oppression cannot be done simplistically. While finding pragmatic ways to improve academic outcomes in English is attractive, socio-cultural pragmatics demands that we understand the society and the cultural conditions which gave rise to the situation we are trying to address. By also understanding the education system in South Africa as a product of the socio-cultural conditions that gave it its form – it becomes possible to critically examine both the South

African education system *and* the CALS construct as products of particular cultural conditions.

Just as the language mismatch in the South African schooling system arose from the ashes of Apartheid but remained rooted in Western ideas of what counts as knowledge and what forms are appropriate for the expression and/or production of knowledge – so too is CALS embedded in Western ideas and ideals of how to express ideas in the academically 'correct' way. Naturally if something is identified as correct – even implicitly so – it must have as its corollary something that is incorrect. It is here that great care must be taken when we begin to examine CALS in the context of it being an intervention that could be deployed to improve South African learners' ability to engage with and produce academic language in English.

There are many scholars that have identified the complex challenges that surround the 'colonised curriculum' (Pillay, 2016; Mangena, 2017; Makhanya, 2018; Masenya, 2021). While this concept may mean a variety of things to different people, at its core it refers to the fact that the South African school and University curricula are fundamentally western in their orientation and ethos. In this thesis, a colonised curriculum does not refer specifically to curriculum content, but rather the fundamental and underlying assumptions about knowledge, the status of knowledge, and what 'counts' as knowledge in the western paradigm. It is very easy to fall into the trap of believing that because there is a coincidence between western thought and marks awarded in examinations – marks that have a real impact on determining future opportunities – that this coincidence signifies that some things are 'wrong' while others are 'right'.

As an example – the philosophy of science in the western academy will argue that parsimony (the idea that the simplest and most concise answer is the best) is the 'right' way of structuring academic arguments (de Queiroz & Poe, 2001). Indeed the CALS construct mirrors this thinking, describing one of the central features of academic language as "dense information packing" (Uccelli et al, 2015a, p. 1079) – a way of conveying the most information with the fewest number of words in the most direct way possible. It can be argued, however, that these practices are a cultural artefact rather than a natural imperative. The western academy structures academic arguments in a particular way – but it is important, particularly in the context of a country that was previously colonised, to always be aware that this way of structuring thought and conveying information is not more 'correct' than local ways of thinking and being. Leketi Makalela (2022) has contrasted this western strategy of reasoning against the African maxim of circumlocution:

> "…the Western maxim of straight to the point … contravenes the circumlocution logic of African languages where high levels of indirection and ambiguity are valued" (p. 64)

This argument should not be misinterpreted to mean that any knowledge system is either superior or inferior to another – it is advanced only to make explicit that not only do different culturally embedded systems of thinking and being exist, but that Academic Language itself is also a culturally embedded construct. While it is being referred to in this thesis as a possible avenue to improve learner outcomes – it is crucial that its embeddedness within the theory of socio-cultural pragmatics is fully understood. Socio-cultural pragmatics argues that language learning is never static or complete, but rather it is an ongoing process that becomes ever more elaborated as individuals encounter ever more

social contexts (Heath, 2012). The theory also emphasises that language is appropriate or inappropriate *depending on the context* in which it is deployed. This resonates very nicely with foundational constructs like CALP and BICS – where the same individuals may deploy different language forms to meet the demands of different contexts. Using BICS is not *wrong* – it just isn't the expected language type in an academic setting. By extension then – socio-cultural pragmatics provides an answer to the question of how can we ethically deploy CALS in a country like South Africa that still grapples with the legacy (and modern expression) of colonialism. It is crucial to make explicit for learners not only the skills that lie within the CALS construct, but also to make explicit that this is just *one* way of thinking and expressing ideas. It is a way that is *pragmatic* given the context in which learners find themselves – but great care must be taken to foreground for learners that CALS is no more than a tool to achieve a certain goal. It is not the "right" way to do things – it is merely a distillation of skills that can be used to successfully interact with the culturally-bound expectations of the South African schooling system.

Literature Review

Language in South Africa

> Language proficiency among young South Africans is low. This is true not only of mother tongue speakers of English and Afrikaans, but also, and especially, of non-mother tongue speakers of English, among whom language proficiency levels raise serious concern (Weideman & Van Rensburg, 2002, p.152).

The above view of language proficiency in South Africa prevails to this day, and indeed is backed up by robust research (Department of Basic Education, 2023). Even the most recent

Progress in International Reading Literacy Study (PIRLS) (2023, p. 4) shows South African learners performing "significantly below the centre point" of the global distribution of reading skills. It is clear that language and language proficiency are among the key concerns for the country and its educational landscape.

South Africa is a country with 11 official languages, but language policy and the situation 'on the ground' reflect an overwhelming push towards the use of the English language in educational, assessment, and workplace settings. The historical trajectory of language policy in South Africa is complex, and while such complexity is beyond the scope of the current research, a basic overview is required in order to make sense of a situation in which a minority language is the de facto standard for schooling in the country.

Much of the history of South African schooling has centred on the struggle for linguistic or cultural dominance. During the Apartheid era [1948-1994] there was a stark distinction between the educational opportunities afforded to white and black[1] learners. While the Apartheid state provided inferior educational facilities and curricula to all black learners, the lowest level of education was reserved for black Africans, for whom the system of Bantu Education was adopted (Giliomee, 2009). The African population is and was the largest single population grouping in South Africa by several orders of magnitude[2]. While the substance of this Bantu education curriculum was designed to perpetuate the unequal power relations between the white and black population groups, the point of significance for this paper is that the Bantu education curriculum was taught mostly in Afrikaans, while English was a language that was mostly absent. The Bantu education system intended for

[1] In this thesis, following the terminology used in South Africa's Employment Equity Legislation, the term black will be used as a catch-all term to refer to the African, Indian, and Coloured population groups.
[2] As shown in the most recent national census (Statistics South Africa, 2023) the black African population group comprises 81.4% of the total South African population of 62 million people.

African learners to become “hewers of wood and drawers of water” – with a quotation from the then Minister of Native Affairs, Hendrik F. Verwoerd, reading as follows:

> “There is no space for him (the black South African) in the European Community above certain forms of labour. For this reason it is of no avail for him to receive training which has its aim in the absorption of the European Community, where he cannot be absorbed. Until now he has been subjected to a school system which drew him away from his community and misled him by showing him the greener pastures of European Society where he is not allowed to graze.”
>
> (Department of Basic Education (DBE), 2013, p. 1)

Given the need for international assistance in overthrowing the apartheid regime (among many other motivators), an effort was made to lobby for schooling to be provided in English. The need for an international language was seen to be of such great importance that growing unrest such as that exemplified by the 1976 Soweto uprising (Ndlovu, 2010) was sparked around the issue of Afrikaans being taught in classrooms instead of English being the primary medium of instruction. It is significant that these events - seen by many to be a key turning point in the struggle against apartheid - were centred on the importance of the language of learning and teaching. The Soweto uprising was a march of between 10 000 and 20 000 learners who took to the streets in protest against the Afrikaans Medium Decree of 1974 (Ndlovu, 2004) – and it was met with deadly force by the Apartheid government of the day. For many this uprising marked a turning point in the struggle against Apartheid, and the 16th of June is still commemorated every year in South Africa as a Public Holiday named Youth Day. Apart from the larger political significance of these events, it is important to stress that this social and political turning point in South Africa, where children rose up

against oppression and faced the deadly force of the oppressors, was sparked by the issue of language policy in schools. Thus language and language policy occupy a particularly emotive space in South Africa – and the desire to be taught specifically in English is rooted in this troubled history.

This need for English, and its status as a nexus around which the larger issues of regime change and freedom from oppression could coalesce, cemented the central role that the language was to play in the educational and public spheres of South African life. The desire for English as a language of learning and teaching has been carried forward into the current structure of the South African educational landscape. While the necessity of English for the purposes of international trade and higher education (among others) is not in dispute, there remain many unanswered questions about the best ways to achieve linguistic and academic parity between learners from different cultures and language communities.

The role of language in assessment

MacFarlane & Broom (2014, p.381) have noted that:

"When any test is given the most fundamental criterion for success is language proficiency."

This observation highlights the need for competence in the language of learning and teaching (and crucially – testing) as a prerequisite for academic achievement. It also suggests an underlying assumption that in order to be able to compare academic proficiency between individuals it is first necessary to establish comparable linguistic proficiency. Assessment in schools in South Africa is now generally conducted in English (and to a lesser extent Afrikaans). Thus very few tests have been developed that are culturally or linguistically relevant to the majority of South Africans (Foxcroft, 2004).

While the Constitution of South Africa stipulates that learners may be taught in a language of their choice (Constitution of the Republic of South Africa, 1996) the reality within the South African schooling system is quite different. Quantitative measurement of schools shows that in 2007, some 22 978 of the 24 979 ordinary public schools in South Africa – so 92% of all public schools – used English as the language of learning and teaching (LoLT) (Department of Basic Education, 2009; 2010). Many of these schools, known as transitional schools, will teach learners in their home language until the end of Grade 3 at which time learners will be taught in an English immersion environment. The policy for effecting this transition to English was, until the end of 2011, to introduce English (in the majority of cases) as the LoLT at Grade 3 level. From 2012 onwards, the revised National Curriculum Statements, now termed the Curriculum and Assessment Policy Statements (Government Gazette, 2011), have prescribed that English (again with Afrikaans as an option) is introduced as a subject in Grade 1, and will transition to being the LoLT from Grade 4 onwards.

The above should make it clear that despite the notional option of learners being able to choose their LoLT, this has not materialised in the current South African schooling environment. While not explicitly stated as such, it is clear that the policy direction is one of foregrounding English as the primary LoLT for South African learners. There are numerous issues that arise from this position – not least of which is the possibility of subtractive bilingualism[3] in which learners emerge with English skills at the expense of their mother-tongue (L1) or worse – with diminished academic language proficiency in both their L1 and

[3] A term describing the erosion of language skills in one language that is caused by the learning of an additional language.

second language (L2)[4]. This is of concern not only for reasons of maintaining cultural history and linguistic integrity, but also because researchers (Heugh, 2009; Brock-Utne & Skattum, 2009; Alexander, 2010) have strongly argued that learners in South Africa for whom the language of assessment (English) is not their L1 will often not be able to perform at the same level as their monolingual peers when assessed in that language based on the additional challenge posed by the requirement to perform in the L2.

This argument has been borne out empirically in several studies (Department of Education, 2005; Department of Basic Education, 2023; Howie, et al, 2008; Moloi & Strauss, 2005; Reddy, 2005; Taylor & Yu, 2008) which have shown unequivocally that the majority of South African learners have extremely low literacy and numeracy levels. While there are a variety of problems that are endemic in South Africa which have deleterious effects on the education system such as poverty, HIV/AIDS, poorly trained teachers etc. (Amnesty International, 2020; Fleisch, 2008) , there is ample evidence to support a growing contention that it is the language status of learners that is among the primary determinants of their academic success (Alexander, 2010; Brock-Utne & Skattum, 2009; Heugh, 2009;). Specifically, many of these researchers argue that the fact that the overwhelming majority of South African learners are both taught and assessed in English, which for most will be their L2, is a central reason for the aggregate poor performance when learners are assessed.

These findings notwithstanding, the very large majority of South African learners are nonetheless required to perform academically in English, and such performance is a key determinant of their opportunities both for further study and for employment. The research

[4] In South Africa many learners will in many instances be multilingual, and English could be their third or fourth (or more) language. In this paper the L2 designator will be used as a catch-all term to refer to a language other than a learner's mother-tongue or first language.

undertaken in this thesis seeks to advance the argument that academic performance in English is so essential a criterion for success in South African society that academic language skills in English should be explicitly taught across a majority of subject areas at school level. Ultimately, if judgements about a learner's ability are based on their ability to perform academically on English-language assessments – and indeed English is the Language of Learning and Teaching – it is essential that learners for whom English is not their L1 must be given the best chance to demonstrate their abilities when using this language. Thus language, and the language mismatch in particular, is not only a barrier to accurate and fair assessment, but is an obstacle to knowledge building.

The 'deficit' that learners experience when they are assessed in English despite it not being their L1 is so persistent that Umalusi, the Council for Quality Assurance in General and Further Education and Training (the school quality assurance body for South Africa), employs a policy of 'language compensation' for all learners that do not take English at the Home Language level. In the South African school system, it is possible to take English at the Home Language (HL), First Additional Language (FAL), and Second Additional Language (SAL) levels. Unless a learner offers English HL as one of the subjects in their final school leaving examinations, Language Compensation will be applied to all of their other results. The initial quantum of language compensation was an addition of 5% of the learners obtained score to their final marks in each subject – and although that quantum has been scaled down progressively over several years, it has been retained at 2.5% indefinitely (Taylor, 2014; Umalusi, 2022). Debates about this language compensation policy have flared from time to time, with Umalusi even arguing at one point that it should be withdrawn altogether by 2023 (South African Government News Agency, 2016). The policy has not been withdrawn

as the challenge it is intended to address remains – there is a mismatch between the LoLT and the language status of South African population. Ultimately, if South African learners are generally assessed in English, then there must be interventions in place to address this language mismatch beyond statistical moderation of learner results. Among such interventions, this thesis argues, must be focused instruction across the subject spectrum in the skills required to produce and successfully interact with academic language in English.

It is a fundamental starting point of this research that academic language skills are conceptualised as a subset of the full ambit of linguistic usage, and they are not conceived of as either superior or inferior to other language skills or discourse types. The focus of this proposed research is on academic language skills because these skills are thought to be crucial for accurate assessment of a learner's abilities, and in general it is these skills that are tested by pen-and-paper examinations or assessments.

It is also imperative that no confusion exists between the need for well-developed home language skills and the need to demonstrate academic language ability in English. This research acknowledges that the attainment of robust skills in a learner's home-language is the ideal starting point for demonstrating academic skills in an L2. Research strongly suggests that advanced skills in the L1 confer a consistent advantage to learners that must learn and/or be assessed in an L2 (MacWhinney, 2005; Paradis, 2004; Ullman, 2001). While it is unlikely that this robust L1 skillset has been solidified by the time learners have reached the linguistic transition point in school (i.e. the end of Grade 3), most South African learners will inevitably move into an English Immersion framework from Grade 4 onwards.

The need for linguistic fairness in assessment is especially important given that South Africa is a deeply multilingual society, with English only featuring as the fourth most spoken home

language. Even before we examine issues of how the language mismatch affects both knowledge formation and performance on assessments, we must recognise that it is fundamentally unfair to the majority of learners that they should have to attend school in an L2. Indeed, the majority of South African learners have been *minoritized* by the system – meaning that the linguistic majority are treated as a linguistic minority at the level of language in education. According to the most recent national census (Statistics South Africa, 2023), IsiZulu is the most widely spoken language, with 24.4% of the population claiming this as their L1. The second most prolific language is IsiXhosa, with 16.3% of the population claiming this as their L1. English is the fourth most common home language, with 8.7% of the population listing English as their L1.

So thoroughgoing is the focus on English in South African society that some researchers (Kamper, Mahlobo & Lemmer, 2003 p. 164) assert that:

> The English language proficiency of South African learners is essential for their general academic success, career prospects and choice and successful adaptation to the demands of a multilingual society.

This statement demonstrates the dynamic tension present in the South African language landscape. The society *is* multilingual, but the primary language required to adapt to the demands of this society is English.

The above discussion suggests the need for a curriculum that takes account of this linguistic diversity while providing skills that are ultimately demonstrable in the language of assessment. It is a promising possibility that some success could be achieved using an approach in which specific academic language skills are taught as part of the broader

curriculum, in as many subject areas as possible, so that linguistic skills are not confined to the language classroom alone.

It is axiomatic, however, that teachers will not be able to reliably teach the language skills required in order for learners to be able to engage with the academic discipline at hand unless these skills have been made explicit. Only once a fully operationalized construct of cross-disciplinary academic language skills has been investigated in the South African context, can advice be given to teachers regarding tuition towards this goal. Ultimately, should the operationalized construct prove robust, it would provide teachers with pedagogical tools to tackle some of the linguistic challenges that face South African learners.

Part of the challenge of language in South Africa is that teachers themselves have been given little guidance on the processes that underlie the acquisition of linguistic skills, and hence how such skills might be taught. Indeed a "technicist" approach to assessment and teaching has often been foregrounded in which children are required to exhibit a certain target behaviour rather than 'think through' a problem using appropriate cognitive strategies (Reagan, 2009). Part of the difficulty lay with the previous national curriculum – the Revised National Curriculum Statements (Department of Education, 2005) – which had an emphasis on outcomes rather than underlying cognitive processes. Since the previous curriculum did not prescribe methods of teaching, it is not clear whether teachers were given the tools to allow learners to acquire language or the more specialised academic language required in schooling or academic settings. The Curriculum and Assessment Policy Statements introduced in 2011 remedy the lack of explicit advice to teachers (Grussendorff, Booyse & Burroughs, 2014) although the outcomes envisaged do not always link with the teaching strategies provided for both English Home Language and First Additional Language

levels. In other words, the curriculum lists “cognitive academic language proficiency” (CALP) (Department of Basic Education, 2011) as one of the outcomes for learners – but does not explicitly provide guidance on how to teach or inculcate such a proficiency. This has implications for both learning and teaching, as well as providing clarity in terms of assessment design. In addition, there is little acknowledgment that complex academic language skills in English are required by learners across the ambit of the subject offering, and no advice on language teaching strategies is given to teachers outside of language subjects.

For an approach based on language tuition across subject areas to be successful, however, it would need to be shown what academic language skills are cross-disciplinary and fundamental for the successful use of academic language in the school setting. Until the CALS construct had been operationalised, it was not possible to advance this position – as the skills that inform CALP had not been explicitly (and empirically) identified. This thesis details and assesses some of these *core* academic language skills – as identified by Uccelli et al (2015a; 2015b) – in the South African context.

Academic Language

The acknowledgment of the usefulness of understanding academic language proficiency as a distinct skillset is not new. Indeed Jim Cummins (1979, 2000) has long argued that there are broadly two types of language skills, basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP).

While BICS is described as consisting largely of colloquial verbal interactions, gestures, intonation, and a degree of intersubjectivity between both the speaker and the listener,

CALP is characterised as being often exclusively text-based, cognitively demanding and context-reduced. In a school setting, BICS can simply be conceived of as the language of the playground, while CALP represents the language of the classroom. While this concept of CALP as advanced by Cummins was among the first to attempt to define the construct of academic language proficiency as a distinct category of language use, a perennial difficulty has been that the construct of academic language skills has not been adequately operationalised (Uccelli et. al., 2015a).

Unfortunately, academic language is a concept that is difficult to define when the specific skills that give this construct its form are sought, especially because it develops throughout the life of the language user – gaining in complexity during this development. Intuitively, the kind of academic language and outputs we would expect from a learner in Grade 6, for example, would be substantially different from what we would expect from a learner in Grade 12. Snow and Uccelli (2009 p. 112) have highlighted the fluidity of the notion of academic language, noting that:

> …language can be more or less academic – that is, furnished with fewer or more of the traits that are typical of academic language; we have no basis for postulating a separate category of language that has passed some threshold qualifying it as academic."

Since academic language exists on this continuum – the distinction hinging on the amount of features within each instance of language usage that are deemed 'more or less academic' – the construct cannot be adequately operationalised until these features have been described and empirically tested. There is convincing evidence to show that a learner's academic performance is related to their use of academic language in contrast to colloquial

language (Dynda, 2008; Pretorius, 2002; Uccelli et al, 2015a; 2015b; Cummins & Yee-Fun, 2008), thus it follows that the features that inform the construct of academic language require explicit description and ultimately teaching in order to provide learners with optimal opportunities during their school career. This is so both for L1 and for L2 learners, since it has been shown that academic language remains challenging for all learners irrespective of their language status (Biancarosa & Snow, 2004; Shanahan & Shanahan, 2008). Essentially, academic language is nobody's mother tongue, and it represents acquired behaviours of using specific, school-appropriate language forms and functions.

Uccelli et al (2015a, p. 1082-1083) have provided an initial map of linguistic features that are typical of academic texts:

> …academic texts across disciplines are expected to be lexically precise; concise and densely packed; and explicit in the marking of conceptual relations, among other characteristics. These expectations are reflected in texts' specific and diverse academic vocabulary; the prevalence of complex morphologically derived words (e.g., nominalizations, such as evaporation) and syntactically intricate structures (such as embedded clauses or extended noun phrases); and the ubiquity of a range of contrastive and causal connectives used to mark relations among complex ideas.

Using this map as a starting point for an operational understanding of academic language, it begins to become clear that academic language goes far beyond word-level skills which have traditionally been taught in decontextualized ways.

While academic vocabulary is undoubtedly an essential element of the overall construct of academic language proficiency, it is becoming clear that vocabulary instruction alone is not

enough to significantly improve learners' comprehension skills (Proctor,et al, 2011; Lesaux, et al, 2010). Vocabulary instruction seems to have positive effects on learners' decoding skills, but results showing improvements in overall comprehension are mixed at best. This makes sense given that there is evidence showing that, particularly for L2 learners[5], grammatical aspects of text provide a significantly steeper challenge than lexical components (Slobin, 1996; Slobin, 1997; Taube-Schiff & Segalowitz, 2005). Slobin (1996) has argued that grammaticized elements of a text are inherently more difficult to master in the L2 when compared to lexical elements. He makes the case that this is because grammaticized elements have structural rather than conceptual functions and so they are not *"experienced directly in our perceptual, sensorimotor, and practical dealings with the world"* (p. 91). In other words, we cannot see or touch an 'and' or a 'but' or a 'therefore' and so on – but they form essential building blocks of meaning. These elements of language form the connective tissue that links ideas together and juxtaposes them against one another. While the lexical elements of a text are often observable (trees, roads, people), grammaticized elements are learned *through* language and function exclusively *in* language.

The above discussion leads to a conclusion that academic language proficiency does not inhere only in lexical understanding, and similarly it is unlikely to inhere exclusively in grammatical elements of language. Knowing enough words and their meanings is not enough to master the skillset of academic language, nor is the ability to precisely use the correct grammar in a language likely to suffice. This definition in the negative is, of course, unsatisfactory and demands further investigation. While this proposed study uses Cummins' conception of CALP as a base, the primary difficulty encountered with CALP is that despite

[5] In this paper the term 'L2 learners' is used to refer to learners who are taught in a language other than their L1.

the category being intuitively appealing, and much research pointing to a differentiation between interpersonal communicative skills and those used when producing academic texts, the actual skills that CALP refers to have not been adequately defined, operationalized, or tested. Uccelli et al (2015a; 2015b), however, have identified and operationalized a construct that they argue operates across content areas and is distinct from vocabulary. These Core Academic Language Skills (CALS) link very well with Cummins' work, and indeed go a long way in describing some of the sub-skills that may underlie the broader construct of CALP.

The skills identified and operationalized in the Academic Language Assessment (ALA) – subsequently renamed the CALS-I – instrument developed by Uccelli et al (2015a; 2015b) form the basis for all of the work undertaken in this thesis. The central argument advanced by this thesis is that, if CALS prove to be robust in the South African environment, their existence can form the basis for a strong argument for a cross-curricular approach to language instruction that could be made explicit to teachers across subject areas.

Core Academic Language Skills

Since the Uccelli et al (2015a) study represents the bedrock of this project, some detailed explanation of that underlying research is required. The original work began by seeking to operationalize the overall construct of academic language proficiency. First, the construct of academic language skills needed to be subdivided into *discipline-specific academic language skills* and *core academic language skills.* The researchers, following Bailey (2007) and Schleppegrell (2004), reasoned that each specific discipline must require a specialised set of language forms and functions that highlight the key concepts and reasoning moves of that discipline. In contrast, the construct of *core academic language skills* was defined as "high-

utility language skills that correspond to linguistic features that are prevalent in academic discourse across school content areas and that are infrequent in colloquial conversations" (Uccelli et al, 2015b, p.341). The key features of the CALS construct are the fact that they are trans-disciplinary and that it makes the individual sub-skills that inform the construct explicit, and thus teachable.

While these CALS are not discipline specific, they will still be linguistically bound to some extent. That is to say that an individual with highly developed CALS in English, for example, would not be able to demonstrate such proficiency in another language without a high level of skill in that language. To relate this statement directly to the South African context, it is uncontroversial to assume that a learner assessed in English who has that language as their L1 will in all likelihood outperform a learner for whom this is not the case – all other things being equal (Alexander, 2010). It is important to reiterate, however, that academic language is no-one's mother-tongue, and a learner who must contend with the demands of learning and being assessed in an unfamiliar language must inevitably face a more challenging path than an L1 counterpart. Thus an L2 learner must first master the language of learning and teaching, and then – like their L1 counterpart – demonstrate a knowledge and facility with academic language that is currently neither made explicit nor directly taught. Research has shown that learners with a high level of proficiency in their L1 are more likely to be able to demonstrate (or perhaps transfer) high levels of proficiency in their L2 (Baker, 2002; Dutcher & Tucker, 1995; Garcia & Baker,1996; Heugh, 2011). While it is an attractive notion to imagine that explicit tuition in CALS might allow for transfer of academic language proficiency across languages, and it is an idea that is not without some inductive support, that case is not being argued for in this proposed research. Ultimately this research argues

that explicit tuition in CALS in English should improve the educational outcomes of learners (both L1 and L2). For this to come to fruition, the discrete academic language skills identified by CALS can be interwoven into classroom practice both in language classes as well as in other disciplines.

In the initial development of CALS, having focused their interest in the construct of academic language proficiency on CALS, Uccelli et. al (2015) decided to take a skills approach to evaluating this construct. In other words, CALS represents "a broader set of academic language skills [capable] of informing language and literacy instruction" (Uccelli et al, 2015b, p. 1079). This approach allowed for the development of an instrument based upon a synthesis of a wide range of independent research studies on common features of texts produced by academic writers across disciplines. This integration provided a map of linguistic features that characterised academic texts which could be translated into a constellation of testable sub-skills. The mapping process described above led to the production of a test of core academic language skills that was broken into eight distinct sub-domains:

1. *Organizing argumentative texts*: This task examines the ability to structure narrative in a coherent and logical fashion. Since academic writing is generally produced in the form of an argument, only the structuring of argumentative texts is assessed in this section.
2. *Connecting ideas*: A key feature of academic texts is the prevalence of academic discourse markers that indicate intra-sentential relations. A skilled reader of academic writing is able to use and understand these markers to connect complex ideas and convey meaning in a precise manner. This task examines the ability to

deploy these key connectives (i.e. therefore; yet; consequently; however etc.) and to correctly crystallise the meaning of a sentence.

3. *Tracking themes*: While anaphors are common in colloquial discourse ('he' is used to refer to 'Simon' for example) a key feature that distinguishes academic writing is the use of *conceptual anaphora* – anaphors used to encapsulate a complex idea or collection of ideas. Understanding and use of conceptual anaphora is an integral part of comprehending or producing academic language, and this task examines the understanding of such indicators.
4. *Comprehending complex sentences*: This task examines the ability to use the syntactic cues present in a sentence to identify the correct response from series of pictures, each picture containing some or all concrete elements of the sentence in different relations to one another. The sentence, for example, may be "The girl is neither sitting nor writing", and the learner must indicate the correct image while ignoring distractor images in which a girl is sitting, writing, or both.
5. *Unpacking words*: A central feature of academic writing is the use of morphologically complex words in order to pack information. Thus, a central skill in understanding academic texts is being able to understand derivational morphology and demonstrate the ability to change a word from one form to another. For example the word *activity* might be presented, with the instruction to use it in a sentence like "People who like to exercise are very_____".
6. *Awareness of academic register*: The researchers identified definitions as a key minimal genre to be used in order to assess the understanding and deployment of the academic register. In this series of tasks, testees would be asked to identify if a definition was written for children or adults, identify the degree of certainty

displayed by a writer, identify the sentence form being used (i.e. an argument, a summary, a comparison etc.) and finally to produce definitions of their own.

