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Core academic language skills as a predictor of academic success in Grade 6 South African learners

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With this article I explore 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, Phillips Galloway, Barr, Meneses & Dobbs, 2015) as 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 I investigate whether a measurable link exists between this assessment and schooling outcomes for a sample of Grade 6 learners in 2 public schools in the Gauteng province of South Africa. 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 reported on here shows 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 use – basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). Where BICS can be conceived as the language of the playground, CALP is simply understood as the language of the classroom (Fillmore & Snow, 2000).

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 proven 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 with children in the United States of America (USA) (Uccelli, Barr, et al., 2015, Uccelli & Phillips Galloway, 2017; Uccelli, Phillips Galloway et al., 2015), but concerns about its applicability outside of that socio-cultural environment have largely been addressed (MacFarlane et al., 2022; Meneses, Uccelli, Santelices, Ruiz, Acevedo & Figueroa, 2018).

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.

In this article I assess 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 directly identify 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, Phillips 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 I use the broad categories of BICS and CALP to delineate the two types of language use in this article, I do not argue for any kind of hard boundary between the two, a precipice beyond which language use 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; however, most language use falls 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 (Common Core State Standards Initiative, 2010; Department of Basic Education [DBE], Republic of South Africa [RSA], 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; Phillips 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.) (Meneses et al., 2018; Phillips Galloway & Uccelli, 2019) 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, 2015; 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" (Phillips 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 (MacFarlane et al., 2022; Uccelli, Barr, et al., 2015; Uccelli, Phillips Galloway, et al., 2015).

The constellation of school-relevant language forms and functions representing the CALS construct was developed in the USA (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, Uccelli & Ruiz, 2020; Meneses et al., 2018). 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.

In the following section I describe the broad linguistic and schooling environment in South Africa, and ultimately provide 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 LOLT for the overwhelming majority of learners in the South African schooling system (Alexander, 2010; DBE, RSA, 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 minoritised 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 LOLT, 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, "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 was an explicit protest against instruction through the medium of Afrikaans. 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 DBE (2011), in the national school curriculum documents, highlights academic language proficiency as fundamental to school success: "[t]he Home Language level provides for language proficiency that reflects the mastery of BICS required in social situations and the **cognitive academic skills** essential for learning across the curriculum" (DBE, RSA, 2011:8, emphasis added). And later: "[l]earning a language should enable learners to acquire the language skills required for academic learning across the curriculum" (DBE, RSA, 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 was used to answer the question of whether an association with CALS and academic achievement existed, 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 with 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

With this research I 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 point of view (Snow & Uccelli, 2009; Van Compernolle, 2014) – a view that regards language and language use 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 from two urban public schools in the Gauteng province in South Africa. Both schools were Quintile 4 schools – "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 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 used, 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[i] 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 were 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 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. The common examinations in this study were treated as a proxy for "schooling outcomes" as a generic construct, and crucially do not represent language-based subjects. In this way it is possible to determine whether 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 & Phillips Galloway, 2017). The measure consists of the following sub-tests:

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 (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, Phillips Galloway, et al., 2015).
2) *Connecting Ideas:* In this subtest learners are asked to select the missing marker from 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 processing of and learning from academic texts (Farahani & Ghane, 2022).
3) *Tracking Themes:* Learners are asked to match the underlined texts with its antecedent by selecting from 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 & Phillips Galloway, 2017)

The CALS-I-ZA was administered to learners during school hours before 11:00 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 mathematics and natural science and technology (NST) common examination results using Pearson's product moment correlation coefficient in the Statistical Package for the Social Sciences (SPSS) software version 17 (SPSS, 2017). The second research question hinged on the outcome of the first, and any association between CALS and 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 and common examinations

	N	Minimum	Maximum	*M*	*SD*
Mathematics 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 reveal a high degree of correspondence between the patterns of results obtained on the CALS-I-ZA and the mathematics 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 and the results are displayed in Table 2.

Table 2 Correlations between CALS-I-ZA and common examinations

		Mathematics common exam	NST common exam	CALS-I-ZA
Mathematics 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. The first being that the South African curriculum at Grade 6 level is largely integrated 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) (DBE, RSA, 2011). Secondly, the common examinations are intended to provide comparable information about learners, and thus it is not unusual that the examinations would correlate.

It is important to note that both common examinations' strongest correlations are with the CALS-I-ZA with NST at r = .642 and mathematics 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 as a positive relationship exists between the CALS and schooling success in Grade 6 South African learners. The fact that the core language skills are related to schooling success is not surprising, as a great deal of research demonstrates 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 (DBE, RSA, 2010, 2011; South African Government, 1997) and in academia (Cliff, 2015; Yeld, 2001; Yeld, Prince, Cliff & Bohlmann, 2012) attests 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 show that the construct is closely associated with schooling success in a numerical-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.

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., 2015:1078) it is a short leap to take to argue that being able to explicitly identify such skills should allow direct instruction in these skills. This ultimately 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 not aimed 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. 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 USA (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 learners in Quintile 4 schools, 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 differs 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 include it directly into the teacher training curricula at 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 in specific contexts like schooling and academia is a learned skill that can be both taught and improved.

Notes

i. All South African examinations are constructed based on Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001) and in some instances on Barrett's Taxonomy (Clymer, 1968).

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