7. *Metalinguistic Vocabulary*: This skill involves understanding and using terminology that refers directly to reasoning moves and discussion processes that occur only *within* language. To simplify, this skill involves the ability to identify and deploy 'language about language' and determine whether a statement is an argument, a premise, a hypothesis, a counter-argument and so forth.
8. *Identifying Epistemic Stance*: A great deal of academic writing focuses on the provision of evidence to back up certain assertions or hypotheses. Depending on the strength and quantity of the evidence provided, a writer will use language to (often tacitly) indicate the level of certainty or uncertainty that they have about a certain point. This is a writer's *epistemic stance* – and this skill refers to the ability of a learner to identify how 'sure' or 'unsure' a writer is of the veracity of their statement.

The sub-skills that informed the creation of these tasks formed an initial constellation that described the CALS construct. At all points in working with the CALS construct, the researchers have emphasised that these skills are not envisioned as an exhaustive set, but rather serve to delineate and operationalize the construct. It is always possible – indeed likely – that additional linguistic and related skills could be identified in future to further operationalise and solidify CALS. It is also important to approach CALS with some caution, especially in the South African context. If the construct is deployed uncritically, it could be easy to pursue the goal of assisting learners to cope with the demands of English as the LoLT while being blind to the fundamental injustice inherent in the majority of learners being

made into a linguistic minority in most school settings. This critique is unpacked further in Chapter 6 of this thesis.

The development of the CALS-I was an iterative process, which culminated in the test being administered to a sample of 235 learners from 4th-8th Grade in the Northeast region of the United States. During the study, the researchers were unsure whether the skills identified and tested were part of a unitary construct or if they had identified a multidimensional construct. The results of the research strongly supported the notion of these skills forming part of a unitary construct with a principal component analysis and a subsequent confirmatory factor analysis all indicating a single factor solution. It was also found that the CALS tasks were significant predictors of reading comprehension as examined by the Massachusetts Comprehensive Assessment System – English Language Arts (MCAS-ELA). Reading fluency was controlled for by using results from the Test of Silent Word Reading Fluency (TOSWRF).

In sum, the results of this study strongly suggest that the CALS-I test indeed examines a unified construct that is significantly related to reading comprehension. These initial results in the United States were extremely encouraging, for were these results to prove robust in the South African context, there was a strong likelihood that explicit tuition of the identified skills would improve learners' linguistic outcomes.

This thesis investigates whether the skills identified by Uccelli et al (2015a; 2015b) remain robust when tested in the South African context, whether they correlate with the academic performance of South African learners, and ultimately examines the possibility of how such skills could be explicitly taught to both L1 and L2 learners. The four linked studies that form Chapters 3 – 6 of this thesis have answered each of these questions in turn.

Language across the curriculum

> Language learning is always an integral part of subject learning, or to put it more radically: Subject learning always involves language learning at the same time (Vollmer, 2008, p.28).

The idea that 'every teacher is a language teacher' is not new. Indeed Fillion (1979) traces the idea back at least to 1973 and a government initiative in Canada to investigate the quality of language teaching. No doubt the idea is even older still, but an obstacle for an approach to 'language across the curriculum' has always been that it has been unclear what language skills need to be taught by teachers who teach subjects other than languages. In essence, a key question has always been: "What language skills are *core* to schooling and should be taught in a cross-disciplinary manner?"

It is clear that without some form of explicit tuition, learners are at a disadvantage when attempting to absorb the linguistic skills that are fundamental to schooling. Vollmer (2008 p.27) has noted that:

> Language and other symbolic means of expression is a tool for thinking and for shaping one's content-based as well as procedure-related thoughts. These competences, however, do not (fully) develop all by themselves; they need to be supported, if not "taught" explicitly, especially to the "vulnerable learners".

It is this lack of explicitness that has until now made it challenging to design a programme that allows subject specialist teachers to address core language skills in their classrooms. Indeed until now it has not been possible to discern what language skills are 'core', and thus any efforts at a language-across-the-curriculum approach have advised teachers in many

ways simply to repeat what has been taught in language classes. This not only requires the content of each lesson to be reduced in order to make room for language instruction, but also has limited prospects for success since the construct that is being taught has not been rendered explicit for classroom teachers.

This research aims to test the construct that has been identified as CALS, and particularly to determine its functioning in the South African context.

Chapter 2: Methods

This thesis was completed through a series of four linked publications (comprising Chapters 3 – 6), and thus the research design has a design for the project as a whole, with discrete sub-projects that answer each discrete research question. Each individual research design is provided in detail in each of the aforementioned chapters, and as such is only briefly outlined in the section below.

Context

This research was motivated by the mismatch in the Language of Learning and Teaching (LoLT) in South Africa and the language/s spoken by the majority of South African learners. The mismatch between the LoLT and the languages of the majority results in (among many other effects) South African learners performing poorly on international standardised assessments (Department of Basic Education, 2023).

As a step towards addressing this trend of poor performance, this research set out to pilot a construct in South Africa that describes cross-disciplinary Core Academic Language Skills (CALS). This construct operationalises a set of skills that form part of the larger construct of Academic Language proficiency – and it was reasoned that one of the key reasons for the observed underperformance of South African learners is that the language mismatch creates a barrier to the formation and cementation of Cognitive Academic Language Proficiency (CALP) (Cummins, 2008).

In undertaking the research detailed in this thesis, the overarching research question was as follows:

Should the skills measured by CALS prove robust and correlate well with academic performance, what are the advantages and disadvantages of translating this fully operationalised skillset into pedagogy that could be used in a cross-curricular manner in South Africa?

The first part of the research question required some substantial empirical work to answer, and as such needed to be broken into three related sub-questions. While the overall project aimed to argue for the use of CALS as both an instructional framework and an assessment tool, the functioning of CALS in the South African context needed to be established before such an argument could be advanced. Despite the potential that CALS represents, it is a construct developed and normed in the United States (US) for use in the US education system with US-based learners. Before arguments could be advanced about using CALS in the South African context, its functioning needed to be established through the use of a pilot study (described fully in Chapter 3).

Once the pilot study had established that CALS retained its robust functioning when deployed in South Africa, it was then crucial to show if it is indeed related to academic performance (described fully in Chapter 4). The final part of the empirical work was to examine the functioning of CALS in L1 and L2 learners in South Africa (described fully in Chapter 5). A central argument in favour of CALS is that the skillset is generic and can assist *all* learners, regardless of language background, with both productive and receptive skills in English. If this argument is to hold true, it is important that CALS is shown to function comparably for L1 and L2 learners. Differential functioning at this stage would indicate that the CALS construct is more or less appropriate as a pedagogical tool (as opposed to merely a construct for assessment) depending on the group/s in which it is deployed.

Chapter 5 of this thesis then ultimately is able to address the initial motivating research question as stated above, having conducted all the prerequisite empirical work to be able to advance an argument in favour of deploying CALS in South African classrooms.

Research approach and design

This research followed a non-experimental ex-post-facto design (Kirk, 2009). The sample was drawn from pre-existing school classes and was not subject to any assignment into groups nor any randomisation.

The non-experimental design refers to a design in which the sample groups are not subject to manipulation or randomisation, and that are also not subject to a specific treatment condition that could differentiate one group from another. The challenge associated with non-experimental designs is that it is not possible to determine a causal relationship between the variables in the study (Thompson, 2007). While it is still possible to show a relationship between variables, the fact that the sample could not be randomised means that it is not possible to rule out that specific features related to the composition of the sample may have introduced a confounding variable. For instance if the sample group has a very strong group identity, or a gender bias, or has any particular characteristic that may affect the outcome of the study but is not related to the variables of interest – this form of research design is unable to control for such confounding variables.

An ex-post-facto design (literally 'after the fact') is one in which the phenomenon of interest has already occurred (Kirk, 2009). In the case of the sample in this study, for instance, the phenomena of interest were the extent to which learners had mastered academic language skills (as measured by CALS) and the learners academic results (as measured by the Gauteng

Provincial Common Examinations). In both instances, neither of these variables of interest were subject to manipulation by the researcher. In general, this meant that the sample could not be subdivided or stratified in any way – except in the final empirical study which examined learner performance based on language status. Once again, the variable of home language is not subject to any manipulation and is a pre-existing status, and thus only an ex-post-facto design was appropriate.

While the non-experimental ex-post facto design is, therefore, weaker than a true experiment – this particular approach was called for due to the fact that learners home languages and assignment to Grade 6 classes were not manipulable in any ethical way. What is missing in an ex-post-fact non-experimental design is the ability to make claims around causal relationships and directionality of relationships (Campbell & Stanley, 1963). For instance it would be desirable, perhaps, to make a claim that highly developed academic language skills *cause* high performance in academic assessments – but the limits of this type of design only make it possible to claim that these variables have a relationship with one another or co-vary.

Sample and sampling

A non-probability purposive convenience sample was drawn for this study. A non-probability sample is one in which it is not possible to randomise the members of a sample group, and thus deal with the possibility of confounding variables pre-existing within the sample group/s (Creswell & Plano-Clark, 2018). Nevertheless, since the groups of interest were Grade 6 learners in South Africa, there was no possibility of randomising learners into such groups.

A convenience sample is one that is available to the researcher, and is generally drawn from an area that is geographically close to the researcher or exhibits some other convenient feature that influences its selection as part of the sample group. In this case, being based in Gauteng, the researcher chose to only sample classes within the Gauteng province. This sampling strategy, while making the research achievable, necessarily limits the generalisability of the findings (Creswell & Plano-Clark, 2018).

Finally the sample was purposive in that the CALS-I-ZA assessment instrument, and indeed the CALS-I instrument on which it was based, are specifically designed to test the academic language skills of learners in the Grade 4 – 8 band. Due to limitations on the size of the sample that could be gathered by a single researcher – Grade 6 was purposely chosen as the mid-point of the target population, as well as one of the Grades in South Africa that is regularly academically assessed at Provincial level, creating a comparable dataset of academic results.

Having delineated the sample group and gained the requisite ethical clearances from both the University and the Provincial Department of Education, individual schools were approached to be part of the sample group. Ultimately four schools consented to be part of the sample with a final dataset of 285 Grade 6 learners. Naturally permission was also attained from the schools, parents and learners in the sample group. The sample was also drawn exclusively from Quintile 4 & 5 schools – a measure of economic status for schools in South Africa. All schools in South Africa are classified by economic quintile – with 20% of the learner population being classified as Most Poor (Quintile 1) and 20% being classified as Least Poor (Quintile 5) with similar labels for each other 20% of the learner population. The choice of Quintile 4 & 5 schools was driven by the need to focus quite specifically on the

language variable in this study, and it was reasoned that sampling learners from lower quintiles would introduce confounding variables associated with poverty that may mask the central variable of interest. Poverty and inequality are widespread in South Africa, and the effects of socio-economic status, geographical location, and access to resources create extreme variability between learners' school outcomes in South Africa (Mlachila & Moeletsi, 2019). The variance introduced by sampling learners attending low-income schools could potentially have masked the functioning of the CALS construct in ways that would not be possible to account for given the relatively small size of the sample.

The sample of 285 learners was relatively balanced in terms of gender, with 126 (44.2%) male learners and 159 (55.8%) female learners. Learners' background language status is difficult to determine with certainty, but two questions were included in the test to provide information on this variable: "*What language(s) do **you** speak at home the most?"* and, *"What language(s) **do people in your home** speak the most?"* Using these two questions, the assumption was made that learners who did not list English as one of their most common spoken languages as well as it being spoken at home were thus not 'home' or 'first' language English learners. Following this assumption, 143 (50.2%) learners listed English as being among their own **and** their family's most commonly spoken languages and thus were understood as L1 learners. The remaining 142 (49.8%) did not list English in their responses to **both** of the questions and were thus understood as L2 learners in this study.

The larger sample of 285 learners had to be delimited for the comparative phases of this study, in which learners results on the CALS-I-ZA were compared against their outcomes on the Gauteng Provincial Common Examinations. This was simply because it was not possible to draw a comparable dataset for the Provincial Examinations that could be linked to all

learners in the original sample. Thus, the final sample for this part of the research was limited to 89 learners and was somewhat skewed in favour of females, with 36 (40.4%) male learners and 53 (59.6%) female learners sampled. Again, the two questions were included in the demographic information portion of the CALS-I-ZA to provide information on learners' language status: "*What language(s) do **you** speak at home the most?"* and, *"What language(s) **do people in your home** speak the most?"* The assumption was made that learners who did not list English as one of their most common spoken languages as well as it being spoken at home were not "home" or "first" language English learners. Based on this assumption, some 38 (42.7%) learners were classified as not having English as a "home" or "first" language (L2) while the remaining 51 (57.3%) were understood as L1 learners.

Instruments

Three instruments were used in this study, namely the CALS-I, the CALS-I-ZA, and the Gauteng Provincial Common Examinations.

The CALS-I is an instrument developed and normed in the United States by Uccelli et al (2015a; 2015b) which measures Core Academic Language Skills in English, a construct that operationalises a skillset that forms part of the larger construct of Cognitive Academic Language Proficiency (CALP) as identified by Cummins (1976, 2008). The CALS-I-ZA is a modification of the original CALS-I that makes it culturally appropriate for use in South African classrooms. Modification of the test was undertaken following all International Test Commission Guidelines for test adaptation (ITC, 2017). The initial pilot study of the CALS-I-ZA is detailed in Chapter 3, but the model fit between CALS-I-ZA and the CALS-I was so robust (with a correlation of $r=0.92$) that no items in the CALS-I-ZA required modification

after the pilot phase. Both the CALS-I and the CALS-I-ZA are subject to copyright and as such cannot be reproduced in whole or in part in this thesis.

The CALS-I and the CALS-I-ZA consist of 51 items, and for each item the item properties have been derived using a Rasch analysis (Boone, 2016) which provides both person characteristics and item difficulties on the same scale. This method is also particularly fruitful for the development of comparable assessments, because the item and person characteristics derived are sample independent – in contrast to assessments developed using Classical Test Theory (Panayides, et al, 2010). Thus assessments developed using Rasch methods will provide an estimate of person ability – for instance that an individual can cope with all items up to difficulty level 3 – and place all test items on that same scale so that every item with difficulty level 3 and below should be approachable by the individual in question.

The 51 items on the CALS-I-ZA have also been subdivided into smaller item sets that each assess a certain sub-skill as follows:

1. *Organizing argumentative texts*
2. *Connecting ideas*
3. *Tracking themes*
4. *Comprehending complex sentences*
5. *Unpacking words*
6. *Awareness of academic register*
7. *Metalinguistic Vocabulary*
8. *Identifying Epistemic Stance*

These individual item sets and the related skills have been fully described in Chapter 1 already, and are further detailed in Chapters 3-6 as each of these chapters appeared as a standalone article prior to inclusion in this thesis. As such a full description of these sub-skills that inform the CALS construct is omitted here.

The Gauteng Provincial Common Examinations are run biannually in all public schools in the province in June and November, and the June 2017 examinations were used in this study. The Common Examinations consist of Natural Science and Technology Examinations and Mathematics Examinations. No information is available about the assessment characteristics of these examinations – but their status as a common assessment of academic performance that is directly keyed to the national curriculum of South Africa informed the choice of these assessments. The Common Examinations serve as a proxy for Academic Performance in this study – and learners performance on this assessment could be compared across different schools and different classes, since all learners in the sample wrote the same examinations. The Common Examinations are administered during regular school hours by the class teachers, and external researchers are not entitled to observe or administer such examinations. Thus only a dataset provided by the provincial authorities could be analysed, and this dataset did not contain information about the full original sample of 285 learners – instead containing data that could be linked to just 89 learners from two of the four schools in the original sample.

Ethical considerations

Since these studies worked with learners in schools, it was essential to obtain permission to do this work from the parents, teachers, school principals, the provincial department of education, and the University of the Witwatersrand (HREC) in order to proceed. The first

step was to obtain ethical clearance from the University itself before I could approach other parties, and this ethics clearance was granted (clearance number H16/07/15) and appears in the Appendix.

The next step was to obtain both ethical clearance from the Gauteng Provincial Department of Education, and also source the list of potential participating schools and a commitment to provide the data from the Common Examinations from the Department. This was a challenging component of the work, as there was some understandable caution on the part of the Department to provide the dataset in particular. In order to ensure the confidentiality of the learners involved in the study, all personally identifiable information about individual learners was anonymised. Ultimately the ethical clearance for the study was granted (Reference no: D2016 / 395), the dataset containing the details of all candidate schools in Gauteng was provided, and later – the dataset containing learners' results on the Common Examinations was also given.

Identifying schools as part of the sample was a time-consuming process of emailing all Quintile 4 and 5 schools with little success, phoning all schools and pursuing those that answered, and ultimately being granted access to four schools after face-to-face meetings with the various principals. Each principal signed a consent form (see the Appendix) and provided introductions to the Grade 6 class teachers. Each of these teachers also completed a consent form, and facilitated initial meetings with their classes where I was able to explain to the learners what the research was about (I am not testing you, I am testing this test to see if it works) and each learner was given a consent form, as well as an explanatory letter and consent form for their parents to sign. Only once consent had been gained at each level – University, Province, School, Principal, Teacher, Parent, and Learner consent – was it

possible to gather the dataset used in this study. While an initial set of personally identifiable information about the learners was collected in order to link them to the results of the Common Examinations, once that linking process had been completed all personally identifiable information about learners in the entire sample (even those learners that were ultimately could not be linked to the Common Examinations) was excised.

Data analysis

The dataset in this study was analysed sequentially in line with the aims of each stage of the research. The first step was to use the large dataset gathered in South Africa and compare it against the validation dataset used in the United States for the CALS construct. Since the assessment was derived from a Rasch model of measurement (Boone, 2016) it was decided that the two datasets would be compared using a Differential Test Functioning procedure in the Winsteps software package – a measure that compares item difficulties against one another that are derived from two separate Rasch measurement models (Linacre, 2023). Since any assessment based on a Rasch measurement model must test a unidimensional construct in order to remain statistically sound (Brentari & Silvia, 2007) it was necessary to also perform a Principal Component Analysis using the Statistical Package for the Social Sciences (SPSS) version 17.

Having validated the construct for use in South Africa and piloted the associated instrument, a correlation analysis (Aggarwal & Ranganathan, 2016) was used to determine if the CALS construct was associated with academic performance. An independent sample T-Test (Mishra, et al, 2019) was used to determine if the construct functioned differently when used to assess L1 or L2 learners.

The dataset and investigation were used to generate four linked articles for publication, which form Chapters 3-6 of this thesis. A very brief description of the individual studies and their discrete research questions follows below, with full details naturally appearing in each discrete article.

Sub-Project 1: Construct Validation

This project addressed the following research questions:

Research Question 1

> Do the items on the CALS-I-ZA display robustly similar functioning to those on the original CALS-I when tested with a large sample of South African Grade 6 learners?

Research Question 2

> Do the patterns of performance of the original CALS-I and the CALS-I-ZA suggest that the CALS construct can be validly tested in South Africa?

Data analysis

Data analysis was undertaken by comparing the constellation of results derived from the original CALS-I and the US sample, against that derived from the CALS-I-ZA and the South African sample. The comparison was done using a Differential Test Functioning procedure in the Winsteps software package (Linacre, 2023) – a measure that compares patterns of item difficulties from two separately derived datasets that are both using a Rasch model to determine the item difficulties. The Rasch model is a form of Item-Response theory that provides a sample-independent measure of item and person ability.

Sub-Project 2: Comparison of CALS-I-ZA and the Common Examinations

This project answers the following research questions:

Research Question 1

> Is there a relationship between CALS and schooling success in Grade 6 South African learners?

Research Question 2

> If a relationship between CALS and schooling success exists, what are the implications for assessment and pedagogy in South Africa in Grade 6 learners and more broadly?

Data analysis

In order to answer the first research question the overall results as well as those of each sub-test of the CALS-I-ZA were compared against the Maths and Natural Science and Technology Common Examination results using Pearson's Product Moment Correlation Coefficient in SPSS 17 (SPSS, 2017). The second research question required a discussion of both the results of the comparisons between the CALS-I-ZA and the Common Examination and the implications of this association for the South African curriculum and pedagogy.

Sub-Project 3: L1 and L2 group comparisons

The third sub-project addresses the following research questions:

Research Question 1:

> To what extent is the CALS-I-ZA Instrument associated with academic performance in L1 and L2 learners?

Research Question 2:

What are the differences in performance in L1 and L2 learners on the CALS-I-ZA instrument?

Data Analysis

First it was determined if there is a significant difference between the groups through the use of an independent sample T-Test. Thereafter the strength of the predictive relationship between CALS and the L1 and L2 groups' performances was determined using Pearson's Product Moment Correlation Coefficient.

ARTICLE 4: An argument for CALS-informed Instruction

Overview

This article is a discursive piece that critically examines the evidence for the use of CALS in South Africa, both as a diagnostic assessment in the form of CALS-I-ZA as well as ways of using the construct to directly inform pedagogy. Where the project began with ideas of a 'language across the curriculum' model – during the course of the work the argument for CALS-informed instruction replaced this earlier model. This model argues for explicitly embedding features of CALS within disciplinary teaching as well as in the language classroom – but does not argue that every teacher is also a language teacher.

Using the collected results of the previous linked articles as well as work by other researchers working on CALS, this article explores the implications for pedagogy that the abilities identified by the construct suggest.

Positionality of the Researcher

Project Background

When I first began this project I was employed at Umalusi, the Quality Council for General and Further Education and Training, which is the statutory body responsible for quality assurance of the school sector. One of the central responsibilities of Umalusi is to conduct the standardisation of the school-leaving examinations entitled the National Senior Certificate (NSC) (often called Matric). The standardisation of these examinations required expert analyses of the question papers to ensure that they were of the appropriate standard, and also involved an annual large-scale statistical moderation of results to ensure that the profile of results remained comparable between years. Part of this statistical moderation of results involved the use of 'language compensation' – an addition of a small percentage to each learner's non-language subject results if they offered English at the First Additional Language (FAL) or Second Additional Language (SAL) levels.

While this practice is eminently defensible – as the effect of the linguistic mismatch between the LoLT and the L1 of the majority of learners in South Africa is to (among other challenges) depress such learners final results – it is also a post hoc statistical correction to a problem that is much more fundamental. If the South African education system must correct for this linguistic mismatch numerically at the point of exit – it is clear that there is a systemic expectation that learners from non-English backgrounds still face challenges at the level of language at the exit point of formal schooling.

From Cognitive Academic Language Proficiency to Core Academic Language Skills

My previous research work had focused primarily on assessment and how the language used in an assessment can affect the final results observed (MacFarlane & Broom, 2014),

and I was determined to look for a solution that could address the linguistic mismatch in South Africa in a more fundamental way. This meant looking for a way to operationalise the kind of language skills required for success in an academic or school setting, beginning with Cummins' (2008) intuitively appealing conceptions of Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). The search for an operationalised construct that could describe the building blocks of academic language led me to meet with Paola Uccelli in the United States who was at the time completing work on an assessment of Academic Literacy using an operationalised construct termed Core Academic Literacy Skills (CALS). While the CALS construct was not exhaustive, it was the first time I had seen a construct that not only broke down academic language into discrete sub-skills but also allowed for direct measurement of those skills.

We both agreed that it would be fascinating to see if the CALS construct remained robust when deployed in a country like South Africa which is culturally and linguistically dissimilar to the United States. As part of this work, I registered for my PhD studies at Wits University and began the background processes of proposal writing, gaining ethical clearances, and getting permissions from the various schools, principals, teachers and learners that I would need to assess when gathering data. These administrative processes took the better part of two years from inception until the point that all data had been gathered – and during that time I had ensured that the original CALS instrument had been carefully localised to preserve the question forms while removing culturally incongruent elements. In essence this meant changing sporting references from American Football to Cricket or Football (Soccer in the US), changing the overabundance of western names to more locally appropriate names,

and in narrative sections ensuring that all narratives were appropriate and dealt with common themes familiar to South African learners.

Together with Christopher Barr, Prof Uccelli and I concluded the initial step of the research which showed that the CALS construct remained robust when used to assess learners in the South African context and this resulted in the first publication that appears in this thesis (Chapter 3). Since my initial intention was to show that academic language skills are directly related to academic results, and that an improvement in such skills should improve learning outcomes across the subject spectrum, I needed to link the CALS construct directly to such outcomes. Linking a bespoke assessment to academic results – especially at the Grade 6 level where I was working – presented challenges because the sample size necessarily meant that multiple different Grade 6 classes in multiple different schools were sampled. It is very challenging to argue that the formative or summative assessments used across diverse schools or classes would be comparable with one another. Thus, in order to find a proxy for 'academic results' I approached the Gauteng Department of Education to allow me access to the results of their annually administered Common Examinations – a set of assessments that is conducted in all schools in Gauteng every year. This entailed some challenging administrative hurdles, a natural consequence of seeking private information about learners officially gathered by the provincial administration, but ultimately I was successful in gaining access to the results of the Common Examinations that could be directly linked to the learners in my sample group.

The results of the Common Examinations, once linked with the results of the CALS-I-ZA (the localised assessment of CALS mentioned above), showed a remarkable correspondence – and a strong positive linear relationship between CALS and Academic Performance. This

provided convincing evidence that the CALS construct could not only function to assess discrete aspects of language learning in the South African context, but also that the construct has a linear predictive relationship with general schooling outcomes. The strength of the relationship suggests that an improvement in CALS – or rather Academic Language Skills more broadly, as CALS does not claim to exhaustively capture this entire construct – should be accompanied by a predictable improvement in general academic performance.

Sampling challenges

Defining and accessing a nationally representative sample in South Africa is an extremely complex task – so complex that even global-scale research projects such as the long running Progress in International Reading Literacy Study (PIRLS, 2021) face challenges when drawing a nationally and linguistically representative sample. Even with a national sample of some 21 743 (12 426 Grade 4 learners and 9 317 Grade 6 learners) individual learners, Grade 6 assessments for PIRLS were conducted only in English and Afrikaans – while the Grade 4 assessments could be conducted in all 11 official languages. This stratification of the sample demonstrates one of the key difficulties of conducting research about language and linguistic skills in South Africa – as the 'switch' to English immersion occurs at the end of the Foundation Phase (Grades 1-3) in South Africa – meaning that from Grade 4 onwards the majority of South African learners will no longer be taught in their mother tongue. Schooling in Afrikaans generally follows a different trajectory – in that many learners in schools with an Afrikaans medium of instruction will indeed have Afrikaans as their L1 – and will use this language as the LoLT throughout their schooling career.

Given the challenges of sampling in this context, I concluded that my only option was to draw a convenience sample from as many schools in Gauteng as I could gain

permission/ethics clearance to approach. Sampling in schools is complex by its very nature – doing research with children requires significant care to be taken in terms of ethics, and needs ethical clearance and consent at the level of the University, the Provincial Department of Education, the individual School Principals, Class Teachers, Learners and their Parents. The challenge of gaining ethical clearance from all these different parties was immense, and also needed to be done sequentially as ethical clearance from the Provincial Department, for example, relied on ethical clearance being granted by the University ethics committee. Similarly, ethical clearance and consent to work with learners during school hours needed to be granted by each individual principal before I could approach class teachers, who would (if they consented) then need to distribute informational materials and consent forms to learners and their parents. Each of these steps raised its own challenges, and indeed the step to gain permission from the Provincial Department of Education was doubly difficult due to the fact that I needed permission not just to sample learners in schools, but then also draw personally identifiable data from the Gauteng Provincial Database to link learners in my sample to their final results in the Gauteng Provincial Common Examinations. In all, gaining all the requisite permissions and ethical clearances consumed the better part of two years. By far the most challenging step was gaining access to the data held by the Provincial Department of Education – and many of the steps required were only available to me due to the knowledge I had of the system as a function of my role at Umalusi. This advantage meant that if an official at the Department was unresponsive I was able to speak to other colleagues that I knew in my day-to-day professional context who could assist me in getting each step in the lengthy process completed. The strict and ethical treatment of learners' personal data by the Department

was commendable and left me with the assurance that private and confidential learner data is treated with great care and respect by South African officials.

Once all ethical clearances and permissions had been attained, I ensured that I collected all data from the various schools in the sample in the middle of the school year within a period of six weeks. It is important, especially when working with learners in the earlier grades of schooling, to compare groups of learners at a similar point in the school year as learners in these grades are rapidly laying down foundational skills, and a learner tested at the beginning of Grade 6, for example, will likely exhibit different patterns of results than if they were tested at the end of the Grade 6 year. In this way I assured that the learners in the sample that I drew were at least broadly comparable in terms of their developmental levels – while acknowledging that I was working with pre-existing school classes that did not allow for random assignment or any form of true experimental research design.

Four Linked Sub-Projects

The first part of the project required that I establish that the CALS construct developed in the United States remained applicable and appropriate for use in the South African context. Since the linguistic, socio-economic, and socio-historical contexts of the United States and South Africa differ dramatically, the possibility that CALS would perform comparably in the local context was always in doubt. This was an extremely nerve-wracking part of the project, as the entire project profoundly rested on the assumption that CALS had indeed identified *universal* or *fundamental* academic language skills that were applicable across dissimilar cultural environments. This work also required that I partner with Paola Uccelli and Christopher Barr – not only in order to access the original CALS instrument and the original dataset that they gathered when originally validating CALS in the United States, but also for

their crucial conceptual guidance and expertise in the statistical methods we needed to employ in order to establish this correspondence. As a first step before gathering data from South African learners, I carefully localised the original CALS instrument (the CALS-I) to create a version appropriate for South African learners while still maintaining strict grammatical correspondence with the original instrument. Essentially this was an extremely light-touch form of localisation as the instrument was designed in English for use in multilingual classroom settings from the outset, and my central concern was to ensure that learners were not alienated by referents that were recognisably foreign in origin. This initial project to show that CALS could function across cultures and contexts laid the essential groundwork to begin to argue that the construct could be extended beyond an assessment tool and into the arena of guiding both curriculum design and pedagogy.

The second step of the project was to begin to show that CALS was associated with academic performance. Ultimately academic performance – at least at the outset of the project – lay at the heart of this research. A tool to measure language skills is perhaps useful in isolation, but the ability to identify discrete and heretofore implicit language skills and then deploy them explicitly as instructional tools was the overarching goal of this work. The challenge at this stage was to identify a way of measuring academic performance that was comparable across the various schools and classes in the sample. Initially the plan was to attempt to gain access to data gathered by the Annual National Assessments (ANA) – a set of assessments that were annually run by the Department of Basic Education for all learners in Grades 3, 6, and 9. This proved to be impossible, however, as various controversies around the ANA that are not relevant to this thesis led to the assessments being discontinued before I was able to gain permission to assess my sample group of learners on

the CALS-I-ZA. Fortuitously, the Gauteng Provincial Department of Education annually runs a set of Common Examinations for all public schools in Gauteng, and I was able to fix my sights on these assessments as my indicator of academic performance.

Academic performance is in itself a challenging construct to describe and capture – but because my focus was on CALS and its relationship with school results, delimiting academic performance to purely the quantitative results derived from school-based assessments made the most sense for this project. Every different class in a school, and between different schools, will inevitably use different internal assessments to gauge the progress of learners. Quantitative comparisons of marks derived from various different assessments conducted at different times in different schools would certainly not yield valid results. Thus, the choice to use the Common Examinations was based first on the fact that they represented an identical assessment of Grade 6 learners that was based directly on the national school curriculum. Concerns around the quality and validity of the Common Examinations remain – but such concerns fall outside the scope of what this thesis is concerned with. Rather it was important to find, above all else, a truly comparable measure of academic performance/school results that could be correlated with the CALS-I-ZA to determine if the CALS construct exhibited a link with such results.

The construct had now been shown to exhibit stability in its functioning across cultures, but the overall goal of the project was to find strategies to mitigate the effects of the 'language mismatch' in the South African schooling system. Initially, mitigating such effects was envisioned in a broadly quantitative way – improving academic outcomes meant improving test scores. Although this purely quantitative trajectory shifted as more evidence was gathered, analysed, and understood, it was still essential for the project to show that there

was a firm link between Academic Performance and CALS. If CALS truly represents skills that inform the ability to use language in an academic way and for academic purposes, it must have a predictive relationship with final academic results.

The final piece of data analytics that was required was to examine the functioning of CALS across language groups. Since the sample group, in the demographic questionnaire, indicated that there were some 14 distinct home languages among them, it was not possible to assign learners to specific language groups. Rather the only categorisation that made sense was to subdivide the sample into learners whose first language was English (the L1 group) and those whose home language was not English (the L2 group). A construct that can improve outcomes for only L1 or L2 learners is of course extremely helpful as a specific instructional tool in discrete settings, however, the goal for this thesis was to show that CALS can serve as a foundational construct on which it is possible generically to base pedagogy and curricula. The results of this analysis provided some comfort in this regard, as there were no significant differences found between the L1 and L2 groups when it came to performance on CALS. As expected, general schooling results (as represented by the Common Examinations) favoured the L1 group, but CALS showed only limited differences between groups. This result was very difficult to interpret but after some lengthy consideration of the findings it became clear that the central result to focus on was the uniform functioning of CALS across the language groups. Researchers in the field already know that academic results are normally somewhat lower for learners that must learn and be assessed in their L2 – indeed this is the very phenomenon that drives Umalusi's language compensation process. What is novel, however, is to find a construct that remains predictive of overall schooling results, while retaining uniform functioning and predictive

validity across language groups. At the time that this final data analytical piece was being written, Prof Uccelli was also publishing research on CALS, showing how the construct functioned when deployed in Spanish-language settings. This evidence, coupled with the findings on the South African sample, gave me the assurance needed to begin to write the final meta-analytical piece that was intended to gather the findings from the three data-analytical articles, as well as other work being done on CALS, together and make a final summative argument on its potential use-cases in the South African school system.

Synthesising the findings

The write-up of the final meta-analytical/argumentative article did not end up going in the direction that I had originally thought that it would upon starting this project many years previously. My overall intention at the outset was to find a fully operationalised way of assessing and teaching academic language skills to allow for improved academic outcomes for South African learners. The data that I gathered ultimately supported CALS as a viable candidate to do exactly that – but it was only in this final part of the project that I began to reckon with the epistemic price that would need to be paid for such deployment. CALS – and perhaps Academic Language as more broadly defined in Western/English-speaking literature – is deeply rooted in Western thought and practices. Where CALS assesses (and if used as an instructional tool instils) academic language, it does so with underlying assumptions about what is 'correct' when constructing academic language. Such assumptions have of course been extracted from deep analysis of academic texts, linguistic scholarship, a wealth of empirical work and more – but ultimately CALS is designed to assess and instil a Western (or perhaps to put it more controversially – a *Colonised*) ideal of how to structure and present ideas. The concluding chapter of this thesis discusses the implications

of these findings and ways of mitigating if not eliminating the challenges associated with the culturally embedded nature of Academic Language in English.

My personal journey with CALS has taken me through hope about the promise of assisting South African learners to better cope with the language demands of our schooling system, fear that CALS may become another instrument of cultural subjugation, and finally hope once again. If carefully and deliberately used, CALS can be pragmatically deployed to assist with the improvement of academic language skills in South Africa, while also being used as a way to critically examine and problematise the hegemonic status of the English language. If deployed with purpose and critical awareness, CALS can allow us to explore English not merely as the prison of the hegemon, but as just another context in which we must, and know how to, meet its demands.

Chapter 3: Core academic language skills: Validating a construct in linguistically dissimilar settings

Introduction

The initial and underpinning question that needed to be answered first was simply whether the CALS construct was appropriate for the South African context. This was fundamental, and far from certain, since the rest of the project hinged on the answer to this question. If it was shown that CALS did not function similarly in South Africa, then the larger goal of arguing for the inclusion of explicitly taught and deployed academic language skills would be impossible. The central innovation that CALS exhibits is its fully operationalised nature – and it is this fully operationalised and empirically robust construct that would allow for direct instruction in what, until now, was a skillset that was both fundamental to schooling success but also imprecisely defined.

The article detailing the initial validation of the construct in the South African setting was published as:

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The full text of the article appears below.

Core academic language skills: Validating a construct in linguistically dissimilar settings

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Recently a novel instrument – the Core Academic Language Instrument (CALS-I) – aimed at testing a constellation of school-relevant English language skills was developed and validated for use in the United States (Uccelli, Barr, Dobbs, Galloway, Meneses & Sánchez, 2015). The unitary construct tested by the CALS-I was dubbed Core Academic Language Skills (CALS) and it aimed to identify and describe a set of skills that comprise academic language proficiency of high utility across curricular content areas. This study piloted a version of the CALS-I that was slightly modified for use in South Africa targeting specifically middle school learners. The results of this study reveal that the CALS construct functions almost identically to the United States sample when tested in South Africa, and this provides strong evidence for the fundamental and cross-cutting nature of these pedagogically relevant skills.

Keywords: Academic Language; Assessment; CALS; Construct Validation

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Language is fundamental to learning in school settings, but it has long been argued that some language skills are relevant for academic purposes, while others function primarily in the sphere of interpersonal communication (Cummins, 1979; 2000; Skutnabb-Kangas & Toukomaa 1976). The distinction between academic and interpersonal language has proved robust (Cummins, Baker and Hornberger, 2001), but it has also proved difficult to truly operationalise which language skills are academic or otherwise (Uccelli et. Al., 2015). Recently a novel instrument – the Core Academic Language Skills Instrument (CALS-I)– aimed at testing a constellation of school-relevant English language skills was developed and validated for use with Grade 4-8 learner populations (learners generally between the ages of 10-14) in the United States (Uccelli, Barr, Dobbs, Galloway, Meneses & Sánchez, 2015a). The unitary construct tested by the CALS-I was dubbed Core Academic Language Skills (CALS) and it aimed to describe a set of high-utility cross-disciplinary skills that comprise school-relevant language proficiency, otherwise called academic language proficiency.

Assuming that the cross-disciplinary language demands of school are similar across contexts, if CALS truly captures generic and fundamental elements of academic language use in English at school level, there must therefore be an expectation that it would remain robust when learners in different cultural and linguistic settings are tested on this construct. Thus this study aims to assess whether learners in South Africa exhibit comparable patterns of performance to learners in the United States when tested on the CALS-I. South Africa maintains the same Grade structure as the United States, and thus the same age range for learners in Grades 4-8. If the performance of learners in diverse cultural settings is shown to be comparable, it lends further support to the notion that CALS has accurately described

fundamental features of academic language use in English, rather than artefacts specific only to the United States schooling system or socio-cultural environment.

Academic Language Proficiency

The usefulness of understanding academic language proficiency as a distinct category of skills is well established. Indeed Jim Cummins (1979; 2000) has long argued that there are broadly two types of language skills: basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). This distinction was first suggested by the work of Skutnabb-Kangas and Toukomaa (1976) who noted that immigrant children in Sweden often appeared to educators to be fluent in both Finnish and Swedish but still showed levels of verbal academic performance in both languages considerably below grade/age expectations when formally assessed. Cummins (1979; 2000) work showed that while spoken language and communication is rich in contextual clues, most academic tasks are significantly context reduced. He further argued that verbal interactions are generally cognitively undemanding, while academic tasks require a high degree of concentration and understanding. It becomes clear using this framework of informal spoken language (context rich/cognitively undemanding) and academic language (context reduced/cognitively demanding) that different linguistic skills are employed when language is used in these different contexts and for different purposes.

While BICS are described as the language skills useful to engage largely in colloquial verbal interactions, with the support of gestures, intonation, and the intersubjectivity between both the speaker and the listener, CALP is characterised as the language characteristic of text-based communication about cognitively demanding content and typically deprived from the support of the physical context to convey meaning. While this concept of CALP as

advanced by Cummins was among the first attempts to define the construct of academic language proficiency as a distinctly recognized and predictable way of using language, a perennial difficulty has been that the construct of academic language skills at school level has often been imprecisely defined or narrowly defined as academic vocabulary (Nagy & Townsend, 2012; National Research Council, 2010; Valdès, 2004; Uccelli et. al., 2015).

This lack of specificity in the skillset that CALP encompasses leads to a lack of precision when the construct is used as a foundation for pedagogical engagements in the classroom, or for curriculum design purposes. Consider as an example the introductory section of the current national curriculum in South Africa for English as a Home Language, which states:

> *The Home Language level provides for language proficiency that reflects the mastery of **basic interpersonal communication skills** required in social situations and the **cognitive academic skills** essential for learning across the curriculum (Department of Basic Education, 2011, p.8, emphasis added)*

And in a subsequent section:

> *Learning a language should enable learners to:*
>
> *acquire the language skills required for academic learning across the curriculum (Department of Basic Education, 2011, p.9)*

The above extracts are drawn from the introductory section that presents the fundamental goals for language learning as envisaged by the South African curriculum. Nowhere in the document, however, are cognitive academic language skills delineated despite forming the conceptual bedrock upon which the English language curriculum is built.

Substantial progress has been made in delineating academic language proficiency at the level of higher education in South Africa (Van Dyk & Weideman, 2004; Weideman, 2011; Yeld, Prince, Cliff, & Bohlmann, 2012; Patterson & Weideman, 2013) – but there is a dearth of information on how the construct can be operationalised at school level. Indeed, the construct of academic language proficiency has not been comprehensively or directly addressed by any South African study – and only one team in the United States (Uccelli et. al., 2015) have attempted to operationally define and empirically test such a construct in mid-adolescents.

A key obstacle in operationalising the construct of academic language proficiency is the fact that academic language skills develop throughout the life of the language user – gaining in complexity during this development. Intuitively, the kind of academic language and outputs expected from a learner in Grade 6, for example, would be substantially different from expectations for a learner in Grade 12. Thus an operational construct that provides robust information about university students, for instance, would probably be inappropriate for school-aged learners. It is likely that any construct of academic language proficiency will only provide useful information for a range of ages and/or years of education.

Snow and Uccelli (2009 p. 112) have highlighted the fluidity of the notion of academic language, noting that:

> *…language can be more or less academic – that is, furnished with fewer or more of the traits that are typical of academic language; we have no basis for postulating a separate category of language that has passed some threshold qualifying it as academic.*

Since academic language exists on this continuum – the distinction hinging on the amount of features within each example of language usage that are deemed 'more or less academic' – the construct needs to be adequately operationalised by delineating the skillsets that it encompasses and by empirically testing it at various phases in a learner's school career. The question of "What traits or features can we identify in order to classify language use on this continuum?" requires an answer.

Linked to this construct, there is also convincing evidence to show that a learner's academic performance is related to their proficiency in academic language even when students are highly fluent in colloquial language (Dynda, 2008; Pretorius, 2002; Uccelli et al, 2015; 2015a; 2015b; Cummins & Yee-Fun, 2008). Since this form of language deployment conveys real and measureable benefits to learners' schooling outcomes, it seems reasonable to hypothesise that the construct may represent a fundamental underlying proficiency that underpins school-relevant learning. Given the importance of such a construct it follows that the constellation of skills that the construct encapsulates *requires* explicit description. Once described and shown to be empirically robust, learners could receive explicit tuition in this skillset in order to provide them with optimal learning opportunities during their school career. This is important both for 'first' or 'home' language' (L1) and for 'second' language (L2) learners, since it has been shown that academic language remains challenging for all learners irrespective of their monolingual or multilingual background/s (Biancarosa & Snow, 2004; Shanahan & Shanahan, 2008). Essentially, academic language is no-one's mother tongue, and its use consists of learned behaviours of deploying specific, school-appropriate language forms and functions.

Uccelli et al (2015, p. 11) have provided an initial map of linguistic features that are typical of academic texts:

> *Dense information packing through morphologically derived words (e.g. nominalizations, such as evaporation) and complex syntax (such as embedded clauses or extended noun-phrases); explicit marking of logical and structural connections through a range of connectives typical of academic writing; lexical diversity and precision; abstract language; detached, authoritative stance.*

Using this map as a starting point for an operational understanding of academic language, it is clear that academic language use goes far beyond word-level skills alone.

While academic vocabulary is undoubtedly an essential element of the overall construct of academic language proficiency, evidence suggests that vocabulary instruction alone is insufficient to significantly improve learners' comprehension skills (Proctor, Dalton, Uccelli, Biancarosa, Mo, Snow & Neugebauer, 2011; Lesaux, Kieffer, Faller, Kelley, 2010). Vocabulary instruction seems to have positive effects on learners' word recognition skills and on vocabulary knowledge, but results showing improvements in overall reading comprehension are mixed at best. This makes sense given that there is evidence showing that, particularly for L2 learners, grammatical aspects of text may sometimes provide a significantly steeper challenge than lexical components (Slobin, 1996; Slobin, 1997; Taube-Schiff & Segalowitz, 2005). Slobin (1996) has argued that grammaticized elements of a text are inherently more difficult to master in the L2 when compared to lexical elements. He makes the case that this occurs because grammaticized elements have structural rather than conceptual functions and so they are not *"experienced directly in our perceptual, sensorimotor, and practical dealings with the world"* (p. 91). While lexical elements of a text are often directly

observable or practically useful outside of the text itself, grammaticized elements are learned *through* language and function exclusively *in* language.

The above discussion leads to a conclusion that academic language proficiency does not inhere solely in lexical understanding and deployment, and similarly it is unlikely to inhere exclusively in grammatical elements of language. This definition in the negative is, of course, unsatisfactory and demands further clarification. While this study uses Cummins' conception of CALP as an initial starting point, it follows on directly from the work of Uccelli et al (2015). This team identified and operationalized a construct that they label 'Core Academic Language Skills' (CALS) which has been explicitly proposed to investigate school-relevant language skills. These CALS link very well with Cummins' work, and indeed go a long way towards describing some of the cross-disciplinary sub-skills that underlie the larger construct of CALP.

Core Academic Language Skills

CALS has been described as *"knowledge and deployment of a repertoire of language forms and functions that co-occur with oral and written schooling tasks across disciplines"* (Uccelli et. al, 2015, p.1079). While the CALS construct is not thought to be an exhaustive description of all school-relevant language skills, the initial constellation of skills that have been described have been shown to form a unitary construct, and to have a predictive relation with reading comprehension (Uccelli et. al., 2015).

CALS have been conceived within a sociocultural pragmatics-based view of language development (Uccelli et. al., 2015). This paradigm understands language as inseparable from social context, and language learning as the result of individuals' socialization and

enculturation histories (Halliday, 2004; Heath, 1983, 2012; Ninio & Snow 1996; Ochs, 1993; Ravid & Tolchinsky, 2002; Snow & Uccelli, 2009). Such an understanding also regards language learners as social agents who master various language resources in order to accomplish defined tasks by participating in various social practices (Biber, Conrad & Reppen, 1998). Thus language learners are enculturated into the practices of informal and formal language practices. This theoretical underpinning of CALS places the construct firmly within the context in which it was developed and tested, and thus raises questions about the applicability of CALS in a variety of cultural and educational contexts. As such, the central concern of this research was to establish the degree of stability that the CALS construct displays when assessed in a context other than that in which it was developed.

A key defining feature of the CALS construct is its cross-disciplinary nature. The construct shies away from discipline-specific vocabulary and reasoning moves, and instead has attempted to identify generic and fundamental skills that are relevant across the gamut of schooling. The CALS construct represents a constellation of high-utility language skills that operate across school content areas but are simultaneously infrequent in colloquial conversations. The colloquial infrequency of the language features identified hearkens back to Cummins' distinction of BICS and CALP, and suggests reasons why learners with comparable proficiency in BICS may display significantly different functioning when their CALP is tested (Cummins, 2001). It is likely that this disparity is present because some of the linguistic features that define CALP are simply not present in BICS, are often less familiar in many learners' language environments, and are thus more demanding to learn.

While more sub-skills are expected to emerge as part of the CALS construct as further research is conducted, CALS already represents a theoretically and empirically robust

construct that describes a baseline of cross-cutting and discipline independent school-relevant language skills. The CALS construct has thus far been delineated through several distinct sub-domains that may underlie the comprehension and production of school-relevant texts:

1. *Organizing argumentative texts:* In the early years of schooling, learners are generally exposed to narrative texts, with other text types being given less emphasis (Oakhill & Cain, 2000). Oakhill & Cain (2000) have shown that skills in structuring narratives have a positive association with reading comprehension. Another commonly occurring text type in the school setting is the argumentative text, and it has been convincingly argued that this text type is among the most prevalent in academic discourse (Rex, Thomas, & Engel, 2010; Toulmin, 1958). Since the argumentative text type contains many of the features of a traditionally understood academic text (thesis statement, premises, examples, and conclusions), the original CALS developers hypothesised that this text form would provide relevant information on a learner's ability to comprehend and organise academic writing (Uccelli et. al., 2015).
2. *Connecting ideas:* A key feature of academic texts is the prevalence of academic discourse markers that indicate intra-sentential relations. Such discourse markers are generally represented by connectives (e.g. *therefore; consequently)* or lexical cue-phrases (e.g. *in other words; as a result; in contrast)*. A skilled reader of academic writing is able to use these markers to connect complex ideas and extract meaning in a precise manner. Evidence suggests that these forms of discourse markers affect receptive skills such as processing of and learning from academic

texts (Meyer & Rice, 1982; Hyönä & Lorch, 2004; Meyer & Poon, 2001). Further research is required to establish the connection between such discourse markers and productive language skills.

3. *Tracking themes:* While anaphors are common in colloquial discourse ('he' is used to refer to the name 'Simon' in subsequent uses, for example) a key feature that distinguishes academic writing is the use of *conceptual anaphora* – anaphors used to encapsulate a complex idea or collection of ideas (Biber, Conrad, & Reppen, 1998). Conceptual anaphora seems to be an integral part of comprehending academic language, and a positive relation has been demonstrated between skill in resolving conceptual anaphora and reading comprehension (Sánchez & García, 2009).
4. *Comprehending complex sentences:* The ability to use the syntactic cues present in a sentence to comprehend precise meaning has generally been shown to have an association with reading comprehension (Mokhtari & Thompson, 2006; Nation & Snowling, 2000; Taylor, Greenberg, Laures-Gore, & Wise, 2011).
5. *Unpacking words:* A central feature of academic writing is the use of morphologically complex words in order to pack information. It has been shown that skills in decomposing morphologically complex words (i.e. running or complexity) have a positive association with reading comprehension in US-based upper elementary and middle school learners (Carlisle, 2000; Kieffer & Lesaux, 2007, 2008, 2010; Nagy, Berninger, & Abbott, 2006). Thus, a central skill in the understanding and production of academic texts is the ability to understand derivational morphology. Proficient users of academic language are able to derive the root word from a morphologically complex construction, or to modify the root word to fit within a given context.

6. *Awareness of academic register:* The original researchers (Uccelli et. al., 2015) identified definitions as a key minimal genre to be used in order to assess the recognition and deployment of the academic register. Knowledge of the language of academic or formal definitions have also been previously identified as a predictor of later academic success (Benelli et al., 2006; Kurland & Snow, 1997).
7. *Metalinguistic Vocabulary:* This skill is associated with understanding vocabulary that refers expressly to reasoning moves and discussion processes (Uccelli & Galloway 2016). Thus it deals primarily with 'language about language' and directly assesses learners understanding of this subset of vocabulary, while also being able to identify the linguistic construction referred to in context.
8. *Identifying Epistemic Stance:* This skill revolves around the identification of linguistic markers that signal a writer's viewpoint (Uccelli & Galloway, 2016). In the context of CALS this identification is focused largely on the writer's epistemic stance, as testees attempt to identify the degree of certainty or doubt in relation to a claim (e.g *certainly; it is unlikely that*).

One of the benefits of the CALS construct is that it identifies specific and explicit features of language that can be directly assessed. Awareness of the distinction between BICS and CALP has led to educational imperatives to teach CALP before the construct has been operationalised (such as the example of the South African curriculum referred to earlier). Ultimately this has not provided researchers and educators with explicit tools for teaching and assessing this skillset due to its implicit nature. By deploying the construct of CALS, it allows for direct empirical assessment of academic language skills, and also moves these skills from being largely implicit to explicit. Essentially what has been rendered testable is simultaneously rendered directly teachable.

Although the potential for the CALS construct to form a fundamental building block in language instruction and assessment is high, it is essential to establish that the construct remains robust across various socio-cultural settings. Indeed, the fact that the construct is based on a sociocultural pragmatics-based view of language development demands that context be understood before the construct can be effectively deployed. Since the CALS construct was initially developed in the United States and validated on a sample of US learners, this paper sought to investigate whether the construct remained robust when assessed in a linguistically and culturally dissimilar setting to the United States – in this case South Africa.

CALS in South Africa

The CALS construct holds particular promise for South Africa, a country with 11 official languages but an overwhelming focus on English as the language of learning and teaching.

Despite boasting a Language in Education Policy (LiEP) (Department of Education, 1997) that endorses multilingualism, the dream of South African learners being able to learn in their mother tongues has not been realised. English remains a minority language within South Africa, being spoken as an L1 by just 9.6% of the population (Statistics South Africa, 2012), yet some 92% of all public schools use English as the language of instruction (Department of Basic Education, 2010). The failure of multilingual education in South Africa is blamed on poor policy implementation by some (Kamwangamalu, 2000), the widespread public perception that English is essential for 'success' in life by others (van der Walt & Klapwijk, 2015), and even naivety – in that a high level of proficiency in English is routinely presented as feasible in a predominantly second language education system without a raft of specialised linguistic interventions in place (Heugh, 2007).

Whatever the reasons behind the failure of multilingual education in South Africa, it is clear that the use of English as the Language of Learning and Teaching (LoLT) in almost all schools in the nation has not led to robust English proficiency in the learner population. A range of national and international assessments have shown that South African learners perform, on average, at the lower end (and often at or near the bottom) of the spectrum on language and mathematical skills (Department of Education, 2005; Reddy, 2005; Moloi & Strauss, 2005; Howie, Venter, van Staden, Zimmerman, Long, Scherman & Archer, 2008; Taylor & Yu, 2008). Many argue that the disparity between the language status of the population and the language of schooling is a core determinant of the poor scores attained by South African learners on internationally comparable assessments (Heugh, 2009; Brock-Utne & Skattum, 2009; Alexander, 2010).

There is a rapidly growing interest in the concept of Academic Language Proficiency, particularly in the sphere of higher education in South Africa (Yeld, 2001; Yeld, Prince, Cliff, Bohlmann, 2012; Cliff, 2015). The South African higher education sector is beginning to reach a consensus position that Academic Language Proficiency is both fundamental to success in higher education (Cliff, 2015), and also lacking in a large proportion of South Africa's student population (Weideman, 2013; Cliff, 2014). Indeed some 17 of the 27 Universities in South Africa (Cliff, 2015) have adopted the National Benchmark Test (NBT) – a test of Academic and Quantitative Literacy, and Mathematics – as a tool for determining placement in academic courses as an addition to the national school leaving examination – the National Senior Certificate.

While the need for an understanding of academic language within the sphere of higher education is clear, language interventions aimed at improving the English language

outcomes of South African learners should ideally be initiated in the early years of schooling and continued throughout. It has long been considered possible for children to become fluent in BICS within a period of about 2 years, while CALP proficiency may take between 5 to 7 years of focused instruction to achieve grade level parity (Dutcher & Tucker, 1995). If this is the case, then it is not possible for higher education institutions to take on the role of instilling fundamental academic language skills in their student populations. The example of the NBT above demonstrates that universities consider academic language ability to be a pre-requisite for university-level study, but these institutions are simply not in a position to spend 5 to 7 years instilling these skills.

The responsibility for providing learners with the opportunity to attain high level academic language abilities rests with the schooling system, and thus it is imperative that focused programmes are developed that directly address this need. Consequently, a primary aim of this study was to investigate the CALS construct to determine whether it remains cohesive in a linguistically and culturally dissimilar setting to that in which it was developed. The researchers reasoned that should the result yield an affirmative to this question, it would be possible to argue for direct instruction in the skillset in a schooling context. If CALS prove relevant for South African mid-adolescents, then perhaps CALS-informed instruction can promote academic language development more efficiently and effectively.

The Core Academic Language Skills Instrument

The CALS construct has been employed in the construction of an assessment instrument which assess the eight areas of language use described above, the CALS Instrument (or CALS-I) (Uccelli et. al., 2015). The CALS-I was constructed through a rigorous process involving linguists, psychometricians, psychologists, educators and learners. All language

features included in the assessment were deliberately chosen to represent high-utility language forms and functions that prevail in middle school texts in the United States, yet are infrequent in learners' informal conversations. The test was validated on a sample of a total of 6,647 fourth- to eighth-grade students in the north-eastern and Mid-Atlantic region of the United States (Barr, Phillips Galloway, & Uccelli, under review).

The initial set of 110 items developed for the test were analysed using a unidimensional Rasch model to determine item difficulties and item fit information. From this analysis it was possible to select a final set of 48 items that best captured the variability in learners' performances while, on the basis of theoretical considerations, covering all domains of the CALS construct. Finally the selected items were subjected to analysis by a panel of experts in order to establish construct validity. The resulting measure was then subjected to pairwise correlational analyses which established that all CALS-I tasks were significantly and positively correlated. In order to determine unidimensionality of the construct, the task specific scores for the instrument were analysed using a Principal Component Analysis, at the domain level, which indicated that only one eigenvalue was greater than one. The first principal component accounted for 49% of the variability in the dataset. Taken together these findings suggested that the items on the CALS-I measured a unitary construct (Uccelli et al., 2015a; Uccelli et al., 2015b).

The results on the CALS-I were correlated, in a first study, with scores obtained on the Massachusetts Comprehensive Assessment System – English Language Arts (MCAS-ELA). At each grade level CALS-I scores were found to be significant predictors of MCAS-ELA scores, and correlations were moderate to strong across all four grades examined, the strongest correlation being evidenced in Grade 6 ($p < .0001$; Grade 4 = 0.54; Grade 5 = 0.61; Grade 6 =

0.77; Grade 7 = 0.41; and Grade 8 = 0.65). In a subsequent study, a standardized reading comprehension measure, the Gates McGinitie, was used as criterion, and regression analysis consistently provided strong criterion validity evidence, with U.S. English-speaking upper elementary students' CALS positively and significantly predicting their reading comprehension levels above and beyond the contribution of sociodemographic factors, reading fluency and vocabulary knowledge (Uccelli et al., 2015b)

Evidence from large scale international comparative studies with South African learners, such as the Progress in International Reading Literacy Study (PIRLS) (Howie, Van Staden, Tshele, Dowse, Zimmerman, 2012), suggests that South Africa learners in grades 4 and 5 would struggle to cope with the demands of academic language as defined by the CALS. The original dataset gathered in the United States (Uccelli et. al., 2015a, 2015b), however, revealed a pattern of learner performance that suggested that learners may have been insufficiently challenged by the CALS-I at Grades 7 & 8. A subsequent form of the instrument was developed for grades 7 & 8. Since the transition point into high school (the Senior Phase in the South African curriculum) takes place at the end of Grade 6 the choice was made to use the original form of the CALS-I as the basis for modification and piloting in South Africa.

Research Questions

Research Question 1

Do the items on the CALS-I-ZA display robustly similar functioning to those on the original CALS-I when tested with a large sample of South African Grade 6 learners?

Research Question 2

Do the patterns of performance of the original CALS-I and the CALS-I-ZA suggest that the CALS construct can be validly tested in South Africa?

Methods

This research compared the performances of a sample of Grade 6 South African learners on the CALS-I-ZA (n= 285) against the pattern of performance exhibited in the original sample collected in the United States using the CALS-I (n= 6,647).

Participants

South African Sample:

The sample for the CALS-I-ZA comprised 285 Grade 6 learners from diverse language backgrounds. The learners in this pilot study were sourced from ordinary public schools in South Africa in the Gauteng province. No randomisation took place, and the sampling strategy was largely purposive in that only quintile[6] 4 & 5 schools were included in the sample. Since language was the focus of this study, it was felt that including schools and learners in very poor schools would introduce confounding variables associated with socio-economic status.

The sample of 285 learners was relatively balanced in terms of gender, with 126 (44.2%) male learners and 159 (55.8%) female learners. Learners' background language status is difficult to determine with certainty, but two questions were included in the test to provide information on this variable: "*What language(s) do **you** speak at home the most?"* and, *"What language(s) **do people in your home** speak the most?"* Using these two questions,

[6] All South African schools are divided into economic quintiles, with the 'least poor' 20% of schools being classified as quintile 5 and the 'poorest' 20% as quintile 1.

the assumption was made that learners who did not list English as one of their most common spoken languages as well as it being spoken at home were thus not 'home' or 'first' language English learners. Following this assumption, 143 (50.2%) learners listed English as being among their own **and** their family's most commonly spoken languages and thus were understood as L1 learners. The remaining 142 (49.8%) did not list English in their responses to **both** of the questions and were thus understood as L2 learners in this study.

U.S. Sample (Secondary Analysis):

The original sample for the CALS-I when piloted in the United States comprised a total of 6,647 fourth- to eighth-grade students attending urban K–8 schools in the northeast region of the United States. The sample was balanced by gender (Female 50.1% and Male 49.9%), with a majority (81%) of learners receiving a free or reduced-fee lunch – an indicator of learners hailing from low-income families. Some 5,825 (88%) of the learners were classified as English Proficient, with the remaining 822 (12%) classified as English Language Learners.

Measures

The original CALS-I was modified only to remove references to concepts that were thought not to be in common use in South Africa (i.e. sports like 'baseball' were replaced with 'cricket' etc.) and to ensure that names used in the test were better rooted in South African conventions (i.e. names like 'Jenny' were changed to 'Karabo' etc.). All questions on the test retained the identical form and format to preserve the linguistic integrity of the original test. The resulting version of the test was dubbed the CALS-I-ZA.

The CALS-I was administered to the original US-based sample as detailed by Uccelli et. al. (2015), and it is against this dataset that the results of the CALS-I-ZA were compared.

Since the CALS-I-ZA and CALS-I are identical in form and format with only very minor modifications made to the ZA version of the test, it was possible to directly equate the two tests. Kolen and Brennan (2004) argue that in order to validly equate two tests, at least four aspects or "commonalities" should be considered:

1. **Inferences:** To what extent are the two test forms used to draw similar inferences? In the case of the two forms of the CALS-I the inferences drawn are intended to be identical in nature.
2. **Constructs:** To what extent do the two tests measure the same construct? Again the two forms of the CALS-I are intended to directly measure the same construct.
3. **Populations:** To what extent are the two tests designed to be used with the same populations? It is on this criterion that the two tests diverge, since it cannot be assumed that the original United States-based sample and the South African sample would be drawn from comparable populations.
4. **Measurement characteristics:** To what extent do the two tests share common measurement characteristics such as test length, test format, item types etc. In this regard the two versions of the CALS-I are identical.

The CALS-I-ZA was administered to learners during school hours before 11am in five different sittings with individual learner groups.

Analytic plan

With the above in mind, it was decided to compare the pattern of results obtained on the CALS-I and the CALS-I-ZA using a Differential Test Functioning (DTF) procedure in the

Winsteps Software Package (Linacre, 2023). The DTF procedure compares the item difficulties independently obtained from two separate Rasch measurement models. This would allow the researchers to observe if all items in the CALS-I-ZA were still conforming to the model as derived from the original CALS-I.

In order to examine if the unidimensionality of the CALS construct was also evident for the CALS-I-ZA participants, it was decided that the pattern of results on the CALS-I-ZA would also be subjected to a principal component analysis.

Results

Descriptive statistics were derived for the CALS-I-ZA to determine the basic properties of the test as shown in Table 1 below. Although this did not affect the overall functioning of the test, a subsequent revision of the CALS-I-ZA will take account of this finding and alternative word lists will be tested in order to obtain a full range of scores.

Table 1: Descriptive statistics CALS-I-ZA

	N	Minimum	Maximum	Mean	Std. Deviation	% Correct
Connectives	285	0	10	5,7	2,6	57,3%
Tracking Themes	285	0	5	2,8	1,5	56,5%
Organising Argumentative Texts	285	0	3	0,9	1,0	28,8%

Unpacking Words	285	0	10	6,6	2,2	55,3%
Comprehending Complex Sentences	285	0	4	2,8	1,1	70,9%
Identifying Definitions	285	0	3	2,4	0,9	79,1%
Identifying Epistemic Stance	285	0	8	5,4	1,8	67,8%
Metalinguistic Items	285	0	6	2,9	1,3	48,0%
Total	285	7	48	29,6	8,9	57,9%

The original CALS-I and the CALS-I-ZA were compared using the DTF procedure as shown in table 2 below. It emerged that the item difficulties across the two versions of the test correlated very strongly at .93. In addition, the root mean square error of approximation (RMSEA) was found to be less than .05, and both CFI/TLI were very close to the .95 level (.943 and .942 respectively). Finally, the chi-square test of model fit was non-significant indicating that the model had a convincing fit across both the SA and US samples.

Table 2: Test of Model Fit between CALS-I and CALS-I-ZA

RMSEA (Root Mean Square Error Of Approximation)

Estimate 0.026

90 Percent C.I. 0.026 0.027

Probability RMSEA <= .05 1.000

CFI/TLI

CFI 0.943

TLI 0.942

Chi-Square Test of Model Fit for the Baseline Model

Value 105443.174

Degrees of Freedom 2352

P-Value 0.0000

Correlation 0,925437187

The above comparison shows that the CALS-I-ZA has produced a remarkably similar pattern of results to that of the CALS-I, and the fit between the two versions of the tests is robust. Indeed the very strong correlation between the two versions of the test was unexpected given the different socio-economic and linguistic profiles of the United States and South Africa. The very strong correlation was also surprising because the two samples were largely

dissimilar in terms of language status, with 88% of the US sample classified as English proficient – while just 50.2% of the South African sample could be placed in this category.

Table 3: Results from Principal Component Analysis of CALS-I-ZA tasks

Variable	Eigenvalue	Explained Variation	Loading
CALS Construct	3.81	0.48	
Connecting Ideas			0,853
Tracking Themes			0,707
Organising Argumentative Texts			0,600
Unpacking Words			0,698
Comprehending Complex Sentences			0,626
Identifying Definitions			0,633

Identifying Epistemic Stance	0,718
Metalinguistic Items	0,653

As indicated in Table 3 above, the principal component analysis compared the task specific scores for each subtest. The results of the analysis revealed that only one eigenvalue was greater than 1, and that this factor explained 0.48 of the variance in the sample. Thus, as for the U.S. CALS-I, the CALS-I-ZA was shown to be measuring a unidimensional construct when administered in South Africa.

Discussion

Research Question 1:

Do the items on the Core Academic Language Instrument ZA-Version (CALS-I-ZA) display robustly similar functioning to those on the original CALS-I when tested with a large sample of South African Grade 6 learners?

The results of this research support the contention that the CALS construct remains robust when tested in a culturally and linguistically dissimilar environment to that in which it was developed. The functioning of the items is remarkably similar across the two samples in this study – with a correlation just above .9.

This provides strong evidence that the CALS construct is relevant for identifying a constellation of fundamental skills that underlie how learners deploy the English language in

school settings. The strong model-fit provides a neat answer to this first research question, in that the pattern of performance in the South African sample is similar enough to that of the US sample that it is easy to argue that the *CALS-I*-ZA can be validly deployed in South Africa to provide information on fundamental academic language skills. Indeed, the researchers were surprised to observe the very strong model fit, given the notably different socio-economic and linguistic profiles of the South African and United States samples. It must be re-iterated that only minor modifications to the original CALS-I were made in the conversion to the CALS-I-ZA, in that some words were altered in certain items to better fit the South African common lexicon ("sneakers" became "running shoes" for example). In other instances, names in the original CALS-I to provide a better fit for South African naming conventions ("Kim" became "Thandi" etc.). Finally, where sporting activities were mentioned, the sport and accompanying picture/s were altered to conform to sporting activities more commonly found in South Africa ("baseball" became "cricket" etc.).

These minor modifications kept the form and format of the items in the CALS-I entirely intact for deployment in South Africa as the CALS-I-ZA. Originally it was assumed that certain items would require more extensive modification once they were piloted in South Africa, and the very robust fit between the two tests was somewhat unexpected. It is clear from these results that the CALS-I-ZA can be administered in South African classrooms and will provide similar information to that provided by the CALS-I in US settings.

Research Question 2

Do the patterns of performance of the original CALS-I *and the* CALS-I-*ZA suggest that the CALS construct can be validly tested in South Africa?*

Both versions of the CALS-I provided evidence of measuring a unitary construct in both settings.

Given the robust model-fit between the two versions of the test, the second research question must be answered in the affirmative: It is possible to validly deploy the CALS-I-ZA in South Africa to test the CALS construct.

Given that the construct has remained reliable across culturally and linguistically dissimilar settings, it seems ever more likely that CALS represents a constellation of skills that underlie school-relevant language use. The skills are discrete, well-defined, and individually testable. This provides enormous utility to the educator or assessor, in that it may be possible to identify particular linguistic skills that are preventing learners from expressing their true abilities in academic settings.

While the CALS construct is not yet thought to be exhaustive in the skills that it measures, however, the skillset that is tested by CALS nonetheless provides a solid groundwork for fundamental and fully operationalised cross-disciplinary Academic Language skills at the middle-school level. Culturally, linguistically, and socio-economically there are very large differences between the United States and South Africa, and yet the CALS construct functions almost identically when tested in these divergent settings, presumably because it focuses on the language of high utility for school learning.

The fundamental nature of CALS is supported by the results of this research, and it opens up exciting possibilities both for diagnostic assessment of school-relevant language skills and also possibly for intervention strategies. By moving this set of skills from the realm of the implicit to the explicit, it is now possible to not only identify where learners have specific

linguistic strengths and weaknesses, but in future it may be possible to design instructional programmes that use CALS as a grounding principle.

CALS also represents fertile ground for instructional design given its cross-curricular nature. It is not unreasonable to imagine CALS forming the bedrock of 'language across the curriculum' approaches, and embedding the idea of Academic Language skills being foundational principles for tuition in any discipline at school level.

Further research will take these ideas forward in moving CALS from the realm of diagnostic assessment to that of being a foundational principal for instructional design.

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Chapter 4: Core Academic Language Skills as a predictor of Academic Success in Grade 6 South African Learners

Introduction

Having successfully shown that the CALS construct functions comparably in South Africa to its functioning in the United States, the next step was to show that CALS was related to academic performance. The second strand of the larger argument in this thesis was to show not only that CALS remains robust in South Africa, but also that it has a predictable relationship with academic performance. This relationship had to be established for the final argument for the use of CALS-informed instruction could be advanced. Only if the relationship between CALS and final school results could be shown to be robust, would it then subsequently be possible to argue that therefore the principle of CALS could be translated from the assessment paradigm into a pedagogical/instructional paradigm.

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Core Academic Language Skills as a predictor of Academic Success in Grade 6 South African Learners

Abstract

This article explores the relationship between Core Academic Language Skills (CALS) – a construct representing a set of high-utility language skills needed to manage the linguistic features prevalent in academic texts across content areas – and schooling outcomes. There has long been an understanding that there is a distinction between Academic Language and Colloquial language, originally described by Jim Cummins (1976) as Cognitive Academic Language Proficiency (CALP) and Basic Interpersonal Communication Skills (BICS). The construct has only recently been operationalised (Uccelli et. Al., 2015) the individual skills and competencies that underlie CALP. The CALS construct describes an empirically testable set of competencies that address this need. This has been used in the development of an assessment instrument aimed at South African learners – the CALS-I-ZA (MacFarlane, Barr & Uccelli, 2022) – and this paper investigates if there is a measurable link between this assessment and schooling outcomes for a sample of Grade 6 learners in two public schools in Gauteng. Schooling outcomes have been measured using the Gauteng Provincial Common Assessments – a provincial examination intended to measure schooling outcomes on a comparable assessment instrument. The study showed that there is a moderately strong correlation between the CALS-I-ZA and the provincial Common Examinations ($r = 0.64$ and $r = 0.65$). This predictive relationship between CALS and schooling outcomes leads to an argument for direct instruction in CALS as an embedded feature of pedagogy in South Africa.

Keywords: Academic language; Basic Interpersonal Communication Skills; BICS; Cognitive Academic Language Proficiency; CALP; Core Academic Language Skills; CALS; common examinations; schooling outcomes

Introduction

Language and academic success in a schooling context are inextricably connected, and researchers have been trying to delineate the links between the two for many decades (Bailey, 2007, Cummins, 1976, 1979; Heugh, 2007, Yeld, 2001). In essence, many of the investigations have centred around the premise that there are two distinct types of language usage – basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). Where BICS can be conceived of as the language of the playground, CALP is simply understood as the language of the classroom (Fillmore & Snow, 2000).

By now it has long been understood that academic success has a strong relationship to CALP (Skutnabb-Kangas & Toukomaa, 1976), but the disaggregated skills that CALP encompasses have proved to be challenging to delineate, define, and assess (Uccelli, Barr, Dobbs, Galloway, Meneses & Sánchez, 2015). Without such specificity, the categories of CALP and BICS remain intuitively appealing, but do not provide concrete pedagogical or assessment strategies that can be directly deployed in classrooms.

Recently, however, a construct has been described and tested that seems to provide a degree of clarity on the skillset that may underlie CALP – the construct of Core Academic Language Skills (CALS). This construct has been shown to provide fundamental and robust measures of discrete language abilities in English that have the potential to operationalise some of the skills that inform the larger construct of CALP (Uccelli, Barr, et al., 2015). Initially the CALS construct was developed and investigated using children in the United States (Uccelli, Barr, et al., 2015, Uccelli, Galloway, Barr, Meneses & Dobbs, 2015b; Uccelli & Galloway, 2017), but concerns about its applicability outside of that socio-cultural environment have largely been addressed (MacFarlane et al., 2022; Meneses, Uccelli, Santelices, Ruiz Zúñiga, Acevedo & Figueroa, 2017).

While the CALS construct has been shown to remain robust when tested in a sample of Grade 6 learners in South Africa (MacFarlane et al., 2022) it is not yet clear whether this construct is directly associated with schooling results in this context.

This paper assessed the link between academic success and CALS in a sample of Grade 6 learners in South Africa.

Literature Review and Theoretical Framework

Core academic language skills

A vast majority of formal learning takes place through the medium of a specific language, and normally the language of instruction is determined through national structures like Departments of Education and similar bodies. In general, the national or local language of the country or region is determined to be the language of instruction – and in some cases this is determined by specific schools or regional bodies. In South Africa, this language of instruction is then designated (normally at individual school level) as the 'language of learning and teaching' (LOLT) (Wildsmith-Cromarty & Balfour, 2019) and is used for instructional purposes as well as assessment.

Much research (Heugh, 2009; Heugh, Prinsloo, Makgamatha, Diedericks & Winnaar, 2017; Howie, Combrinck, Roux, Tshele, Mokoena & McLeod-Palane, 2017; Snow & Uccelli, 2009) has already made it clear that proficiency in the LOLT has a strong association with success in schooling. This is intuitively clear if just the basic level of decoding skills are considered, where there must be an understanding of the direct meaning of the words and the ability to link the signifier with the signified. As language proficiency increases in complexity beyond decoding it becomes increasingly complex to identify directly the

processes and skills that underpin skilled, or 'academic', language use. It is clear that such language use goes far beyond decoding or vocabulary (Uccelli, Galloway, et al., 2015), but until recently it has been difficult to empirically identify what skills could encompass language use that is 'academic' in nature (Uccelli, Barr, et al., 2015). Although this paper uses the broad categories of BICS and CALP to delineate the two types of language use, it does not argue for any kind of hard boundary between the two, a precipice beyond which language usage becomes 'academic' in nature or vice-versa. Rather, language use and the deployment of linguistic skills is understood on a continuum where the extreme ends may be clearly colloquial or clearly academic, but most language use will fall somewhere between the two poles.

As learners progress through their schooling career into higher grades, so does the demand for the production and consumption of more 'academic' texts increase (Common Core State Standards Initiative, 2010; Department of Basic Education, 2011; Graham & Perin, 2007; Nippold & Sun, 2010; Phillips Galloway & Uccelli, 2019). Oral language production adequately supports learners in the early grades of schooling, where there is a greater focus on the production of oral narrative and short narrative texts. As learners advance into higher grades, however, so does the demand for additional skills and the production of a broader array of text types. Comparisons made between early and later-grade text production show that each successive grade requires the use of more specialised language and more production of expository rather than narrative texts (Beers & Nagy, 2011; Berman & Nir-Sagiv, 2007; Galloway & Uccelli, 2019; Hall-Mills & Apel, 2015).

Expository texts contain many of the features typical of 'academic' texts (writing in the passive voice, use of complex noun phrases, multi-clausal sentence structures etc.) (Galloway & Uccelli, 2019; Meneses et al., 2017) while also including a great deal of discipline specific

language. While significant attention has been paid to the development of specialised vocabulary in various disciplines (Halliday & Martin, 2003; Moje, 2015; Snow, 2010), it is seldom understood that academic texts also contain a core set of grammatical and discourse features that *"have their genesis in a shared set of communicative demands faced by academic writers"* (Galloway & Uccelli, 2019:734). This set of skills has been named Core Academic Language Skills (CALS) and represents a set of high-utility language skills needed to manage the linguistic features prevalent in academic texts across content areas (Uccelli, Barr, et al., 2015; Uccelli, Galloway, et al., 2015; MacFarlane et al., 2022).

The constellation of school-relevant language forms and functions representing the CALS construct was developed in the United States (Uccelli, Barr, et al., 2015) but remains robust when deployed in the South African schooling environment (MacFarlane et al., 2022) as well as in other locales (Meneses et al., 2017; Meneses, Uccelli & Ruiz, 2020). While the assessment of CALS in diverse cultures and languages is an important step in understanding the measurement and functioning of the skillset, it is equally important to show that the CALS construct has a direct and perhaps predictive relationship with schooling outcomes.

The following section describes the broad linguistic and schooling environment in South Africa, and ultimately provides reasoning for the instrument chosen to compare against the CALS as a proxy for 'academic achievement.

Language and academic success in South Africa

While English is the language of learning and teaching for the overwhelming majority of learners in the South African schooling system (Alexander, 2010; Department of Basic Education, 2010), it is the home or first language of just 8.1% of the population (Statistics

South Africa, 2020). South Africa is, unfortunately, not an outlier in this regard, as Maringe and Chiramba (2021) note, a feature of a large number of post-colonial countries is that the language of the erstwhile colonisers remains the dominant language in the spheres of education and business.

In the case of South Africa, the apartheid system was a deliberate attempt to strip local Indigenous people of their cultural heritage and values through an organised system of epistemicide (Grosfoguel, 2007). This project was achieved through various forms of intellectual, cultural, religious, and social violence (Maringe & Chiramba, 2021) – and has resulted in a post-apartheid education system in which most learners have been minoritized in terms of their linguistic status. An argument for home language instruction for learners even in the early grades is vexed by several factors, not least of which being that there is a strong preference on the part of both learners and parents that English be the language of instruction (de Wet, 2002; Roberts, Kivilu & Davids, 2010).

Linguistic and cultural heritage in South Africa on aggregate still coincide with poverty and rurality (Chikoko & Mthembu, 2021). Indeed, many researchers (Fleisch, 2008; Spaull & Jansen, 2019; Spaull & Kotze, 2015; Van Der Berg, 2008) have noted that two systems of schooling have emerged in the post-apartheid era: one urban, well-resourced, and English-proficient; the other rural, poorly resourced, and with limited English proficiency. Language, particularly the language of learning and teaching, has long been a battleground in South Africa (Lanham, 1996). When the Union Act of 1910 was promulgated, it saw the joint statutory recognition of English and Afrikaans as the official languages of South Africa. Statutes aside, however, it was clear that economic power was still vested primarily in the English language, and the need to assert the place of Afrikaans as the language of the nation and crucially of business saw the rise of the concept of *Taalstryd* (language struggle). As

Lanham (1996:22) notes: “language loyalty became the biggest division in South African society.” It was also around this time that there was a rapid rise of urbanised Black people who were able to enter the workplace through the use of English. Thus, the politically dominant Afrikaner Nationalist movement began to perceive a new threat associated with the English language – the economic and political emancipation of the black population.

In 1953, perhaps one of the cruellest instruments of apartheid oppression was introduced in the form of the Bantu Education Act, which enforced mother-tongue instruction for Black children alongside a systemic withdrawal of English from the neutered schooling system designed for black people. Felix Banda (2000:53) puts it well when he notes that education was seen as “a weapon through which to advance Afrikaans and reduce the influence of English in South Africa.” Moreover, that “the Afrikaner nationalist government went on a deliberate campaign uprooting white English mother-tongue teachers from Bantu education, thereby denying black children authentic models of English and well-trained, experienced teachers.” The anger towards the system of enforced mother-tongue and Afrikaans instruction in the Black community ultimately boiled over and was expressed in the form of the 1976 Soweto uprising which were explicitly a protest against Afrikaans medium instruction. Banda (2000) further argues that the collapse of the Bantu education system and its historical association with forced mother-tongue and Afrikaans language instruction has left its mark on the black community, and has resulted in an overwhelming preference for English medium instruction, and lingering doubts over the economic usefulness of indigenous languages (Banda, 2000; Roberts et al., 2010).

Ultimately this history has resulted in the South African schooling system being overwhelmingly English-language based, while some 92% of the South African population must learn and work in English as their second or additional language (Statistics South Africa,

2020). It is thus not surprising that English proficiency has been found (Pretorius, 2002; Van Der Slik & Weideman, 2008) to be a predictor of academic achievement in South Africa. Indeed, the South African Department of Basic Education (2011), in the national school curriculum documents, highlights particularly Academic Language Proficiency as fundamental to school success: "The Home Language level provides for language proficiency that reflects the mastery of **basic interpersonal communication skills** required in social situations and the **cognitive academic skills** essential for learning across the curriculum" (Department of Basic Education, 2011:8, emphasis added). And later: "Learning a language should enable learners to acquire the language skills required for academic learning across the curriculum" (Department of Basic Education, 2011:9).

With the above discussion in mind, it must be acknowledged that a concept like "academic achievement" is not unproblematic and should be understood in a broader context than mere marks on a test. This is important to bear in mind when examining the results and methods employed in this study.

Since a quantitative approach has been utilised to answer the question of whether there is an association with CALS and academic achievement, it was necessary to operationalise "academic achievement" numerically. This should not be read to mean that test results and academic achievement are the same, indeed academic achievement is a broad concept associated with subsequent employment, selfhood, economic and social capital and a host of other factors beyond the scope of this study. Thus, the association investigated in this article compares test results against one another, but ultimately the discussion focuses on the potential meaning of the results in a pedagogical and societal sense that goes beyond the numerical results alone.

Research Questions

Research question 1

Is there a relationship between CALS and schooling success in Grade 6 South African learners?

Research question 2

If a relationship between CALS and schooling success exists, what are the implications for assessment and pedagogy in South Africa in Grade 6 learners and more broadly?

Methodology

This research compared the performances of a sample of Grade 6 South African learners on the CALS-I-ZA (n= 89) against the pattern of performance exhibited by the same sample in the Gauteng Provincial Common Examinations which comprise examinations in Mathematics, and Natural Sciences and Technology.

Data collection using the CALS-I-ZA was undertaken through the use of group testing of learners in schools during their normal school hours. All ethics clearances and permissions were obtained from the provincial department of education, the school management, parents, and learners themselves. The Common Examinations are conducted routinely at schools during the school year by the Provincial Department of Education, and only the results of these examinations (matched to the learners in the sample) were used in this study.

The research was undertaken using a socio-cultural pragmatics points of view (Snow & Uccelli, 2009; van Compernolle, 2014) – a view that sees language and language usage developing explicitly for use in various cultural contexts. Language learning is thought to be lifelong in nature, and is informed by the cultural and historical position that the language user finds themselves in. The consequence of using this theoretical lens, is that language learners and language itself are not seen as separated from their contextual position, and language use is not neutral in its expression but rather goal directed and defined or constrained by the context in which it is expressed.

Participants

The sample comprised 89 Grade 6 learners with a wide range of language backgrounds. The learners in this study were sourced from two urban public schools in South Africa in the Gauteng province. Both schools were in Quintile 4 – and were thus "fee paying" schools. Since learners were already assigned to classes by the schools, randomisation was not possible. Although care was taken in selecting schools with a range of learners from various socio-economic levels, the sample was largely convenience based.

The sample of 89 learners was somewhat skewed in favour of females, with 36 (40.4%) male learners and 53 (59.6%) female learners sampled. Two questions were included in the demographic information portion of the CALS-I-ZA to provide information on learners' language status: "*What language(s) do **you** speak at home the most?"* and, *"What language(s) **do people in your home** speak the most?"* The assumption was made that learners who did not list English as one of their most common spoken languages as well as it being spoken at home were not "home" or "first" language English learners. Based on this assumption, some

38 (42.7%) learners were classified as not having English as a “home” or “first” language (L2) while the remaining 51 (57.3%) were understood as L1 learners.

Measures

The CALS-I-ZA was previously piloted and validated as detailed by MacFarlane et. al. (2022) and the measure for academic performance that was chosen is the November Common Examinations developed by the Gauteng Department of Education. Two Common Examinations were utilised, the Mathematics Examination and the Natural Sciences and Technology Examination (Gauteng Department of Education, 2016). Since learners in the Intermediate Phase of schooling (Grades 4-6) are generally assessed using tests and examinations that are internally developed at individual schools, it was important to find a measure of academic performance that was externally developed and comparable across different schools. The provincially set examinations were chosen for this purpose not only because of their standardised administration across public schools in Gauteng, but also because the examinations are set in accordance with the expected outcomes and cognitive levels[7] for Grade 6 learners in South Africa.

The Common Examinations were administered routinely as part of the provincial monitoring of schools, and the resultant data was retrieved with permission from the Provincial Department, the Schools, learners, and parents involved and then linked to the learners in this study before being anonymised. The Common Examinations are assessments that are standardised and administered to all learners in a Province to provide comparable data on school achievement. They consist of an assessment in Mathematics, and another in

[7] All South African examinations are constructed based on Bloom’s Revised Taxonomy (Anderson & Bloom, 2001) and in some instances on Barrett’s Taxonomy (Clymer, 1968).

Natural Sciences and Technology. The key feature that made these assessments appropriate for this study was the fact that they represented the same standardised measure of school achievement for all learners in the study. This provided comparable data that allowed for comparisons to be made across different classes and schools. Ultimately – the Common Examinations are treated in this study as a proxy for 'Schooling Outcomes' as a generic construct, and crucially are do not represent language-based subjects. In this way it is possible to ascertain if there is a link between CALS and general schooling outcomes.

The CALS-I-ZA is a measure of Core Academic Language Skills that have been shown to co-occur with school-relevant language development (MacFarlane et al., 2022; Uccelli, Barr, et al., 2015; Uccelli & Galloway, 2017). The measure consists of the following sub-tests:

1) *Organizing Argumentative Texts:* This sub-test requires learners to organise four to six fragments of a brief essay with each fragment introduced by a common marker such as *in my opinion; one reason; in conclusion* etc. The fragments are organised into a typical argumentative text that follows a conventional argumentative text structure. This text type is among the most prevalent in academic discourse (Rex, Thomas & Engel, 2010) and skills in structuring narratives have been shown to have a positive association with reading comprehension (Barton-Hulsey, Sevcik & Romski, 2017). Organising argumentative texts is hypothesised to have a positive association with the ability to comprehend and organise academic writing (Uccelli, Galloway, et al., 2015).
2) *Connecting Ideas:* In this subtest learners are asked to select the missing marker from among four options (e.g., Sam broke his leg _____, he continues to play cricket. *Consequently, nevertheless, namely, thus*). This demonstrates skills in understanding school-relevant words that connect ideas and in using those words to correctly organise intra-sentential relations. These types of discourse markers have been shown to affect

receptive skills such as such as processing of and learning from academic texts (Farahani & Gane, 2022).

3) *Tracking Themes:* Students are asked to match the underlined texts with its antecedent by selecting among three options (e.g., China resisted the move for change. In 1989, students protested to demand changes, but the army opposed those changes. Troops were sent to stop **the movement**. *China, The Army, The Student Protests*) This task aims to assess each learner's ability to understand *conceptual anaphora* – anaphors used to encapsulate a complex idea or collection of ideas (Biber, Conrad & Reppen, 1998). Skills in resolving such conceptual anaphora have been shown to have a positive association with reading comprehension (García, Bustos & Sánchez, 2015).
4) *Comprehending complex sentences:* In this subtest the administrator reads a sentence and learners are asked to select the picture that corresponds to the target sentence. Four pictures are presented, three of which depict sentences altered by a grammatical element (e.g., *The boy the dog sees is running*). This allows learners to demonstrate the ability to use syntactic cues in a sentence to comprehend precise meaning, a skill that has been shown to have a positive association with reading comprehension (Mokhtari & Thompson, 2006; Taylor, Greenberg, Laures-Gore & Wise, 2012).
5) *Unpacking Words:* The administrator reads a morphologically derived word followed by an incomplete sentence, and learners are asked to complete the sentence by extracting the base from the derived word (e.g., *Activity. The children are very* _____.) The ability to decompose morphologically complex words has been shown to have a positive association with reading comprehension (Carlisle, 2000; Lesaux & Kieffer, 2010).
6) *Awareness of academic register:* Learners are asked to identify the most academic definition from a set of three definitions of the same familiar word. Knowledge of the

language of formal and academic definitions has been identified as a predictor of later academic success (Benelli, Belacchi, Gini, & Lucangeli, 2006).

7) *Identifying epistemic stance:* The administrator reads a set of claims from "scientists" that include a stance marker. Learners are then asked to determine how sure each scientist is about the claim that they have made (e.g., *"The rock appears to be from space." Yes, Maybe Yes, Maybe No, No*) Skills in identifying the epistemic stance of a writer have been shown to be positively associated with the comprehension of academic texts (Uccelli, Barr, et al., 2015).
8) *Understanding metalinguistic vocabulary:* The administrator reads two sentences from an informational article followed by a one-sentence reaction from a respondent. Learners are then asked to select one word that best describes the respondent's reaction from a list of four possible options (e.g., *opposing, quoting, describing, exaggerating)*. The ability to understand words that label or qualify language or thinking moves has been shown to have a positive association with reading comprehension (Kieffer & Lesaux, 2012).

(Adapted from Uccelli & Galloway, 2017)

The CALS-I-ZA was administered to learners during school hours before 11am in four different sittings with individual learner groups. The Common Examinations were administered and marked by the learners' class teachers during school hours.

Analytic Plan

In order to answer the first research question, it was decided that the overall results as well as those of each sub-test of the CALS-I-ZA should be compared against the Maths and NST Common Examination results using Pearson's Product Moment Correlation Coefficient in SPSS 17 (SPSS, 2017). The second research question hinged on the outcome of the first, and

any association between CALS & academic results evidenced is discussed, and an analysis of the implications for the South African education system – both in terms of classroom pedagogy and curriculum design – is undertaken.

Results

Descriptive statistics were derived for the CALS-I-ZA and the Common Examination to determine the basic properties of the instruments as shown in Table 1 below.

Table 1: Descriptive statistics CALS-I-ZA & Common Examinations

	N	Minimum	Maximum	Mean	Std. Deviation
Maths Common Exam	89	32.0	99.0	63.9	15.1
NST Common Exam	89	50.0	100.0	80.5	11.4
Connecting ideas	89	1.0	10.0	6.3	2.3
Tracking themes	89	0.0	5.0	3.2	1.4
Argumentative texts	89	0.0	3.0	1.1	1.1
Breaking words	89	3.0	10.0	7.6	1.9
Complex sentences	89	0.0	4.0	3.0	0.9
Identifying definitions	89	0.0	3.0	2.6	0.8

Epistemic stance	89	2.0	8.0	5.7	1.7
Metalinguistics	89	0.0	6.0	3.0	1.2
CALS-I-ZA combined	89	31.4	94.1	63.5	15.1

The descriptive statistics in table 1 above reveal a high degree of correspondence between the patterns of results obtained on the CALS-I-ZA and the Maths Common Examination. On all descriptive metrics, these two assessments are highly similar. The NST Common Examination follows a noticeably different pattern, and indeed proved to be the least challenging for learners in the sample.

While the descriptive statistics are useful, in order to determine the predictive relationship between the CALS-I-ZA and the Common Examinations, a correlation analysis was undertaken as indicated in the results displayed in Table 2, below.

Table 2: Correlations between CALS-I-ZA & Common Examinations

		Maths Common Exam	NST Common Exam	CALS-I-ZA
Maths Common Exam	Pearson Correlation	1	.625*	.642*
	Sig. (2-tailed)		.000	.000
	N	89	89	89
NST Common Exam	Pearson Correlation	.625*	1	.650*

	Sig. (2-tailed)	.000		.000
	N	89	89	89
CALS-I-ZA	Pearson Correlation	.642*	.650*	1
	Sig. (2-tailed)	.000	.000	
	N	89	89	89

Note. *Correlation is significant at the 0.01 level (2-tailed).

The first thing to notice in the above table is that all the instruments display a moderately strong correlation with one another ranging from .625 to .650. It was expected that the two Common Examinations would correlate strongly with one another for several reasons. First being that the curriculum at Grade 6 level in South Africa is largely integrated at this level, with the subject offering including only languages (at Home Language and First Additional Language levels), Mathematics, Natural Sciences and Technology, Social Sciences, and Life Skills. The South African national curriculum takes an integrative approach in the early grades and becomes increasingly differentiated into discrete subjects at each subsequent level (from Foundation Phase through Intermediate, Senior, and Further Education Phases) (Department of Basic Education, 2011). Second, the common exams are intended to provide comparable information about learners, and thus it is not unusual that the examinations would correlate.

Importantly both Common Examinations strongest correlations are with the CALS-I-ZA with NST at r = .642 and Maths at r = .650. It is also important to note that performance on the CALS-I-ZA is significantly related to the results on the Common Examinations at the 0.01 level. This suggests that the CALS-I-ZA is a moderately strong predictor of academic

achievement in Mathematics and NST at the Grade 6 level in South Africa, and therefore that it broadly predicts 'schooling outcomes'.

Discussion

Research Question 1

Is there a relationship between CALS and schooling success in Grade 6 South African learners?

The results of this research indicate that there is a moderately strong relationship between the CALS-I-ZA and the Common Examinations. Since schooling success is operationalised in this paper as the Common Examinations, the research question must be answered in the affirmative: Yes. There is a positive relationship between the CALS and schooling success in Grade 6 South African learners. The fact that these core language skills are related to schooling success is unsurprising, as there is a great deal of research demonstrating that language mastery is a key variable related to academic success (Manyike & Lemmer, 2014; Motilal, 2021; Van Rooy & Coetzee-Van Rooy, 2015). Indeed, the heavy emphasis on language in education both at the national level (Department of Basic Education, 2010, 2011; South African Government, 1997) and in academia (Cliff, 2015; Yeld, 2001; Yeld, Prince, Cliff & Bohlmann, 2012) attest to the recognition that this connection exists.

The strength of the CALS as a construct is that the set of skills identified has been shown to form a fundamental building block of academic language skills. Indeed, CALS goes a long way towards providing an operational definition of academic language skills. Because the skills in CALS are explicitly understood and available for assessment, they are thus amenable to deployment in classrooms across the subject offering. The CALS construct has been

developed to operationalise cross-disciplinary academic language skills of high utility that are relevant across disciplines. Thus, these cross-disciplinary and fundamental skills, having been shown to be valid and reliable in the South African context (MacFarlane, et al., 2022) and this paper now shows that the construct is closely associated with schooling success in a numerically based subject (Mathematics) and a content-based subject (NST) at Grade 6 level.

This leads directly to the discussion linked to the second research question in this paper.

Research Question 2

If a relationship between CALS and schooling success exists, what are the implications for assessment and pedagogy in South Africa?

The significant relationship between CALS and schooling success for Grade 6 learners in South Africa provides a strong basis to argue for direct instruction in these core skills. Since the CALS construct has been developed to explore 'school-relevant language skills' (Uccelli, Barr, et al., 2015) it is a short leap to take to argue that being able to explicitly identify such skills should allow direct instruction in these skills. Ultimately this leads to an argument for integration of these academic language skills into the curriculum to develop disciplinary ways of thinking, reading and writing.

Conclusion

The CALS construct is a skillset that underlies school-relevant language use in context and across schooling disciplines. Thus, the instruction that is called for is rather aimed at promoting skills and would not aim at a content-driven approach. CALS represents a skillset

and not a knowledge domain, and the constellation of skills is generic and deliberately cross-disciplinary in nature. Objections aimed at language across the curriculum that hinge on teachers having specific content expertise and having limited time to provide language instruction in addition to discipline-specific content and skills instruction, do not hold in the face of CALS.

Since it has been shown that CALS form a cross-disciplinary substrate that is both relevant and applicable across content domains, they do not represent explicit language instruction alone, but also represent the possibility of direct instruction in a skillset that can be deployed across schooling and academic settings. CALS also, because of their skills-based nature, are eminently flexible and modifiable to fit into any intra-disciplinary instruction. Every discipline has a broadly delineated vocabulary, register, and argumentative strategy. Thus, while the specifics of school-based disciplines will vary widely, every discipline will be primarily taught and learned through the medium of language. Work on CALS both in South Africa and elsewhere has shown, however, that many of the linguistic skills associated with schooling success are indeed generic and are applicable across disciplines. Hence, South African teachers could be teaching CALS as a formal part of the requisite skills within the discipline that they teach in an integrated manner. While the specifics of CALS could be moulded to fit the register, argumentative strategies, and vocabulary of an individual discipline, explicit instruction in these skills would provide both intra-disciplinary and inter-disciplinary benefits for learners.

Recommendations

The above analysis suggests that learners with more advanced academic language skills perform better academically, and it is likely that they will thus be afforded greater opportunities in later life. As discussed previously, there is also a wealth of evidence that shows that South African learners in particular struggle with the demands of language throughout their schooling careers and in later life. Urgent interventions are required to strengthen the instructional models available to South African teachers, and CALS represents enormous potential in this regard. The construct makes school-relevant language skills explicit and goes beyond instruction in vocabulary alone. Indeed, the construct is already beginning to emerge as a basis for curriculum design in the United States (Uccelli, Phillips-Galloway, Aguilar & Allen, 2020). This study highlights that the relationship between the CALS construct and academic achievement in Grade 6 South African learners is strong, and it is thus likely that the testable and empirically robust skills that inform this construct are also directly teachable and may be used as a basis for cross-curricular instruction.

The sample size is relatively small in this research, and is limited to just quintile 4 and 5 learners which may skew the results. Further research should be conducted with larger samples at schools that run the gamut from quintile 1-3, and also in rural classrooms where the linguistic mix of learners will differ from that encountered in the urban classrooms in this study.

A next step for the use of the CALS construct in South Africa would be to build it directly into the teacher training curricula at the undergraduate level. Such instruction would be intended to make teachers explicitly aware of the construct and how it can be deployed both generically and within each teacher's chosen discipline. Such training would also highlight the idea that language learning is a lifelong journey, and language use specific contexts like schooling and academia is a learned skill that can be both taught and improved.

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Chapter 5: Performance of L1 and L2 Grade 6 South African Learners on an Assessment of Core Academic Language Skills

Introduction

Having thus far shown that the CALS construct remains robust in South Africa, and is a strong predictor of academic performance, this final empirical article set out to determine if CALS displayed any differential functioning between language groups. This question was crucial to answer, as the larger argument for the deployment of CALS in South Africa would not hold if it could be shown that CALS functions differently in different language groups. Advocating for a standardised use of CALS-informed instruction would not be reasonable if the CALS construct did not hold the promise of uniform benefits for both L1 and L2 learners in South Africa. Indeed, the very crux of the argument that runs through this thesis is that CALS-informed instruction would be a benefit in addressing the language mismatch in the South African schooling system. If CALS were to be shown to only function optimally for one language group or another, its utility as a standardised instructional tool would be dramatically reduced.

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PERFORMANCE OF L1 AND L2 GRADE 6 SOUTH AFRICAN LEARNERS ON AN ASSESSMENT OF CORE ACADEMIC LANGUAGE SKILLS

ABSTRACT

This study investigates the relationship between the linguistic background/s of South African Grade 6 learners and an instrument measuring Core Academic Language Skills (CALS). The learners' (n = 89) results were divided into two groups based on their most commonly spoken language (either English, L1 or a language other than English, L2). All learners in the study (and indeed the overwhelming majority of South African learners) attend school in an English language immersion setting, where English is the sole language of learning and teaching. The groups were assessed on the CALS-I-ZA, an instrument developed to measure CALS that has been validated in the South African context. This study found that in both the L1 and L2 groups, the CALS-I-ZA showed a strong association with both the provincial Maths Common Exam (r = 0.642) and the provincial Natural Sciences and Technology Exam (r = 0.650). Surprisingly, the home language variable either does not correlate or correlates only very weakly with the other variables, suggesting that L1 or L2 status alone is a weak or increasingly irrelevant predictor of academic success. This research concludes that the strong association between CALS and schooling results remains robust, regardless of L1 or L2 status, and thus, there is compelling evidence to begin deploying the construct as an instructional tool in South African classrooms.

KEYWORDS: Academic language, academic literacy, core academic language skills, assessment

INTRODUCTION

This research investigates the use of a novel assessment instrument, the CALS-I-ZA, in assessing Grade 6 South African learners from various language backgrounds. This instrument is based on the Core Academic Language Skills (CALS) construct operationalised in the United States by Uccelli et al. (2015) and normed for use in South Africa by MacFarlane et al. (2022).

The language of education and assessment in South Africa is overwhelmingly English and, to a lesser extent, Afrikaans (Alexander, 2010; Department of Basic Education, 2010; Maringe & Chiramba, 2021). The dominance of English in the South African education system places the vast majority of South African learners in an extremely difficult position since only a minority of the population, some 9.6% according to the latest official figures (StatsSA, 2022), speak English as a home language or mother tongue—hereafter referred to as their L1. This has wide-ranging consequences for learners and education in South Africa, not the least of which is that the country and its learners fare poorly (on aggregate) in international comparative tests of educational achievement (Howie et al., 2017; SAQMEC IV, 2017). Some would argue that significant inequality and inefficiency in the education system are the roots of such poor performance, and indeed, it must be acknowledged that systemic and socioeconomic challenges cannot be disentangled from the overall performance of the schooling system (Spaull & Jansen, 2019). However, few would disagree that language must be among the factors informing this trend of South African learners' poor performance, on average.

Of particular relevance in the South African schooling system is the construct of Academic Language Proficiency as contrasted with that of Basic Communication Skills. The distinction between such categories of language use, first identified by Cummins (1976; 1979), has proven enormously influential in shaping our understanding of language use in academic settings, even though academic language remained a conceptually appealing construct that remained imprecisely defined until recently (Uccelli et al., 2015). This lack of precision in defining the construct of interest leads to a situation in which academic language proficiency is tested only indirectly and often accidentally in standardised assessments deployed at a school level. While the national curriculum for South Africa acknowledges the centrality of academic language in its introduction, it falls short of defining and operationalising the construct beyond this statement of intent:

> *The Home Language level provides for language proficiency that reflects the* ***basic interpersonal communication skills*** *required in social situations and the* ***cognitive academic skills essential for learning across the curriculum.*** (Department of Basic Education, 2011:8 [emphasis added])

Certainly, once South African learners move into higher education, the construct of academic language proficiency becomes acknowledged both as a determining factor in subsequent university performance (Yeld et al., 2012) and as a key *a priori* metric that might determine university admission/placement (Cliff, 2015). As Van der Merwe (2018: 1) states: *"When students enter university they need to use academic language to engage with content across disciplines".* While the focus on academic language proficiency (in English) is well supported in the South African Higher Education arena, it is not a skill set that is generally explicitly taught in these educational settings. Ultimately, higher education institutions begin interaction and educational intervention with learners/students after their formative schooling career is complete. The many programmes deployed at a University level to assist learners with the development and strengthening of academic language proficiency are valuable, but academic language skills are, in many ways, a prerequisite for University study. Thus, many such interventions may be too late for learners who struggle with academic language.

Another layer of complexity is added when considering that academic language proficiency is an evolving construct that is differentially expressed at different levels of a learner's educational journey (MacFarlane, Barr & Uccelli, 2022). Essentially, the academic language skills expected from a Grade 6 learner, for instance, would be different from those expected from a Grade 9 learner, which would, in turn, differ from the performance of a university student. This continuum of language skills becomes ever more elaborate over a person's lifetime and adds to the complexity of assessing a construct like academic language proficiency, as we must necessarily measure the construct differently and at different levels of complexity, depending on the assessed population. Ultimately, it is clear that academic language and colloquial language are on a continuum, with some features of both present in almost any linguistic construction, although some utterances have features that are

inherently more or less academic (Snow & Uccelli, 2009; Snow, 2010). Ultimately, no language use is completely colloquial or *vice versa*, and features of the CALS construct (like, for example, linking ideas: "Get the ball ***and*** throw it to me") would be present even in playground communication. This argument should alert us to the depth of complexity in measuring a construct like academic language proficiency, which is dramatically bound by context (location, home language, age range, usage intent, etc.). This continuum of language skills from colloquial to academic, which becomes ever more elaborate as a learner moves through the various stages of their educational journey, poses significant challenges to operationalisation and direct instruction. Simply put, what counts as academic language use for a Grade 6 learner would likely represent colloquial language use at the University level. Thus, the targeted measurement of and instruction in such skills must be implemented carefully and appropriately.

Hence, it seems measuring decontextualised utterances or instances of language usage alone would not reveal the operationalised construct of academic language proficiency. Ideally, a fully operationalised construct would reveal an underlying set of skills that, while becoming more elaborate over time, would allow for fundamental and stable tools for measuring and teaching academic language usage. Recently, the construct of Core Academic Language Skills (CALS) has been identified, which explicitly operationalises an empirically robust set of academic language skills. The construct and the version of the assessment instrument normed for South African learners (the CALS-I-ZA) have been empirically tested and found robust in the South African school setting (MacFarlane et al., 2022). CALS represents a constellation of school-relevant English-language skills of high utility that are relevant across the subject spectrum (Uccelli & Galloway, 2017). It is also targeted to measure academic language skills within a certain set of grade boundaries (Grades 4–8 in the current study) and may provide information on areas where focused instruction on particular skills could be successfully employed. However, the instrument once again remains an English-language-based assessment intended for use in the thoroughly multilingual classrooms of South Africa.

There are very few monolingual English classrooms in South Africa, and in this context, there is consequently only limited utility in understanding the functioning of CALS in a monolingual

setting. Rather, the South African schooling system is characterised mainly as one that teaches and assesses learners in their additional language (L2),[8] English (Nugraha, 2018).

With the above in mind, this article explores the possibility of using the CALS construct and its associated assessment (the CALS-I-ZA) to make valid judgements about both L1 and L2 learners in South Africa.

A BRIEF HISTORY OF LANGUAGE EDUCATION IN SOUTH AFRICA

Although the history of language education in South Africa is far too complex to reexamine in this paper, the reader should have some understanding of how English became the *de facto* language of instruction in an overwhelmingly multilingual nation like South Africa. Thus, below is an overview of key historical points to contextualise this research.

The recent history of South Africa is inextricably bound to language and language policy; indeed, the concept of *taalstryd*[9] was coined during the apartheid regime to describe a focused project to deliberately alter the linguistic profile of South Africans (Lanham, 1996). One of the great victories of democratic South Africa was the recognition within the South African Constitution (Act 108 of 1996) of eleven official languages. Theoretically, every learner is entitled to tuition in their home language if it is an official language; in reality, the South African schooling system favours English to an overwhelming degree (Nguyen, 2022). The historical reasons for this mismatch between the language status of the majority of the population and the Language of Learning and Teaching (LoLT) are complex, but among them are that under the Apartheid-era education system designed to oppress the non-white majority in South Africa (termed Bantu Education), learners were taught exclusively in home languages and nominally in English or Afrikaans (Lafon, 2009). The Afrikaans Medium Decree was issued in 1975 (which required many crucial subjects to be taught exclusively in Afrikaans) and led to deep resentment of the use of Afrikaans and a strong preference for tuition in

[8]For most South African learners, English is among the many languages they use in their daily lives. Thus, L2 does not refer to a second language but rather to a language that a learner uses in addition to their home language.
[9]Language struggle

English (Ndlovu, 2011)—a preference that culminated in the 1976 Soweto uprising, which was sparked by schoolchildren fighting for the right to be taught in English.

While the option of mother-tongue (L1) instruction is available for all South African learners between Grades 1 and 3, the Foundation Phase, from Grade 4 onwards, the instructional model moves to one of English immersion for the majority of South African learners. In an English immersion model, learners receive instruction solely in English, and all schooling takes place through this medium of instruction. This model of instruction has shown mixed results, with some studies showing overall negative outcomes for learners (Nguyen, 2022) while others have produced positive results (Swain & Cummins, 1979). In interpreting these results, it has been argued that the success of an immersion programme relies on the continued high status of the learners' L1 while they receive instruction only in their L2 (Cummins, 1996; Stroud, 2001). Essentially, these researchers have demonstrated that if the L1 of a learner is understood as a high-status language, an immersion programme in the L2 will have a lower chance of causing deleterious effects on the L1 while enjoying a greater chance of cementing skills within the L2. Conversely, if the L1 is considered or represented as a low-status language, the erosion of L1 skills is likely, along with lower levels of academic language skills in the L2 (Stroud, 2001; Mannish, 2019).

The evidence of language erosion above, if the language in question is not considered high status, is particularly worrying in the South African context. Abundant evidence exists that South African learners and parents perceive other official languages as having a lower status than English (Banda, 2000; Cekiso et al., 2015; Dyers, 2001). The immersion model is further complicated by the fact that the majority of teachers in South Africa speak English as their L2, with many having received instruction during the Bantu education period, and, as such, many teachers are themselves often poor models for correctly spoken and written English (Banda, 2000). As Mullis et al. (2016) state succinctly: *"South Africa has a history of poor teacher education, especially for African teachers"*. This low status of African languages, coupled with historically poor teacher education in South Africa, has resulted in persistent challenges in terms of learner performance. The following section deals with the history and outcomes of assessment in South Africa, but for now, it suffices to note that language instruction and policy have led to both intended (during the period of Bantu education) and unintended

negative effects (on aggregate) in terms of learners' ability to use, learn, and complete assessments in English.

ASSESSMENT IN SOUTH AFRICA

The narrative above will be of little surprise to any scholar with even a passing familiarity with South Africa's history and education system, but this aggregated viewpoint can disguise much of the development that has taken place within the system. Umalusi, the statutory body responsible for monitoring the quality of schooling and national school leaving assessments, has noted that in the initial days after the rise of democracy, the focus was on access to schooling, while quality concerns necessarily came after (Umalusi, 2015). In 2002, just 40% of five-year-old children were attending school in South Africa, a percentage that increased to 99% by 2012 and has since remained relatively stable (StatsSA, 2022), with an increase of 145% in a decade. This suggests that a very large proportion of schools in South Africa were built recently, serving communities that previously had little access to schooling, and given those two factors, could be assumed situated in under-resourced communities. In short, much of the South African education system, just in terms of infrastructure, is inherently recent or emergent. Howie et al. (2017: 7) note that with *"access being at the top of Government's priority list, access has improved to the extent that primary education is almost universal".* This focus on access to education proved remarkably successful regarding that specific aim, but an education system undergoing such rapid expansion while taking on learners and teachers in the most underprivileged quarters of the nation was necessarily forced to make quality a secondary concern (Umalusi, 2015).

Furthermore, a pronounced urban-rural division becomes evident regarding academic performance. As Umalusi (2015: 2) notes:

> *The general socio-economic profile of the provinces is intimately related to educational performance, with generally good educational outcomes being observed in socio-economically affluent provinces and poorer performance being observed in provinces that are economically depressed.* (Umalusi, 2015: 2)

This urban vs rural, or affluent vs impoverished, divide is extremely evident in schooling outcomes, whereby in 2012, 22% of all Quintile 1 schools (the poorest 20% of schools) did not achieve a single Bachelor's pass[10] on the National Senior Certificate, while in 99% of Quintile 5 schools (the most affluent 20% of schools) not a single learner did not achieve this pass level (Umalusi, 2015). Therefore, it is clear that the popular narrative of collapse in the South African schooling system does not remain entirely robust when faced with the disaggregation of the figures presented above. The need for a nuanced approach is crucial when analysing samples of learners in South Africa because of the extreme range of experiences that South African learners can expect from the schooling system. While many learners in South Africa endure a schooling experience of under-skilled teachers and dramatic resource constraints in terms of school infrastructure (McFarlane & Selebalo, 2019), others attend schools rated among the top 100 best schools in the world (Spear's, 2022).

The fractured nature of the South African schooling system makes generalisations about assessment results (or indeed any aspects of schooling in the nation) exceptionally difficult. When national-level assessments are undertaken, such as the Progress in International Reading Literacy Study (Howie et al., 2017; Van Staden & Roux, 2022), one of the most challenging elements of the research design process is the process of determining a nationally representative sample. An extract from PIRLS (Howie et al., 2017: 32–33) is instructive in this regard:

> *The PIRLS 2016 Grade 5 sample was designed to be representative of Grade 5 learners from all the nine provinces… However, because the sample does not include [all] official languages, the sample cannot be generalised as a national representative sample overall.* (Howie et al., 2017: 32–33)

Globally, PIRLS is among the largest and most rigorous international assessments of learners; yet, after multiple iterations for over a decade and counting, it has not been possible to draw a nationally representative sample. Even the most recent PIRLS 2021 study (Van Staden & Roux, 2022) assessed the South African Grade 6 sample in English or Afrikaans rather than in

[10]A Bachelor's pass is understood as the minimum level of results required to attend University in South Africa

the 11 official languages. This statement is not a criticism of the methods employed in PIRLS but is raised only to demonstrate that attempting analyses of the South African schooling system as an entity are, at best, extremely challenging and inevitably provide only a partial picture of select aspects of the system.

When aggregated figures are considered, South African learners generally fare poorly on large-scale standardised assessments (Howie et al., 2017; Mullis et al., 2020), but the aggregation approach will inevitably mainly measure the emerging and under-resourced parts of the system, inarguably because such schools are in the majority. Studies that show an aggregated trend, particularly when reported on in the popular media, can easily create expectations about all schools in South Africa that apply only to emerging and under-resourced schools because such schools are in the majority.

The argument above is important for this paper in particular since the sample group was selected from an urban public school in Johannesburg classified as Quintile 5 (the most well-resourced 20% of schools). Many readers, when approaching results drawn from a South African public school with a thoroughly multilingual learner population, might expect either overall low performance or a significant disparity in performance between L1 and L2 learners. Such expectations are not borne out in the results; indeed, the argument above should demonstrate that such expectations ignore the reality of multiple interdependent complex systems at provincial, local, and individual school levels that make an aggregated or overall view of South African schooling virtually impossible. While a picture of an average learner in South Africa can be derived numerically, the range of possible contexts for an individual South African learner is so vast that aggregate figures must be viewed through lenses that emphasise nuance, context, and individual variability.

CORE ACADEMIC LANGUAGE SKILLS

One of the few universal truths about the South African (or indeed any) schooling system is that nearly all learning takes place in and through language, and the type of language employed by and expected from the learners is intrinsically academic, in general. A crucial, previously unanswerable question forms the basis of this fundamental truth, namely, what constitutes academic language. With the identification and validation of the CALS construct (Uccelli et al., 2015; MacFarlane et al., 2022), this question has now been (partially) answered.

Where previously, it was possible to identify broadly defined categories of language use (academic/non-academic or colloquial), the development of CALS provides an operationalised set of discrete and assessable skills that have been shown to have a strong association with schooling outcomes (MacFarlane, 2022). The construct is not assumed to be innately comprehensive, as there is a high likelihood that the gamut of academic language as both a productive and receptive skill set goes beyond that which CALS identifies (Uccelli et al., 2015). However, the strength of CALS is that it provides an empirically robust starting point for the explicit assessment and teaching of academic language. Where previously, academic language was a categorical variable, the CALS construct allows for this variable to be operationalised and explicitly measured and taught as a defined skill set.

There is little opposition to the idea that academic language is fundamental to success in school and academic settings, but while this notion is unopposed, there has also been no clear way to incorporate direct instruction in or measurement of this fundamental skill set. Due to its vague categorical nature, academic language has long been recognised as fundamental to schooling while simultaneously being taught only implicitly because, until recently, it has been only vaguely operationalised. Before direct instruction in a skill set can be attempted, the skills that inform that construct must be explicitly identified, disaggregated, and operationalised. Knowing broadly that a text is inherently academic does not assist in demonstrating what features of the text place it into this category, and further, does not assist in providing learners with the skills required to produce academic texts themselves.

While the challenges of multilingualism in the South African schooling system cannot be understated, L1 English speakers will not automatically be proficient in the understanding and production of academic language due to their home language status alone. There is no expectation that learners in monolingual schooling systems will automatically be proficient consumers and producers of academic texts, and all the concerns about the necessity for instruction in this skill set remain in such contexts (Snow & Uccelli, 2009). Thus, in the South African context, we must guard against the assumption that we are trying to teach children to use English. While the curriculum and pedagogy of the South African schooling system are intrinsically English (in general), the CALS construct is emerging as fundamental to academic language usage across various languages and regions (Meneses et al., 2020; Uccelli et al., 2020; Galloway et al., 2020). This strongly suggests that CALS identifies and operationalises

academic language skills as a category not bound to the specific language in which the skills are being deployed. CALS is becoming understood as a way to engage with and produce academic texts, not specifically academic texts in English, Spanish, SeSotho, etc. It is becoming clear that the production and comprehension of academic texts is a skill set that stands outside of a particular lexicon or language and, instead, is a way of approaching text using discrete and identifiable skills existing and being applicable independently of the target language.

While the description of the CALS-I-ZA instrument provides a full overview of the discrete skills in the section below, it is worthwhile listing the skills here to advance the current line of argument. The skills that make up the CALS construct are: Organising Argumentative Texts, Connecting Ideas, Tracking Themes, Comprehending Complex Sentences, Unpacking Words, Awareness of Academic Register, Identifying Epistemic Stance, and Understanding Metalinguistic Vocabulary (Uccelli et al., 2015). For any of these skills, the actual language in which the skill is deployed is a secondary issue; for example, the first item, Organising Argumentative Texts, whereby a learner is required to place a series of out-of-order sentences in the correct order to form a logical argument form. Such argument forms follow standard argumentative structures such as *modus ponens*[11] and similar standardised argument forms. Importantly, it must be understood that such argument forms can be symbolically represented as abstract formulae using propositional calculus (Patrick, 2009), which results in a formula for *modus ponens* as follows:

$$\frac{a \rightarrow b, a}{b}$$

This argument form, once symbolically represented, can be applied and understood in any target language. The skill of identifying the logical structure of the argument and placing the sentences in order requires decoding the language in which they are presented as a prerequisite, yet it is a skill that is also independent of the specific language beyond the decoding step.

[11]**If A then B. A. Therefore B**. Expressed in natural language, *modus ponens* would create an argument as follows: If it is daytime then the sun is up. It is daytime. Therefore, the sun is up.

Similarly, if we examine the second skill within the CALS construct—Connecting Ideas—it becomes evident that while the connectives/conjunctions within any one language are lexically bound, their function within language is innately generic and cross-linguistic. All languages require ways of defining relationships between concepts, and the skill of understanding how these linguistic connectives define the relationship between inter/intra-sentential concepts goes far beyond decoding the words themselves.

Thus, the truth of academic language usage is revealed as being a skill set that describes how language is used and deployed academically and not how ***a*** language is used.

RESEARCH QUESTIONS

Research Question 1:

To what extent is the CALS-I-ZA instrument associated with academic performance in L1 and L2 learners?

Research Question 2:

What are the differences in performance in L1 and L2 learners on the CALS-I-ZA instrument?

THEORETICAL FRAMEWORK

This research and the CALS construct more broadly embraces the paradigm of sociocultural pragmatics—a view that regards language and language use as being embedded in (and inseparable from) the context/s in which they are developed and used (Halliday & Matthiessen, 2004; Heath, 2012; Ravid & Tolchinsky, 2002; Snow & Uccelli, 2009; Uccelli et al., 2015). This view entails that language use and language learning are lifelong endeavours prompted by the contexts in which they are deployed or encountered. Due to the embeddedness of language within a particular culture or context (the context of the playground, the context of the home, the context of the classroom, etc.), some language forms and functions are either more or less appropriate in a specified context. Crucial to this viewpoint is that language learning is never complete; rather, language skills are an ever-evolving construct that is constantly shaped and reshaped by the environment in which it is encountered and deployed. The ability to adapt language usage to context is termed *rhetorical flexibility* (Ravid & Tolchinsky, 2002). The concept has been extended by Uccelli et

al. (2020) to include a critical awareness of the power relations embedded in social contexts and to acknowledge that language use is never neutral. This understanding is termed *critical rhetorical flexibility*.

This paper embeds itself in the paradigms of sociocultural pragmatism and critical rhetorical flexibility as they are particularly relevant in a country like South Africa, where the education system was deliberately shaped for decades as a tool of cultural control (Bantu education). Critical rhetorical flexibility represents an understanding that a skilled language user in one context might lack the linguistic skills necessary to operate efficiently in a different context and that this discrepancy is merely a skill set that could be developed through training and exposure to the expected outputs in that specific context (Uccelli et al., 2020).

METHODS

The CALS-I-ZA instrument was previously localised for the South African context, and the instrument and underlying CALS construct were validated on a moderately sized (n = 285) sample of South African learners (MacFarlane, Barr & Uccelli, 2022). The instrument has been normed on Grade 4 to Grade 8 learners and found appropriate for that age range (Uccelli et al., 2015). With both the instrument and the construct proving to remain robust when utilised in South Africa, it then became necessary to establish the functioning of the instrument when analysed in L1 and L2 learners. This entailed both a comparison of the functioning of the instrument when attempted by L1 and L2 learners and a comparison of the same learners' performance on the provincial Gauteng Common Examinations.

Instruments

The primary instrument in this study was the CALS-I-ZA, a derivation of the original CALS instrument, the CALS-I, which was developed in the United States (Uccelli et al., 2015). The instrument consists of eight sub-tests detailed as follows:

1. Organising Argumentative Texts: This sub-test requires learners to organise four to six fragments of a brief essay, with each fragment introduced by a common marker such as "in my opinion", "one reason", "in conclusion", etc. The fragments are organised into a typical argumentative text that follows a conventional argumentative text structure. This text type is among the most prevalent in academic discourse (Rex,

Thomas & Engel, 2010) and skills in structuring narratives have been shown to have a positive association with reading comprehension (Oakhill & Cain, 2000). Organising argumentative texts is hypothesised to be positively associated with the ability to comprehend and organise academic writing (Uccelli et al., 2015).

2. Connecting Ideas: In this subtest, learners are asked to select the missing marker from among four options (e.g., "Sam broke his leg _____, he continues to play cricket." consequently, nevertheless, namely, thus). This demonstrates skills in understanding school-relevant words that connect ideas and using those words to organise intra-sentential relations correctly. These types of discourse markers have been shown to affect receptive skills such as the processing of and learning from academic texts (Meyer & Poon, 2001; Hyönä & Lorch, 2004).
3. Tracking Themes: Students are asked to match the underlined texts with their antecedents by selecting among three options (e.g., "China resisted the move for change. In 1989, students protested to demand changes, but the army opposed those changes. Troops were sent to stop **the movement**.") This task aims to assess each learner's ability to understand conceptual anaphora, which are used to encapsulate a complex idea or collection of ideas (Biber, Conrad & Reppen, 1998). Skills in resolving such conceptual anaphora have been positively associated with reading comprehension (García et al., 2015).
4. Comprehending Complex Sentences: In this subtest, the administrator reads a sentence and learners are asked to select the picture that corresponds to the target sentence. Four pictures are presented, three of which depict sentences altered by a grammatical element (e.g., "The boy the dog sees is running"). This allows learners to demonstrate their ability to use syntactic cues in a sentence to comprehend precise meaning, a skill that has been positively associated with reading comprehension (Mokhtari & Thompson, 2006; Taylor, Greenberg, Laures-Gore & Wise, 2011).
5. Unpacking Words: The administrator reads a morphologically derived word followed by an incomplete sentence, and learners are asked to complete the sentence by extracting the base from the derived word (e.g., Activity. "The children are very _____."). The ability to decompose morphologically complex words has been positively associated with reading comprehension (Carlisle, 2000; Lesaux & Kieffer, 2010).

6. Awareness of Academic Register: Learners are asked to identify the most academic definition from a set of three definitions of the same familiar word. Knowledge of the language of formal and academic definitions has been identified as a predictor of later academic success (Kurland & Snow, 1997).
7. Identifying Epistemic Stance: The administrator reads a set of claims from 'scientists' that include a stance marker. Learners are then asked to determine how sure each scientist is about the claim they have made (e.g., "The rock appears to be from space." Yes, Maybe Yes, Maybe No, No). Skills in identifying the epistemic stance of a writer have been positively associated with the comprehension of academic texts (Uccelli et al., 2015).
8. Understanding Metalinguistic Vocabulary: The administrator reads two sentences from an informational article followed by a one-sentence reaction by a respondent. Learners are then asked to select one word that best describes the respondent's reaction from a list of four possible options (e.g., opposing, quoting, describing, exaggerating). The ability to understand words that label or qualify language or thinking moves has been positively associated with reading comprehension (Kieffer & Lesaux, 2012).

   (Above extract adapted from Uccelli & Galloway, 2017)

The instrument used as a comparator and proxy for academic performance was the Gauteng Common Examinations developed by the Gauteng Department of Education. The common examinations are run annually in all Gauteng public schools at the Grade 6 level by the Provincial Education Department, making them a direct proxy for schooling results for Grade 6. Two common examinations were utilised: the mathematics examination and the natural sciences and technology examination (Gauteng Department of Education, 2016). It should be noted that it was important for this study to compare the CALS-I-ZA against a measure of general academic performance, not against performance on other language assessments. A language instrument that correlates with other measures of language proficiency is perhaps useful, but the intention of CALS is to predict general academic performance, not isolated language skills.

While the common examinations are not standardised or normed assessments, the choice of these instruments was because such assessments are administered across all public schools in the province and, thus, provide a common comparator. Assessments other than the common examinations in Grade 6 (and generally, for earlier grades of schooling) are normally developed internally at each school and, thus, do not provide a basis for analysing learners' academic performance across different schools. Therefore, while the validity and reliability of the common examinations are unknown, they are nonetheless developed as measures of academic performance and keyed directly to the national curriculum by the provincial authorities. In this study, it is the relationship between the results of the CALS-I-ZA and the common examinations that is of interest, rather than the actual quantum of the common examination scores. Since the common examinations represent actual schooling outcomes as measured by the provincial government, a strong association between CALS and the common examinations would indicate that CALS is predictive of schooling outcomes.

Participants

The sample included 89 Grade 6 learners in two English medium public schools. The two urban public schools were in the Gauteng province, and both schools were classified as Quintile 4.[12] Randomisation of learners was not possible, given they were already in fixed classes and grades, and, of course, their language backgrounds were also preexisting variables. The schools in question both had catchment areas covering fairly affluent as well as low-income areas and, thus, the sampled learners were from a mix of socioeconomic and linguistic backgrounds. Fourteen different home languages were reported within the sample. Despite the diversity evidenced within the schools, the sample was necessarily convenience-based and manipulation of the pre-existing groups was not possible.

The sample of 89 learners was somewhat skewed in favour of female learners, containing 36 (40.4%) male learners and 53 (59.6%) female learners. Two questions were included in the demographic information portion of the CALS-I-ZA to provide information on learners' language status: "What language(s) do you speak at home the most?" and "What language(s) do people in your home speak the most?". Due to the extreme diversity of linguistic

[12]Both the sample size and choice of Quintile 4 schools were determined by the need to obtain ethical clearance to access learners' provincial schooling results from the provincial education department.

backgrounds present in South African urban classrooms, asking learners what their home or first language is could easily produce answers about learners' ethnic heritage language/s but not discern the language/s most commonly spoken by people in the home and social situations. For example, a learner whose home language is IsiZulu might not be able to use that language with the same level of proficiency as another language they encounter more frequently in their daily lives. Many families do not use their heritage languages for communication in the home, and this study was concerned with the language/s within which the learners were most proficient rather than what their familial heritage language/s might be.

The assumption was that learners who did not list English as one of their most commonly spoken languages as well as being spoken at home would thus have English as their L2. Based on this assumption, 38 (42.7%) learners were classified as having English as their L2, while the remaining 51 (57.3%) were understood as L1 learners. Within the L2 group in the sample, no dominant home languages were reported, with the set of languages including isiZulu, isiXhosa, Sepedi, SeSotho, TshiTsonga, SeTswana, Afrikaans, Igbo, Urdu, German, Shona, Malagasy and Bemba.

Analytic Plan

It was necessary to perform a correlation analysis using Pearson's product-moment correlation coefficient to answer the first research question, comparing the variables of the maths common exam, the natural science and technology (NST) common exam, the CALS-I-ZA (percentage score derived from the CALS-I-ZA instrument), and home language status (English as L1 or L2). In this analysis, the maths and NST common exam (Annual National Assessments) results stand in as a proxy for schooling performance.

The second research question required the use of an independent sample t-test to determine any significant differences between the groups on the variables of interest in this study (maths common exam, NST common exam, CALS-I-ZA, and home languages).

All data were analysed using *SPSS Statistics 26*.

RESULTS and DISCUSSION

Descriptive statistics were derived for all variables of interest and are presented in Table 1 below.

Descriptive Statistics					
Home Language		N	Mean	Std. Deviation	Std. Error Mean
Maths Common Exam Mark	L1	50	67,64	15,15	2,14
	L2	39	59,08	13,81	2,21
NST Common Exam Mark	L1	50	81,74	11,24	1,59
	L2	39	78,97	11,52	1,85
CALS-I-ZA	L1	50	67,61	13,39	1,89
	L2	39	58,32	15,83	2,53

The pattern of the results obtained on the maths common exam and the CALS-I-ZA correspond substantially, with the mean scores and standard deviations nearly mirroring one another. The language groups were coded as being in the L1 (English as a home language) or the L2 (English as a second language) groups and it becomes apparent that the L2 group performed at a lower level than the L1 group on both the maths and CALS scores.

The NST scores revealed that this examination was less challenging for the candidates in general than the other assessments, with negligible differences in scores between the L1 and L2 groups.

A correlation analysis was undertaken to determine the strength of the relationships between the variables. Table 2 presents the summarised results below.

Correlations					
		Maths Common Exam Mark	NST Common Exam Mark	Home Language	CALS-I-ZA
Maths Common Exam Mark	Pearson Correlation	1	.625**	.283**	.642**
	Sig. (two-tailed)		.000	.007	.000
	N	89	89	89	89
NST Common Exam Mark	Pearson Correlation	.625**	1	.121	.650**
	Sig. (two-tailed)	.000		.258	.000
	N	89	89	89	89
Home Language	Pearson Correlation	.283**	.121	1	.306**
	Sig. (two-tailed)	.007	.258		.004
	N	89	89	89	89
CALS-I-ZA	Pearson Correlation	.642**	.650**	.306**	1
	Sig. (two-tailed)	.000	.000	.004	
	N	89	89	89	89
**. Correlation is significant at the 0.01 level (two-tailed).					

The results of the correlation analysis reveal a moderately strong relationship between the maths and NST common examinations (r = .625) and similarly, a moderately strong

relationship between the maths and CALS-I-ZA (r-.642) and the NST and the CALS-I-ZA (r = .65). All these correlations are significant with *p* at .01. Thus, the CALS-I-ZA has a significant and moderately strong relationship with both common examinations, which provides strong evidence of a predictive relationship between CALS-I-ZA and schooling results.

The weak relationship between the home language variable and the other results is significant. The results indicate no relationship between the NST examination and home language. While home language remains significantly related to the results of the CALS-I-ZA and the maths exam, the strength of the relationship is very low at r = .283 for Maths and r = .306 for CALS-I-ZA.

This result supports the argument that the skill set represented by CALS exhibits a strong linear relationship with schooling outcomes, irrespective of the language status of the learners. This further shows that home language has only a weak or insignificant relationship with the learners' academic outcomes and CALS scores.

It was important to test if there were significant differences in performance for the L1 and L2 groups on the various assessments, and for this task, an independent samples t-test was employed. Although several of the learners shared a grade, most did not share the same classroom and were split between two different schools, thus ruling out the use of a related samples t-test.

Independent Samples Test									
	Levene's test for equality of variances		T-test for equality of means						
	F	Sig.	t	df	Sig. (two-tailed) *p*	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper

Maths Common Exam Mark	Equal variances assumed	0,965	0,329	2,749	87	0,007	8,563	3,115	2,372	14,754
NST Common Exam Mark	Equal variances assumed	0,065	0,799	1,139	87	0,258	2,766	2,427	-2,059	7,591
CALS-I-ZA	Equal variances assumed	1,726	0,192	2,997	87	0,004	9,287	3,098	3,129	15,446

Table 3 above shows that the L1 and L2 groups performed significantly differently on both the maths common examination and the CALS-I-ZA. Unexpectedly, this difference was not evident in the NST common exam, and it was not possible to subdivide the language groups using their performances on this measure. This might be evidence that the L1 and L2 groups are moving closer together in terms of their academic performances but similarly, it might merely be evidence that this particular measure does not discriminate effectively. Ultimately, it is expected that the L2 group will perform at a lower level than the L1 group on such assessments precisely because the L2 group face the additional challenge of working in an additional language. In all cases, the CALS-I-ZA emerged with the strongest relationship with schooling results on either of the two comparator assessments.

CONCLUSION

This paper demonstrates that the CALS construct has a strong relationship with schooling results in the context of an English-language-based schooling system while having only a limited degree of association with the home language status of learners. This argues strongly that the CALS skill set might have a degree of lexical independence in that it is not directly associated with a specific language or lexicon. It is also clear that the CALS construct is functioning comparably in both the L1 and L2 groups in this study. It is still challenging to

make more general claims about the CALS construct from this study alone, as the sample size was relatively small (*n* = 89) and further research is required to confirm the trends that emerged in this paper.

The preliminary trend identified is cause for optimism; however, since the CALS construct has the potential not only to be used as an assessment to predict later schooling success, the fully operationalised and specified nature of CALS should also make it a strong basis for the development of instructional tools and pedagogy. While the language status of the South African schooling system and learner populations has been discussed at length above, many of the concerns raised would be addressed by an explicit method for teaching academic language skills that is not concerned specifically with teaching English.

None of the skills identified in the CALS construct are necessarily English language skills and are indeed generic in their design, such that they could be deployed in any target language. That is not to say that teaching English in South Africa is fruitless; of course, no linguistic skill set can be deployed if the individual does not have a command of the language in which such skills must be demonstrated. Instead, the results of the analyses conducted in this paper strengthen the argument that (in South Africa) English language skills are necessary but not sufficient for the development and deployment of proficient academic language skills. The results further raise the likelihood that such skills could be taught in any language and could be transposed into any language that is the target language of the schooling system in question.

The great benefit of the CALS construct is that it is both highly specified and fully operationalised. As noted previously, the instrument was normed for Grade 4 to Grade 8 learners, and thus, Grade 6 was explicitly chosen as an appropriate level to measure these skills. This allows for the larger construct of academic language to be deconstructed into directly assessable sub-skills. No researchers working with the CALS construct claim that the construct is exhaustive, and indeed, as further research is conducted, additional generic academic language skills will likely be identified and incorporated into CALS. The construct is not yet comprehensive, but this is no barrier to its use; indeed, the results of this paper demonstrate that CALS provides robust information about learners' language skills, which is strongly associated with their schooling outcomes. Further, CALS clearly maintains this

association with schooling outcomes, irrespective of the language status of the learners being assessed. Thus, the question raised in the very first line of this paper can be answered in the affirmative: Yes, it is possible to assess learners in South Africa from diverse language backgrounds using only English-language-based instruments, with a caveat regarding measuring such performance in English. Since the South African schooling system forces most learners down the path of English immersion, it is of great value to have an instrument that could allow us to predict how learners would perform academically when tested in that language.

The explicit nature of CALS provides further possibilities; however, by rendering these fundamental academic language skills explicit, it also allows for direct instruction in the skill set. If these skills are directly testable, inevitably, they are also directly teachable. The evidence that the skill set is also lexically independent provides the hope that the mastery of CALS could be a skill set that is directly transferrable from one language to another. Indeed, the results of this study suggest a strong possibility that the CALS skill set represents fundamental ways of using language for academic purposes and not using a specific language for this purpose. In conclusion, this research has shown that the CALS construct can validly be used to assess academic language skills in L1 and L2 South African learners and remains a strong predictor of academic success in both groups.

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Chapter 6: It's not the Language it's the Skill: Possibilities for CALS-Informed Instruction in South Africa

Introduction

This final article in the linked series makes the argument for CALS-informed instruction on the basis of the evidence gathered and published in the previous articles. CALS had now been shown to be empirically robust in South Africa, have a strong predictive relationship with academic performance, and function almost identically for both L1 and L2 learners in ordinary Grade 6 South African classrooms. This final article was both a limited meta-analysis of the work done on CALS, and a discursive piece that argues for the deployment of CALS-informed instruction in South Africa. The article also advocates for a cautious approach to be taken, as it is all too easy to miss the fact that CALS is a distillation of discrete skills that are aimed at succeeding in the western or westernised academy. CALS does not represent locally derived ways of knowing, it is a set of skills designed to operate within a certain (colonised) paradigm. Thus, the argument for the deployment of CALS in South Africa, a country in which education for the majority had historically been used as an instrument of oppression, is nuanced and cautious in its approach. While CALS is argued for in terms of its utility within the English-language based/Westernised/Colonised education system, the danger of leaving this status unexamined and uncriticised is highlighted in this paper.

The article is under review at the Cogent journal under the following title:

> MacFarlane, M. (2024) It's not the Language it's the Skill: Possibilities for CALS-Informed Instruction in South Africa. Under Review.

It's not the Language it's the Skill: Possibilities for CALS-Informed Instruction in South Africa

Abstract

The South African school system is overwhelmingly English in terms of the language of learning and teaching (LoLT), while the South African population is overwhelmingly diverse in terms of linguistic backgrounds – and learners for whom English is their 'home' or 'first' language make up less than 10% of the national population (StatsSA, 2023). Since the LoLT of the schooling system differs from the linguistic background of 90%+ of the South African population, most South African learners struggle with the decoding and production of academic language (in English) (Department of Basic Education, 2023). This paper briefly explores some of the historical reasons for this reality, but also proposes an empirically robust construct – Core Academic Language Skills (CALS) – that operationalises academic language into various sub-skills that can be readily assessed and taught. This paper reviews previous research that shows that the construct is appropriate for and functions predictably within the South African context, and also sheds light on ongoing work that suggests that the construct is applicable to fostering academic skills in languages in addition English. The CALS construct, therefore, presents a valuable opportunity to improve these skills in the South African schooling system. The paper also cautions that – notwithstanding the reality that the South African schooling system is essentially English in its character – the hegemonic position of English should not be accepted without question. The practical need to perform academically in English should not hide the socio-cultural violence that its hegemonic position within the system entails.

Introduction

There is a common and persistent refrain that the South African schooling system is in crisis. The nature of this crisis or crises is elusive as the depth of inequality in the nation means that there are dramatic challenges in some schools – while others are stable and high performing. The narrative of "two nations" (Nattras & Seekings, 2001) has been advanced as a descriptive tool to emphasise dramatic inequality nationally, and such inequality weighs heavily on the education system in particular (Amnesty International, 2020). Dividing schooling along the lines of 'rich' vs 'poor', however, does not adequately capture the complexity of the obstacles facing schools in South Africa. Such obstacles are sometimes at the level of national policy, some at provincial level, and some local or even confined to particular schools. In an environment of inequality and diversity, what possibilities for improvement of the *system* can be advanced that maintain relevance when employed across the dramatically diverse South African schooling ecosystem?

At the macro-level what is known for certain is that South African learners perform poorly on international standardised assessments (Howie et. Al., 2017) and further that there are a host of factors that inform this trend. From challenges with school infrastructure (Modikoa Pillay & Shipalana, 2023) to learning materials (Skephe, 2020; Mabula et. Al., 2023) or curricula (Letshwene & Du Plessis, 2021) or socio-economic status (Spaull, 2013) to the language of learning and teaching (Heugh, 2013) there are multiple complex reasons for the trends that emerge in terms of learner outcomes. It is also important to stress at this stage that these *aggregate* outcomes can also serve to disguise the immense complexity of the South African schooling landscape – where some learners in the system will drown in pit latrines (BBC, 2018) while others attend some of the best schools in the world (T4

Education, 2023). With so vast a gulf of inequality in the schooling system – it is difficult to comment on the system as though it were a single entity – and still more difficult to argue for interventions that are both feasible and implementable for poor schools while also being non-trivial for wealthier schools.

One central point that is true for nearly all schools in South Africa, however, is that most learners must learn through the medium of a language other than their mother tongue. While South Africans are diverse in terms of their heritage and languages, the South African schooling system is overwhelmingly English in terms of the language of learning and teaching (LoLT)(Manyike & Lemmer, 2014; Pluddeman, 2015). For the vast majority of learners in this nation with 12 official languages, the system overwhelmingly follows a monolingual English-immersion model (McLeod Palane & Howie, 2019). Some of the reasons for this state of affairs are discussed briefly in a later section in this paper, but at this stage it is only important to understand that some 92% of all South African schools use English as the primary language of instruction (Department of Basic Education, 2010), while just 8.1% of the population speak English as a home or first language (Statistics South Africa, 2020). For simplicity – this paper uses the terms L1 to describe a first or home language, while L2 is used to denote a second or additional language.

While many of the challenges in the system may ebb and flow in their severity – or be confined to certain areas or socio-economic strata – the centrality of the LoLT cannot be understated. It is also important to understand that the language of schooling goes far beyond using language merely as a basic communication tool, and instead (and increasingly as learners move up through the grades) the use and mastery of academic language is required (Uccelli et al, 2015; Cummins & Yee-Fun, 2007). It was Cummins (1979) that first

coined the terms Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) to delineate the two broad categories of language use. The existence of these two categories has been investigated over many years by numerous researchers (Cummins, 2000; Schleppegrell, 2004; Snow & Uccelli, 2009; Weideman, 2003) and such a subdivision of language use is generally uncontroversial. Academic Language can be simply understood as the "language of the classroom" to emphasise its centrality in schooling, in contrast to the "language of the playground" – describing colloquial communication or BICS. Ultimately though – a key question has remained unanswered until very recently: What skills are required to both comprehend and produce academic texts? If academic language is a distinct class of language use, and requires a distinct skillset to work with, what then are those skills?

The operationalisation and delineation of academic language skills has proved to be a challenge for many years (Cummins & Yee-Fun, 2007; Uccelli et. Al., 2016; Madiba, 2013) but recently an operational construct has been developed that describes an empirically robust set of Core Academic Language Skills (CALS)(Uccelli et. Al., 2015; Uccelli & Galloway, 2017). The CALS construct succeeds at describing a set of discrete and empirically measurable skills that are theoretically grounded and have been shown to have a strong association with schooling outcomes (Uccelli et. Al., 2015). Although developed in English in the United States, the construct has been found to remain robust when deployed in the South African context (MacFarlane et. Al., 2022). Further, it has been found to have a strong association with schooling outcomes for South African learners (MacFarlane, 2023), and remains robust when used to assess learners from diverse language backgrounds (MacFarlane, 2024). There is growing evidence that the CALS construct represents a

fundamental academic language skillset that is not necessarily associated with a *particular* language (Uccelli et. Al., 2020). This is an important possibility, as it begins to diverge from ideas of teaching *English* and rather opens the possibility of teaching school-relevant *language skills*. If the CALS construct remains robust when assessed in different languages – it is not a large logical leap to make to argue that the skillset could also be taught in different languages. Due to the fully operationalised and empirically robust nature of CALS, the underlying skillset can be directly taught to learners, while also representing transferrable skills across languages. In the South African context, this would be a dramatic intervention for learners irrespective of their home language since, as several researchers have pointed out, academic language is nobody's mother tongue.

With the above in mind, this paper represents an argument for the direct deployment of this construct as a pedagogical tool in South African classrooms.

Language in Education in South Africa

It is perhaps too trite to argue that South Africa and its schooling system is shaped by its unique history – for what historical journey is not unique? Rather history provides an explanatory lens through which to examine how things have come to be organised as they are, and provides a context for some of the dilemmas now faced by the system. The South African education system has a complex and oftentimes dark history, and the current system still bears the scars of colonialism compounded by the Apartheid era, and even the policy missteps of post-apartheid democracy. Such historical complexities go a long way towards understanding *why* the South African education system has taken on its current form, but this paper is concerned with questions of *what* innovations could improve the system as we find it. While such history goes beyond the scope of this paper, which argues

for a specific intervention in the current system, many authors (Maringe, 2021; Kallaway, 2002; Giliomee, Mbenga & Nasson, 2022) have provided important and instructive narratives on the history of education in South Africa – especially regarding the African majority who were the target of some of the most deliberately destructive policies of the Apartheid regime, among these being 'Bantu Education'. Readers confused by the linguistic mismatch between the schooling system and the South African population are encouraged to review some of these authors among others to understand the history that has led up to this current reality. This paper concerns itself centrally with how language is used in South African schools currently, and further with how certain linguistic practices/pedagogies might be modified to assist learners in attaining higher academic proficiency in the target language[13] – English.

Even though, for most learners, the system is one of English immersion in which their L1 will seldom if ever be encountered in their formal school life it has been shown that the incautious use of linguistic immersion in schooling can have deleterious effects on a learner's L1 skills (McLaughlin, 1978; Cummins, 1996; Stroud, 2001) – and thus, the challenge facing South African learners is twofold. First they are generally expected to conduct the vast majority of their learning in a language that they will in all likelihood have limited proficiency in, and second, the exclusive use of this language in learning may over time be detrimental to the skills the learners have gained in their home language/s. As soberly noted by Wildsmith-Cromarty & Balfour (2019, p.304)

[13] This paper refers to English as the Target Language because of its overwhelming dominance in both the South African education system and the formal economy. Readers should not read this phrase as being a value judgment on the part of the author offering support for the hegemonic status of English – rather it is a descriptive term that reflects the linguistic target that *the system* expects (explicitly or otherwise).

"When English is the language of instruction, learner outcomes are poor for learners from poor socioeconomic backgrounds, whether urban or rural."

In addition to the obvious challenges for L2 learners associated with encountering all or almost all their schoolwork in the L2, there is the additional challenge of developing and utilising Academic Language skills in this language. While all learners must face the challenge of developing Academic Language Skills, irrespective of their original language status, the additional challenge of mastering these skills in the L2 must be understood. Umalusi – the educational standards authority for schooling in South Africa – understands this challenge well, and in order to effect a degree of social justice, uses a technique called 'language compensation' to statistically moderate L2 learners' results at the point of writing the school leaving examinations (the National Senior Certificate) (Taylor, 2014). In 2000, all learners that wrote English as a First Additional Language (FAL) (in contrast to English as a Home Language (HL)) were awarded an additional 5% to the final results of their non-language subjects. Over time, Umalusi has scaled down the quantum of the 'language compensation' to 3% - but while the need for such social justice measures is clear, the larger issue of fundamental *proficiency* in the target language is not addressed by a statistical intervention.

An additional challenge associated with the Language Compensation applied by Umalusi is that it is linked directly to the English FAL subject. This means that any learners that offer English HL will not receive this numerical increase in their other subject results. It is also likely that a large number of learners that offer English HL as a subject are indeed L2 learners who take the subject due to the belief that it will provide better opportunities for employment or further education (Fleisch et. Al., 2015; Saneka & de Witt, 2019). Thus, many

L2 learners will slip through the numerical language compensation net due to the challenges associated with targeting such statistical moderation of results. The Quality Council clearly recognises that interventions are required to mitigate the effects of running an English-language based schooling system in a nation where English is the L1 of just 8.7% of the population (StatsSA, 2023), but the challenges remain primarily in the classroom and not on the final tally of assessment results.

Some authors argue that code-switching and translanguaging are already taking place successfully in South African classrooms (Makalela, 2015), and while the value of these techniques is not in dispute, inevitably the quality of such approaches must be variable in nature from one classroom to another. Since there are no systematic approaches recommended in policy or the school curriculum on how to apply such strategies – it is down to individual teachers to ensure that they use language in a way that is most appropriate for the learners in their classroom. Without a systematic approach with well-structured advice and examples for teachers to follow, the results of the code-switching and translanguaging undertaken informally in individual classrooms are difficult to measure or predict. While the multilingual skills of teachers will vary between individuals, so too will there be dramatic variability in different classrooms in terms of languages represented in the learner population. It is unlikely that the linguistic resources of a teacher will overlap perfectly with the languages represented in their classroom in a South African context, and the language mix of any given classroom will inevitably vary from year to year.

Such pedagogical approaches are inevitably limited by the thoroughgoing diversity of South African classrooms – where it is not uncommon for a class of 30 learners to have 8 or more home languages represented. In classrooms where the majority of learners come from an

IsiZulu linguistic background, for example, it may be possible for a teacher to code-switch between IsiZulu and English frequently to assist their learners (if the teacher is proficient in both languages). As the diversity of linguistic backgrounds increases in any given class, so too do possibilities diminish for code-switching to be feasible in such a class. This argument is not advanced to minimise the value of such strategies – but rather to note that they do not uniformly and systematically address the challenge of academic language use in English in many South African classrooms.

The challenge of English is twofold – first in its use as a language of communication, but second and most importantly in a schooling situation as the vehicle for academic study. It is in this second arena that the CALS construct holds the most promise – as it represents a fundamental skillset for using language academically and is not inherently bound to the English language despite being initially developed using this language. Because this skillset has been shown (Uccelli et. Al., 2020) to remain robust even when deployed in languages other than English (although more needs to be done to establish the degree of language independence of the construct) it holds a great deal of promise in the thoroughly multilingual environment in South Africa.

Socio-cultural pragmatics and the development of 'critical rhetorical flexibility'

The CALS construct was developed using the lens of socio-cultural pragmatics, a view that sees language as being inseparable from the context in which it has developed or is used, and sees language learning as part of individuals' lifelong socialisation (Halliday, 2004; Heath, 1983, 2012; Ninio & Snow 1996; Ochs, 1993; Ravid & Tolchinsky, 2002; Snow & Uccelli, 2009). There are two key consequences of this viewpoint that make socio-cultural pragmatics an ideal fit for the development and use of CALS: first that language

development is seen as a potentially lifelong endeavour for individuals, and second that it acknowledges that language skills appropriate for a certain social context may not be appropriate for another. Since the need to produce academic language (normally in text form) is so central to schooling and school-relevant language use, the understanding that the school forms the particular social context in which particular language forms and usage patterns are expected is crucial. A skilled language user in one context may not be so in another, and so certain linguistic resources may need to be learned and deployed to fit a certain socio-cultural milieu.

The individual's ability to identify what social context they find themselves in, and to be able to use their language resources appropriately to conform to the requirements of that social context is called *rhetorical flexibility* (Ravid & Tolchinsky,2002). Uccelli et. Al. (2020) have extended this concept of rhetorical flexibility to include a critical awareness of the entrenched linguistic and cultural power relations that underpin such social contexts. Language is never neutral in its usage, and as such the need for *critical rhetorical flexibility* is crucial in navigating the status quo in schooling (and beyond) – as learners begin to understand that language is both a gateway and a gatekeeper. Critical rhetorical flexibility fundamentally underpins the goals of CALS, as direct instruction in this skillset is intended not only to allow learners to *do better in schools*, but also to allow the inclusion of learners' voices and experiences to challenge entrenched power relations so that schools can *do better for learners*.

Core Academic Language Skills

As research on the use of CALS as an instructional tool begins to emerge (Uccelli et. Al. 2020) it is becoming clear that, while it should conceptually be useful across disciplines or

subject areas in schools, it requires a collaborative approach between teacher and learner. Indeed, researchers in this area have called for “practices and dispositions that amplify language resources and awareness and affirm students’ voices by engaging teachers and students in reflecting about language, context, and power while scaffolding CALS across content areas and grades” (Uccelli et. Al 2020). Ultimately this represents an approach to pedagogy and instruction that is focused on a discursive approach between learner and educator that makes explicit many of the language features that are embedded in disciplinary texts or the production thereof.

Below is an overview of the individual aspects of CALS that have been identified and empirically validated, which is followed by a broad discussion of how such skills could be explicitly examined and taught in classrooms.

1. Organizing argumentative texts:

Argumentative texts are among the most commonly occurring text types in academic discourse (Rex, Thomas, & Engel, 2010; Toulmin, 1958) and they contain many of the crucial features of academic writing (thesis statement, premises, examples, and conclusions). Thus the argumentative text-type represents an ideal microcosm of academic language that allows learners to demonstrate both comprehension and mastery of many of the structural features of academic writing. In the CALS-I-ZA assessment, learners are presented with a series of out-of-order sentences that together form a basic argument when correctly organised. In an assessment setting, this provides information on a learner’s ability to both comprehend and organise academic writing (Uccelli et. al., 2015), however, this (fairly commonplace) technique of asking learners to organise sentences is also an ideal instructional technique for instilling such skills. A

central feature of CALS-informed instruction is the discursive approach in which the educator and learner explore both *why* and *how* various features of the argument are placed, and how this alters, enhances, or destroys meaning. Much of this can be achieved by an educator posing several 'what if' questions to their class: What if the premise is put at the end? Are we certain of this conclusion or does it need more support? If these premises are true *must* the conclusion be true or can we doubt it?

2. Connecting ideas

A large part of constructing academic texts consists of the linking and juxtaposition of ideas. In order to link ideas, the use of connectives (e.g. *but*; *therefore*; *and*) or lexical cue-phrases (e.g. *as a result*; *meaning that*; *in contrast to*) is employed to establish the relationship of different ideas to one another. It is clear that such discourse markers are associated with learners' comprehension of texts (Meyer & Rice, 1982; Hyönä & Lorch, 2004; Meyer & Poon, 2001) – and academic text in particular places a high burden on the reader to track and comprehend such relationships accurately. When this fact is made explicit to learners in a classroom setting, a teacher could compare and contrast different connectives and how they change and create meaning. Consider the following:

John played cricket. He broke his leg.

John played cricket <u>despite the fact that</u> he broke his leg.

John played cricket <u>which is where</u> he broke his leg.

John played cricket <u>after which</u> he broke his leg.

John played cricket <u>until</u> he broke his leg.

The narrative of what happened is dramatically shaped and changed by the use of the connectives in the above examples. In a learning environment, making such relationships explicit is trivial in any discipline, and would only require a very small amount of classroom time on the part of the teacher.

3. Tracking themes

A central feature of academic discourse (and a great deal of colloquial discourse as well) is the use of anaphors – words that refer back to previously mentioned words (for instance 'he' may be used to denote the character 'Simon' after the first mention in a text). The use of 'conceptual anaphora' – anaphors used to encapsulate a complex idea or collection of ideas – however, is a distinctive feature of academic writing (Biber, Conrad, & Reppen, 1998). In an academic text, for instance, a concept will be introduced in full – such as the concept of photosynthesis which describes how green plants and some other organisms use sunlight to synthesize nutrients from carbon dioxide and water – and thereafter will be referred to almost exclusively via conceptual anaphors like "the process". A key skill for learners working with decoding academic texts is the ability to track the concepts referred to by the conceptual anaphora – and be able to mentally reconstruct the narrative and relationships described as information becomes ever more densely packed. Academic texts are characterised by densely packed information, often using several conceptual anaphora within a single sentence to describe complex relationships. In order to both decode and produce academic texts, learners need to be able to explicitly identify the conceptual anaphora that are in use and track these themes (Sánchez & García, 2009).

4. Comprehending complex sentences:

Academic texts are often characterised by the use of compound sentences that contain precise syntactic cues that delineate meaning. The ability to rapidly and accurately decode such syntactic cues has been shown to have a strong association with reading comprehension (Mokhtari & Thompson, 2006; Nation & Snowling, 2000; Taylor, Greenberg, Laures-Gore, & Wise, 2011). Simply put, syntax is the set of rules of combination and arrangement of words and phrases to accurately create meaning in a sentence. Academic texts regularly deal with complex conceptual relationships, and also adhere to the principals of economy of language in that there is an attempt to use the fewest words to express an idea. Indeed, as Uccelli et. Al have noted:

> *Literature suggests that academic texts across disciplines are expected to be lexically precise; concise and densely packed; and explicit in the marking of conceptual relations* (2015, p. 1082).

This economic use of language often means that academic texts ultimately requires that learners, in order to both decode and produce such texts, must be able to identify how meaning is created and changed by the syntactic/grammatical features within each sentence.

5. Unpacking words

In line with the identified trend of academic text being characterised by dense information packing, this is also expressed at the level of individual words. Academic

texts in particular are exemplified by the use of morphologically complex words (words composed of two or more morphemes) in order to pack information. Several studies have shown that the ability to decompose morphologically complex words has a positive association with reading comprehension (Carlisle, 2000; Kieffer & Lesaux, 2007, 2008, 2010; Nagy, Berninger, & Abbott, 2006). Skilled users of academic language are able to derive the root word from a complex construction, and can modify the root word to fit it into a given context. This skill is easily deployed in a classroom environment, as teachers need only to identify (in particular discipline specific) words and how they are used in context in the given discipline. For instance, a *composer composes composed* music that is a *composition*.

6. Awareness of academic register

Register is broadly the language used by a speaker or writer that is tailored to the context in which that language is to be consumed – as Agha (2008) puts it, register is *"a metapragmatic classification of discourse types"* (p.23). Because register is determined by context, enhancing learners' exposure to the context of academic language should by extension enhance their ability to both produce and understand this particular register. While the 'academic register' may be too broad an arena to envision in a classroom setting, it has been shown that formal definitions are a key minimal genre that provides both exposure and opportunities to practice production of such text (Uccelli et. al., 2015). Strong skills in the understanding and production of academic or formal definitions have also been shown to have an association with later academic success (Benelli et al., 2006; Kurland & Snow, 1997). A definition exhibits many of the central

features of academic text in that it must be precise without room for ambiguity, it should not be unnecessarily long, and will pack as much information as required into the shortest possible text. It is also a familiar genre for learners in schools, and forms and ideal circumscribed genre to both assess and practice the formal academic register.

7. Metalinguistic Vocabulary

Academic language is replete with terminology that describes conceptual relationships and reasoning moves that exist *in* language and describe concepts *about* language or language use. In academic language people don't have ideas they make *hypotheses* that may be *generalisable* or may be *compared* against other ideas and then *summarised*. Such language is known as metalinguistic vocabulary, because it is language about language and describes relationships between grammaticised elements of text. This skill is associated with understanding vocabulary that refers expressly to reasoning moves and discussion processes (Uccelli & Galloway 2016). It is also a skill that can be easily made explicit and practised in classroom settings. As learners encounter things like *arguments* they can be tasked with identifying the *premises* and *conclusions* – or they can be asked to make *summaries* of texts and provide *examples*. Clear understanding of such metalinguistic vocabulary should allow learners to smoothly navigate grade-appropriate academic discourse and assist them in producing such texts.

8. Identifying Epistemic Stance

> Academic language abhors certainty – and very few if any academic texts will provide absolute answers, but rather will provide evidence that supports a certain conclusion as far as possible. Much of this is associated with the scientific method more broadly, as described by Popper (1959; 1963), in that the process is inherently circular in nature and always accepts the possibility that new evidence may alter previous conclusions. With the scientific method in the background, academic language then will contain phrases that indicate the author's epistemic stance – the degree to which they accept or reject the proposition at hand. Skilled readers and producers of academic texts are able to identify what linguistic markers indicate the degree of support or opposition for a proposition in a text. Again, this skill is relatively simple to practice in a classroom setting, as learners can be asked to identify how 'sure' or 'unsure' a writer is about a certain fact – and similarly can be tasked with rewriting sentences to make the writer more or less sure about a given proposition.

In order to make the argument for the deployment of the CALS construct in South African classrooms, however, several pieces of information needed to be in place. The following section details the research undertaken up to this point that forms the basis for the current argument.

CALS in South African classrooms

Academic literacy in South Africa, while listed as a central outcome in the national curriculum in South African Schools (Department of Basic Education, 2011), is generally the province of Higher Education when it comes to focused training in such skills. Indeed, academic literacy as a concept is so variously defined and (until recently) so vaguely

operationalised that it is unsurprising that it finds little direct expression in the national schooling system.

This definitional instability allows academic language to be taken to denote forms of racialised language ideology (Flores, 2020); ways of describing a particular form of language deficit (Martinez & Mejia, 2020); part of the colonial project (Angu et. Al., 2020); a proxy for the hegemonic status of English and whiteness (Baker-Bell, 2020); or school-relevant language resources (Uccelli et. Al., 2015). This paper adheres strictly to the conception of academic language as school relevant language skills associated particularly with the consumption and production of text in a schooling setting. While any and all of the above conceptions of academic language and how the term is used are useful in certain circumstances, the understanding of the term advanced in this paper is narrowly focused on that of a skillset associated with success in schooling settings – and one that is used to affirm the value of learners' own voices and experiences (Cummins, 2017; Gee, 2014; Ladson-Billings, 2014; Paris & Alim, 2014; Uccelli et. Al., 2020).

The investigation into the use of CALS in South Africa began on the basis of acceptance of English as the hegemon despite the negative consequences that this entails. In other words, it was an argument born out of resignation that, despite the unfair status quo, if the system cannot be dramatically redesigned to work with learners in their home languages then there must be interventions to assist learners to cope with the system-imposed target language. The deleterious effects of English-immersion for learners are well understood (McLaughlin, 1978; Cummins, 1996; Stroud, 2001) and the initial intention of the work on CALS was to find ways to mitigate some of the consequences of the English-language-based system of schooling in South Africa.

As the work evolved, however, new evidence began to emerge that the CALS construct may describe school-relevant language skills that are not directly associated with a *particular* language (Uccelli et. Al., 2020; MacFarlane, 2024). Thus the *skills* required for the production and consumption of academic texts are beginning to be disentangled from the English language. There are few results that could hold more promise for a nation like South Africa – where our schooling system remains an English-language-based challenge for the majority of learners in the nation. If school-relevant academic language skills can stand alone as a generic skillset that can be applied *in any language* they allow such skills to be taught and assessed independently of English. Rather than the CALS construct capitulating to the hegemonic status of English, it becomes a weapon in the arsenal of those who wish to argue that *any* language can be used academically.

Initially, it was important to ascertain that the CALS construct functioned similarly when deployed in South Africa when compared against its functioning in the United States where it was first developed. South Africa is contextually different to the United States and it was not clear that the CALS construct developed in a largely monolingual culture that is socio-economically dissimilar to South Africa would remain applicable. Macfarlane, Barr and Uccelli (2020, p. 89) have however shown that

> *"the CALS construct functions almost identically to the United States sample when tested in South Africa, and this provides strong evidence for the fundamental and cross-cutting nature of these pedagogically relevant skills"*

This is an essential first step in making the argument for such skills to be developed into the toolbox of pedagogical skills in South Africa in particular. As demonstrated in the earlier sections of this article, the LoLT in the South African schooling system is one of the primary

barriers to wider success in schooling and beyond. It was also important to establish that CALS is associated with schooling success in South Africa, and this too has been demonstrated through a comparison of CALS and the Gauteng provincial Common Examinations (MacFarlane, 2023). While this baseline understanding of CALS is important, the challenge that lies ahead is to use these fundamental skills that have been empirically identified and turn them into pedagogical resources. In other words, to use the CALS construct to inform and underpin instruction across disciplines.

CALS-informed instruction

Ideas of infusing CALS into pedagogy are still in their infancy, and Uccelli et. Al. (2020) have conducted an exploratory study of CALS-informed instruction being used for LatinX learners in the United States. This is an important step, as the team argues that:

> "*without understanding and strategically scaffolding students' school-relevant language development, inequalities that exist in society will be maintained or exacerbated in school, unfairly benefitting those students socialized at home into ways of using language and literacy that support school learning"* (p. 75)

The above argument is of particular relevance to the South African schooling environment, an environment which has been a nexus of contestation around language and its role in learning. While the work undertaken in the United States on CALS-informed instruction revealed the unsurprising trend that CALS in English predicted comprehension in English – the study also, interestingly, concluded that Spanish CALS significantly predicted English comprehension (Uccelli et. Al., 2020). It is likely that CALS, when deployed in any language, will assist in comprehension and production of the relevant LoLT required of learners. The

strength of CALS lies not only in its empirically robust underpinnings, but centrally in that it is a *skillset* and not a *language* – nor is it associated with a particular language. The likelihood is high that CALS operationalised and deployed in any local language in South Africa would be beneficial for learners ands would assist them in comprehension of school relevant texts, while also allowing for transference of the *skillset* into another language. This is tacitly required in the South African schooling system in any case, given the hegemonic status of English in the system, but currently the linguistic skills required are present by implication alone.

Because CALS represents a *skillset* – rather than discrete skills – it is important to understand that it is not curriculum content that can be learned in a decontextualized or isolated approach. Indeed direct instruction in vocabulary, morphology, or syntax has been shown to be ineffective in providing learners with a linguistic arsenal to employ in their own academic writing (van Lier & Walqui, 2012). Rather CALS can be revealed and inculcated through a discursive approach, in which the teacher occupies the roles of an affirmer of learners' experiences and ideas, a listener to their voices, and a learner about students existing ways of using language.

Uccelli et. Al. (2020) have provided an initial map of how CALS could be deployed in a schooling setting:

(1) Scaffolding CALS

(a) using a CALS map to anticipate students' language needs, and strategically promote CALS

(b) promoting CALS across modalities (listening, speaking, reading, writing) and across content areas, together with content-area-specific language, to support conceptual learning

(c) adopting a CALS metalanguage, or language to talk about language, across content areas and grades, in Spanish and English.

(2) Fostering language awareness

(a) language-&-purpose: reflecting on how language varies by context (e.g., conversation vs. essay writing)

(b) language-&-self-expression: reflecting on language as flexible choices for self-expression (e.g., hybrid texts that cross borders by combining languages or language varieties)

(c) language-&-power: reflecting on language as a gateway and gatekeeper (e.g., how and why language can support communication and self-reflection or, instead, obscure meaning and silence voices).

(Reproduced from Uccelli et. Al., 2020)

A close reading of this schematic outline shows that CALS instruction is centrally informed by the desire to create in learners the facility for critical rhetorical flexibility. First it is about enhancing learners' abilities when it comes to the understanding and production of school-relevant texts, and second it is about critical examination of those embedded language forms and functions to understand how they shape power relations both within the schooling context and beyond. This is also why CALS-informed instruction requires a

discursive approach – learners adrift on the ocean of English need both the tools to navigate the dangerous waters, but also the understanding of how they can critically engage with, and against, the hegemony.

Although the pedagogical implications of CALS are still only thinly sketched, there is an urgent need for further development of the construct as a set of *principles* for teaching rather than just more content in textbooks. CALS is not so much about *what* is being taught – indeed it is cross-disciplinary in its conception and is intended for use across content areas. Almost all school-relevant disciplines rely on language, and learners engage with such disciplines through the medium of language. When teachers provide instruction to learners, CALS calls for critical engagement both with the material and with the language through which it is delivered.

The above discussion makes it clear that there is an urgent need for research into operationalising CALS beyond the assessment realm into a set of teaching resources for South African teachers. In a country with an education system linguistically skewed to the detriment of most learners, interventions are urgently required. CALS also do not represent a one-way relationship between learner and the system, indeed CALS are not intended to make a learner fit the system better but to make the learner better able to engage with the system and the power structures that inform it.

Conclusion

The CALS construct is not inherently associated with *language instruction* – that is, it does not teach the basics of language as a medium of communication. Rather the CALS construct can be used for instruction in a skillset associated with *using language for academic*

purposes – and as such the basics of communication in the target language are assumed to be in place before CALS can be deployed. This distinction is paramount, because CALS represents some of the fundamental skills required for learners to work with school relevant texts, irrespective of the language in which this skillset is acquired. Where ideas of language across the curriculum become challenging is where we encounter the idea that every teacher is, or should be, a language teacher. Not all teachers are language teachers, but this paper does not argue for that position. Rather it is argued that every teacher is involved in preparing learners to work with school-relevant texts across all disciplines, and that the skills associated with working with school relevant text have now been identified, empirically examined, and have been shown to have a strong association with schooling success.

Not every teacher is a language teacher, but every teacher is teaching academic skills within their discipline or disciplines. This paper argues for a systematic approach to this underpinning endeavour using an empirically robust skillset. The paper also argues that any attempt at enhancing linguistic skills in English in South Africa also demands that a critical lens is applied to the inherent socio-cultural power relations that English represents. There is an ever-present danger that the project to inculcate English language skills, even for reasons as pragmatic as allowing learners to better cope with the English language-based schooling system, can disguise the need to critically examine such power relations. It is all too easy to allow the hegemonic status of English, both within the South African schooling system and globally, to go unchallenged and unexamined – but the use of techniques such as critical rhetorical flexibility allows for the examination and critique of such cultural artefacts.

Ultimately, CALS represents a possibility of better equipping learners to navigate the linguistic requirements of the South African schooling system, while also giving them the tools to critique the (often unacknowledged) status quo.

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Chapter 7: Discussion & Conclusion

This study began with the goal of finding methods for improving educational outcomes related to language status and the language of learning and teaching (LoLT) in South Africa. The development of the Core Academic Literacy Skills (CALS) construct in the United States initiated this study – as it seemed to hold immense promise for a nation like South Africa where there is a significant mismatch between the aggregate language status of the population and the LoLT in schools. This mismatch between the language expected by the education system in South Africa and the home language/s of learners within the system has its roots in a history that, while briefly covered in the four linked articles that form the body of this study, is too complex to fully trace in research that is aimed centrally at mitigating the effects of this mismatch. Crucially, the language mismatch is between the Home Language status of the South African population and the LoLT, but this mismatch also creates gaps in the ability to use language as cognitive tool to engage with the formal linguistic requirements of school (Fleisch, 2008).

This research addresses the need for an operationalised construct that describes Academic Language in an empirically robust manner, and holds significant potential for addressing the gaps between the LoLT and the Cognitive Academic Language Proficiency (CALP) that is explicitly required by the South African curriculum (Department of Basic Education, 2011).

The need for an Operationalised Construct of Academic Language

It is, by now, well-trodden ground to note the distinction between Cognitive Academic Language Proficiency (CALP) and Basic Interpersonal Communication Skills (BICS) – but while these distinctions work at the level of categorisation, they do not approach operational definitions of the constructs. If we accept the distinction, then naturally we must begin

asking which instances of language use are ‘academic’ and which are ‘basic’. Indeed, the work of Jim Cummins (1976, 1979, 2000) has cemented the concepts of BICS and CALP in the day to day educational lexicon – so much so that the concepts even appear in the foundational curriculum documents of the South African Curriculum and Assessment Policy Statements (CAPS) (Department of Basic Education, 2011). It is clearly not enough to stop at the level of categorisation, for while it is useful and perhaps fundamental in school/academic settings to be able to categorise and broadly identify classes of language use, only an operational construct can provide us with the ‘building blocks’ of how to both assess and instil such skills.

If we conjoin this need for an operationalised construct to the language mismatch in the South African schooling system, it starts to become clear that the need for such a construct is urgent in this education system. A fully operationalised construct allows for direct instruction, formative, diagnostic, and summative assessments of CALP that create the possibility for teachers to directly assist their learners in empirically robust ways. Because of the diagnostic possibilities of the CALS construct and its associated assessment, as demonstrated in Chapter 5 (MacFarlane, 2024), it is now possible to discern learners’ strengths and weaknesses on specific sub-skills that make up the larger CALP construct and design instructional interventions to address such gaps.

The first part of the empirical work of this thesis was the work on validating the CALS construct in the South African setting. For this stage, it was a team effort between the original researchers that described CALS in the United States and myself – and the results of this phase of the investigation were far from certain at the outset. While CALS had been shown to be a robust description of Academic Language skills in the United States, there

were no guarantees that its functioning in that setting would be replicated in South Africa, a country with a different curriculum, learner population, and socio-economic context. Indeed – the continuation of the project rested solely on the outcome of the initial piloting of the CALS-I-ZA and the concomitant validation of the construct in this context. Had it been shown that the CALS construct did not function comparably in South Africa – the consequence for the construct more broadly would be to delimit its applicability to the United States schooling system, instead of being able to make claims about it describing universal or fundamental academic language skills. The consequence for the project in this thesis – to describe and critically analyse a set of fundamental academic language skills in English to guide assessment and curricula in South Africa – would be that CALS would have been shown to not be appropriate for this purpose.

With this challenge in mind, the research team were both surprised and extremely gratified to discover that the level of model-fit between the original CALS-I and the CALS-I-ZA was extremely strong – with a correlation of $r=0.92$ between the original and modified assessment forms. Indeed, the unexpected strength of the model-fit caused the team to re-run the statistics multiple times to ensure that what we were seeing was not some form of data or calculation error. The fact was that the CALS construct was functioning in South Africa in an almost identical manner to the manner in which it functioned in the United States sample. This showed that the CALS construct could not only be used to validly assess learners in South African classrooms – but the extreme level of correspondence between the two sets of observations also bolstered the claims that CALS was tapping into fundamental or underlying academic language skills.

This was not a result that we had predicted – and the dramatic level of correspondence gave us hope that CALS had indeed captured something both fundamental and generic about the larger construct of CALP. The original work on CALS (Uccelli et al, 2015), and the work that I have been directly involved in, has all been very careful to argue that CALS represents a sub-set of the larger construct of CALP as described by Cummins (1976, 2008). Ultimately this means that we cannot be sure that all aspects of CALP are empirically described within CALS, and indeed recently another team of researchers (Roberts et al, 2023) in South Africa has built on the work published as part of this thesis (MacFarlane et al, 2022) and is extending the CALS construct as part of the Primary Teacher Education (PrimTEd) project in South Africa. It is extremely promising to see that this work is already being extended and embedded in practical projects in South Africa.

CALS: Beyond a Construct for Assessment

For the purposes of this research, however, validating CALS in South Africa was only the first step. The central goal of this research was not about the accurate assessment of learners, but rather to argue for the use of CALS as more than just an assessment construct. The unique nature of CALS is that it represents a fully empirically measurable set of skills that form part of the larger construct of CALP. By operationalising such skills, they can be moved out of the realm of assessment alone and can be used as discrete instructional strategies built into curricula across the subject spectrum, and as part of teachers' arsenal of pedagogical techniques. Thus, it was not sufficient to show that CALS functioned comparably in South Africa as an assessment construct – it was also essential to link the construct to academic outcomes (as proxied by Provincial Common Examinations in the case of this research).

The necessity to link learners CALS-I-ZA results with the Provincial Common Examinations meant that the overall sample had to be delimited only to the Public schools (since these examinations are run in Public Schools) and classes in the original sample for whom data was available. This dramatically shrank the validation sample in the first article (n=285) to just n=89. While this sample size was still adequate to indicate if there was a statistically significant relationship between CALS and Academic Performance, a small sample inevitably further limits the generalisability of the results. Nonetheless the relationship between Academic Performance and CALS was shown to be robust – with correlations for the Natural Science assessment and the Mathematics assessments of the Common Examinations falling at around .65 (*r=.642* and *r=.650*). These moderately strong correlations were an important result for this project, as two of the fundamental necessary points had now been established – CALS functions robustly in the South African context and is also associated with schooling outcomes. Crucially – the Common Examinations represent performance in non-language subjects. Given the goals of this thesis overall, it would not have advanced the argument further to show that CALS predicts performance in language assessments. While that would serve to further strengthen the argument that CALS accurately describes a constellation of language skills – the key for this step of the project was to focus on the *school relevant* nature of CALS. Thus, it was crucial to determine the relationship between CALS and general school performance rather than specifically if it was related to language skills, a claim that does not advance the broader agenda of this thesis. This project intended to examine CALS and its relationship with academic performance across general school subjects – and while the claim that CALS may improve or have a linear relationship with English skills is important, it does not cement the fundamental claim that improved outcomes in CALS (or perhaps Academic Language Skills more broadly since CALS cannot

claim to have exhaustively captured and operationalised every conceivable aspect of this larger construct) should be accompanied by improved outcomes in general schooling for learners.

It is important, however, not to overemphasise language as though it alone may be a panacea for all ills within the South African schooling system. Where today's linguistic mismatch in the system has arisen in response to the Apartheid Bantu education system of the past, the Bantu education system was characterised by many more injustices than language policy alone (Giliomee, 2003). Apartheid in general systematically engineered dramatic inequalities between the various population groups of South Africa based on an ideology of racial dominance. In simple terms Apartheid sought to impoverish and subjugate, to varying degrees, all South Africans that were not identified as 'white'. The Apartheid regime was cruelly effective at this form of negative social engineering – and thus even today linguistic mismatches in schooling will often coincide with poverty and various form of inherited socio-economic distress. Although Apartheid ended in the early 1990s and the transition to democracy occurred in 1994 in South Africa, a formal ending to the system of racial segregation and oppression did not erase the lingering societal effects.

This makes working on questions of language and LoLT in South Africa particularly complex, since there is on aggregate an association between L2 status and varying forms of poverty and inequality (Fleisch, 2008). Further, this will generally not be true for learners that offer Afrikaans as their L1, as many of those learners will attend Afrikaans medium schools – again an effect of the resource distribution and systemic arrangements that have remained post-apartheid. This also creates challenges in interpretation of research on language in South Africa – even for the empirical work done in this thesis. The system of Apartheid was

constructed not only with ideas of subjugation of certain racial groups in mind, but it was also explicitly designed to uplift the white population in general, and the Afrikaans speaking portion of that population group in particular (Giliomee, 2003). This complicates the foundational categorisation used in this thesis of subdividing the sampled learners into L1 (English as a Home/First Language) and L2 (Any other language as a Home/First language). There is significant evidence (Department of Education, 2023) that the Afrikaans language group has a different experience of schooling in South Africa, and it is possible that narrative of the Language Mismatch that runs throughout this thesis may not apply to this group in particular – as the possibility of receiving all school-level tuition in Afrikaans in a generally monolingual environment still exists for this group. That scenario is, as is made clear throughout this thesis, already the case for monolingual or L1 English speakers in South Africa. This reality must give us pause, because the perhaps sanitised narrative about a linguistic mismatch in the South African education system should not blind us to the racial component that underlies this mismatch in that it is possible as a White South African (the population group that in general makes up the Afrikaans L1 and English L1) to avoid the language mismatch in schooling almost entirely, as some 97% of all White South Africans have either English or Afrikaans as their L1 (Statistics South Africa, 2011).

To disentangle the effects of the varying socio-economic positions occupied by learners in different schools, areas, and provinces is exceptionally challenging – and this challenge is amplified when it is considered that this research project was undertaken by just a single researcher in a limited number of Quintile 4 & 5 schools. This necessarily entailed a form of convenience sampling, which limits the generalisability of the findings. Further, the Quintile 4 & 5 status of the schools in the sample may also disguise many of the wider socio-

economic issues in the nation since the sample consists of some of the 'least poor' learners in the school-going population.

CALS and the necessity for Socio-Cultural Pragmatics

The complexity compounds even further, however, when we necessarily follow through on the foundational theoretical underpinnings of the CALS construct – socio-cultural pragmatics. Since socio-cultural pragmatics sees certain behaviours as culturally bound, it necessarily holds that what is 'right' or 'correct' behaviourally is a largely culturally or contextually bound phenomenon. If this theory is understood as both thoroughgoing and fundamental, it holds therefore that any instance of language use is only 'correct' in certain cultures while it may be 'incorrect' or meaningless in other contexts. If we follow through to examine CALS as a constellation of school appropriate language forms and functions – we cannot be blind to the fact that these skills are *culturally* appropriate in certain settings that – in the case of schooling in English in South Africa – have their roots in systems of cultural subjugation and oppression. Thus, a simple argument around using CALS as a way to assist learners to improve their skills in academic language is not neutral – indeed Cummins (1976, 1979, 2000, 2008) has argued this point strongly – and it must be acknowledged that the skillset is one that is both embedded within, and targeted towards, a Western ideal of how to structure and express thought.

Where western thought demands parsimony, the work of Makalela (2022) convincingly argues that many local cultures will prefer circumlocution as a method of inquiry. Where CALS looks at academic text as featuring densely packed information, local knowledge systems may approach the same question from a more Socratic or circuitous route. Ultimately as these arguments were teased out and examined, it became clear that CALS

understands academic language as part of the western tradition of enquiry and expression. This revelation led me to begin asking questions about what is *lost* if we imagine that CALS becomes thoroughly deployed as part of the South African pedagogical/curricular framework. It became clear that while CALS represents western academic language and has 'correctly' identified and operationalised crucial aspects of this construct – western academic language is itself a cultural-historical artefact. That is to say that the formal register used in constructing arguments and using language academically has not coalesced in this manner due to it being universally correct – but rather because it is part of a western cultural tradition that has become globalised in the aftermath of colonialism. These arguments are important because learners in South Africa must be made aware that what is 'right' in terms of using language and reasoning moves in school hails from and embeds a certain cultural perspective. Academic language as understood by the western academy is not is not necessarily *the* way to construct arguments, it is *a* way of going about these things.

The above argument is crucial, as the history of language in South Africa is also the history of physical, cultural, and epistemic violence being visited upon the majority of South Africans. The hegemonic positions of the English language and the Western academy are not functions of natural justice, but rather they represent the legacy of centuries of Colonialism and the erasure of local ways of doing and being. This understanding led me to re-examine CALS, and particularly to revisit the theoretical underpinnings of CALS, being embedded as it is with a Socio-Cultural Pragmatics point of view. It was upon revisiting the theoretical underpinnings of CALS that I began to reconcile the initial impetus simply to find a method to assist in the improvement L2 learners school results, with my findings that

point to CALS as a valuable intervention for achieving this goal, but the goal could not stand uninterrogated. By returning to the theoretical basis for CALS, however, I once again found solace in the certainty that socio-cultural pragmatics stands firm on the conception that the impetus for action within society and cultural practices is ultimately pragmatic in nature. Socio-cultural pragmatics argues that behaviours are prompted by and fashioned for use in certain social and cultural contexts (Ravid & Tolchinsky, 2002), and crucially it does not assign a value beyond these practices beyond their utility within such contexts. By extension then, the use of CALS in inculcating and improving English outcomes in South Africa has a practical or pragmatic value – but at no point is any argument advanced that these skills have some sort of cultural or moral value. Indeed, the hegemonic status of English globally, and in South Africa in particular, is an artefact of the great historical crime of Colonialism. It is for this reason, among others, that inculcating English language skills in South African learners is not a morally or culturally neutral endeavour – especially if we allow the high status of English to erode existing cultural ways of doing, thinking and being.

With these limitations in mind, then, the study shows that a fully operationalised construct of Academic Language Skills in English can function well to inform the assessment (diagnostic, formative, and summative) of academic language in South Africa. Further, while accurate assessment of language capabilities – particularly Academic Language in the context of schooling – was an important sub-goal of the research, the central goal was to show that a robust and fully operationalised construct could be used to inform instructional practices as well as assessment possibilities. A central thread running through the research was the argument that educational material that is directly testable must inevitably be directly teachable – and the intention at the conclusion of this research is to continue

investigating the use of CALS as an instructional tool in South African classrooms. The findings of this research confirm that the CALS construct performs comparably when deployed in South Africa and the United States, confirm that CALS accurately predicts academic performance, and that such predictions of performance remain stable across L1 and L2 groups.

This research addresses a pressing question, particularly for the South African schooling system, of how to directly assess and teach CALP – the larger construct of Cognitive Academic Language Proficiency that is directly referenced as an outcome of the South African Curriculum and Assessment Policy Statements (CAPS).

> *The Home Language level provides for language proficiency that reflects the mastery of **basic interpersonal communication skills** required in social situations and the **cognitive academic skills** essential for learning across the curriculum.*
>
> (Department of Basic Education, 2011, p.8 – emphasis added)

This research provides the construct that operationalises fundamental aspects of CALP – the construct that the Department of Basic Education has in the above quotation referenced as '*essential for learning across the curriculum*'. Until now, CALP has been a category of language use that has not been amenable to direct assessment or direct instruction, due to its categorical nature. For the first time, a construct of Academic Language has been fully operationalised and tested in the South African context, and has been found to be both empirically robust and predictive of learners' subsequent academic performance (see Chapter 4 of this thesis). The construct has also been extended beyond its initial use-case for

assessment, and an argument has been developed for CALS-informed instruction in South African schools and in initial teacher education.

The investigation into CALS has also engendered dramatic personal growth in my own thinking about the issue of language and the language-mismatch in South Africa. Where I began this project with a clear goal in mind of describing a construct that could assist South African learners in meeting the cognitive-academic demands of the LoLT, critical analysis of the construct and the South African education system has complicated such goals. The phenomenon of subtractive bilingualism (Nguyen, 2022) tempers the argument for inculcating English-language skills in learners as a purely additive activity. Indeed, the fact that the CALS construct is fundamentally embedded within socio-cultural pragmatics forced me to contend with the fact that improving learners CALP in English is not a universally desirable goal – but rather one that is culturally bound and pragmatic only in a certain cultural context. Uncritically deployed, CALS holds within it the potential to suggest to learners that the 'right' way to do things is the way of the English/Western Academy – and that locally derived ways of doing and being are therefore 'wrong'. The argument developed over the course of this thesis is far from the simplistic place where I began. Although I still ultimately argue for the use of CALS as a pragmatic tool to achieve certain outcomes expected by the formal Education system, the argument is for cautious and critical deployment of the CALS construct with explicit and ongoing reference to the fact that it represents capabilities that are useful in a certain system, rather than being the 'correct' way to structure language and thought. It is also clear that juxtaposing CALS against a range of authentic indigenous African epistemologies is an important task for further

investigation, to understand possible continuities and discontinuities between these different paradigms.

The empirical findings in this thesis require substantial further investigation, however, as the work done is at too small a scale to provide generalisable findings. To show generalisability, a larger sample would need to be drawn that is as close to nationally representative as possible. The sample would also need to make observations across all school quintiles – as opposed to the limited sample that could be drawn by a lone student researcher based in the Gauteng province. Limiting the sample to "wealthier" schools made the work possible to complete alone, but such convenience sampling does not go far enough to allow for generalisable findings. A larger study that includes schools from all economic Quintiles is an important avenue for further study. It is also important to begin investigating the causal relationship between CALS and Academic performance through direct deployment of CALS and measurement of any subsequent improvements in Academic Performance. This study shows strong associations between these variables, but causality has not been established.

Nonetheless, this thesis provides a valuable starting point for further investigation, as the findings argue strongly that the CALS construct holds tremendous promise for deployment in South Africa to enable accurate assessment of cognitive academic language proficiency, and direct instruction in the construct has been linked to improvement in learners overall academic results.

I leave the reader with this final thought:

"Language is not everything in education but without language everything in education is nothing" (Wolff, 2009, p.9)

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Appendices

Ethical Clearances

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 MacFarlane

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H16/07/15**
PROJECT TITLE	Core academic language skills in grade 6 South African learners
INVESTIGATOR(S)	Mr M MacFarlane
SCHOOL/DEPARTMENT	Human and Community Development/
DATE CONSIDERED	22 July 2016
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	05 September 2019

DATE 06 September 2016 **CHAIRPERSON** _____ (Professor J Knight)

cc: Supervisor : Professor H Jordaan

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

For administrative use only:
Reference no: D2016 / 395
enquiries: Diane Buntting 011 843 6503

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GDE RESEARCH APPROVAL LETTER

Date:	**18 February 2016**
Validity of Research Approval:	**18 February 2016 to 30 September 2016**
Name of Researcher:	**Mac Farlane M.V.W.**
Address of Researcher:	**11 Neale Crescent; Northcliff; 2195**
Telephone / Fax Number/s:	**011 678 7220; 083 391 8363**
Email address:	**marco.farlane@umalusi.org.za**
Research Topic:	**Core Academic Language Skills in Grade 6 South African Learners**
Number and type of schools:	**FIFTY- ONE Primary Schools**
District/s/HO	**Johannesburg East**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved. A separate copy of this letter must be presented to the Principal, SGB and the relevant District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted. However participation is VOLUNTARY.

The following conditions apply to GDE research. The researcher has agreed to and may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

CONDITIONS FOR CONDUCTING RESEARCH IN GDE

1. *The District/Head Office Senior Manager/s concerned, the Principal/s and the chairperson/s of the School Governing Body (SGB.) must be presented with a copy of this letter.*
2. *The Researcher will make every effort to obtain the goodwill and co-operation of the GDE District officials, principals, SGBs, teachers, parents and learners involved. Participation is voluntary and additional remuneration will not be paid;*
3. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal and/or Director must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*

2016/02/19

Office of the Director: Education Research and Knowledge Management ER&KM)
9th Floor, 111 Commissioner Street, Johannesburg, 2001

4. *Research may only commence from the second week of February and must be concluded by the end of the THIRD quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
5. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
6. *It is the researcher's responsibility to obtain written consent from the SGB/s; principal/s, educator/s, parents and learners, as applicable, before commencing with research.*
7. *The researcher is responsible for supplying and utilizing his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institution/s, staff and/or the office/s visited for supplying such resources.*
8. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research title, report or summary.*
9. *On completion of the study the researcher must supply the Director: Education Research and Knowledge Management, with electronic copies of the Research Report, Thesis, Dissertation as well as a Research Summary (on the GDE Summary template). Failure to submit your Research Report, Thesis, Dissertation and Research Summary on completion of your studies / project – a month after graduation or project completion - may result in permission being withheld from you and your Supervisor in future.*
10. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned;*
11. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director/s and school/s concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Dr David Makhado

Director: Education Research and Knowledge Management

DATE: 2016/02/19

Office of the Director: Education Research and Knowledge Management ER&KM)
9th Floor, 111 Commissioner Street, Johannesburg, 2001

Consent forms

Dear Principal,

My name is Marco MacFarlane and I am conducting research for a PhD in Research Psychology at the University of the Witwatersrand. I am studying how learners acquire academic language skills and I hope to develop an instructional programme that can allow for direct teaching of these types of skills. The project is entitled: *Core Academic Language Skills in Grade 6 South African Learners.*

If you grant me permission to conduct the study at your school, the grade 6 teacher/s will be provided with information and consent forms regarding the research. The parents of learners who are currently in grade 6 will also be given information sheets and consent forms. The children who participate in the study will be given a simplified description of the study and their consent will also be requested.

If the parents allow their children to participate and the child gives consent, the child will be tested on a test called the *Academic Language Assessment*, requiring him/her to complete some questions aimed at discerning specific language skills. The test takes exactly 50 minutes to complete. It is anticipated that the results of the study will have implications for teaching practice to facilitate academic language acquisition in the intermediate phase and beyond.

Participation in this study is completely voluntary. Children are free to refuse to participate and to withdraw at any time during the study. They will not be penalised or disadvantaged in any way. Furthermore, all responses are strictly confidential and all personally identifiable information for both learners and schools in this project will be destroyed once the data has been extracted.

If there are any queries please do not hesitate to contact me.

Your cooperation would be greatly appreciated.

Marco MacFarlane

(PhD Student)

(011)678-7220 / (083) 391 8363

Prof. Heila Jordaan

Supervisor

PROJECT: *"Core Academic Language Skills in Grade 6 South African Learners"*

I hereby give permission to the researcher to conduct the above-mentioned study at this school .....(name of school).

Principal: ..... (name) Signature: .....

Date: .....

Dear Teacher,

My name is Marco MacFarlane and I am conducting research for a PhD in Research Psychology at the University of the Witwatersrand. I am studying how learners acquire academic language skills and I hope to develop an instructional programme that can allow for direct teaching of these types of skills. The project is entitled: *Core Academic Language Skills in Grade 6 South African Learners.*

I would like to request your permission to conduct this research in your class after school hours. The parents of learners who are currently in grade 6 will also be given information sheets and consent forms. The children who participate in the study will be given a simplified description of the study and their consent will also be requested.

If the parents allow their children to participate and the child gives consent, the child will be tested on a test called the *Academic Language Assessment*, requiring him/her to complete some questions aimed at discerning specific language skills. The test takes exactly 50 minutes to complete, and will be conducted after school hours. It is anticipated that the results of the study will have implications for teaching practice to facilitate academic language acquisition in the intermediate phase and beyond.

Participation in this study is completely voluntary. Children are free to refuse to participate and to withdraw at any time during the study. They will not be penalised or disadvantaged in any way. Furthermore, all responses are strictly confidential and all personally identifiable information for both learners and schools in this project will be destroyed once the data has been extracted.

If there are any queries please do not hesitate to contact me.

Your cooperation would be greatly appreciated.

Marco MacFarlane

(PhD Student)

(011) 678-7220 / (083) 391 8363

Prof. Heila Jordaan

Supervisor

PROJECT: *"Core Academic Language Skills in Grade 6 South African Learners"*

I hereby give permission to the researcher to conduct the above-mentioned study in my class.

Teacher: ..... (name) Signature: .....

Date: .....

Dear Parent,

My name is Marco MacFarlane and I am conducting research for a PhD in Research Psychology at the University of the Witwatersrand. I am studying how learners acquire academic language skills and I hope to develop an instructional programme that can allow for direct teaching of these types of skills. The project is entitled: *Core Academic Language Skills in Grade 6 South African Learners.* I would like to invite you to allow your child to participate in my research.

The study involves your child doing a written test aimed at identifying and testing specific language skills that are thought to be involved in using language for academic purposes. The test takes about 50 minutes to complete and will be conducted during school hours. All personally identifiable information for your child and the school itself will be destroyed upon extraction of the data, and complete anonymity is assured.

If your child decides to participate and you agree, kindly fill in the formal consent form below. Participation in this study is completely voluntary. You are not under any obligation to allow your child to participate. If you decide not to participate, or wish to withdraw your child at any time during the study, you and your child will not be penalised or disadvantaged in any way. In addition, all the test results will remain strictly confidential.

Should you have any queries you can contact me. I will gladly respond to your questions to the best of my ability. If you have any concerns about this project you can also contact the Human Research Ethics Committee at Wits University: Lucille Mooragan, Lucille.Mooragan@wits.ac.za or 0117171408

Your participation and contribution to this study would be greatly appreciated.

Please return the consent form below, indicating whether or not you agree to allow your child to participate.

Marco MacFarlane — Prof. Heila Jordaan

PhD Student — Supervisor

(011) 678-7220 / (083) 391 8363 — (083) 323 8016

PROJECT: *"Core Academic Language Skills in Grade 6 South African Learners"*

Formal Consent Form

I, ... (name and surname) hereby consent to allow my child ..... (name) to participate in this study. Furthermore, I give the researcher, Marco MacFarlane, permission to use the responses in the write up of the study and in any further publications or presentations.

I understand that I am free to refuse to participate, or withdraw my child and discontinue participation in the study at any time, without it being held against me or my child in any way.

I understand that privacy will be maintained and that any responses will remain strictly confidential and anonymous. I am also aware that if I have any questions at any time, they will be answered by the researcher.

Signature: _____

Date: _____

Dear Learner,

My name is Marco, and I would like you to help me in completing a big project at University. I am studying how kids learn and use English in school, and I would like you to help me by writing a test for me. This test isn't for marks, and what we are trying to do is check that this test works properly. If you agree to write the test, I won't let anyone know how you did on the test, since I am only trying to see how the test works. Your results will help me to understand how this test works and if it is useful in South Africa.

You don't have to do this if you don't want to, and even if you say 'yes' now remember that you can say 'no' at any time and you won't get into trouble.

If you think you would like to help me with this, please read and sign the form below.

Thanks so much!

Marco

CHILD ASSENT FORM

PROJECT: *"Core Academic Language Skills in Grade 6 South African Learners"*

Hello, my name is Marco. I am studying at university and I am working on a big project. I would like you to be part of my project. The project is about how children use English in school, just like you do. We are going to write a test that will ask you to fill in some answers to a few questions. None of this is for marks and if you don't want to do the test you don't have to. Even if you say 'Yes' now, if at any time later you do not want to do the test anymore, just tell me and I will stop. You will not get into trouble if you decide to stop.

Will you help me with this project?

YES

My name is _____

The date today is _____