




Assessing student teachers' knowledge of English to inform curriculum design in initial teacher education

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Background: In Initial Teacher Education (ITE) programmes, there are concerns about student teachers' English language proficiency.

Aim: To discuss the first iteration of the PrimTEd English language and literacy test and analyse the results for information about the test instrument and about student teacher attainment.

Setting: South African student teachers in BEd programmes preparing for teaching in primary schools, across six public universities, participated in the test from 2020 to 2022.

Methods: The student results for the PrimTEd English assessment were analysed using basic statistics, focussing on the largest samples of first-year and fourth-year students who took both the subtests. The items in each subtest were coded according to their underlying language constructs, and each subtest was subjected to Rasch analysis before the test was considered as a whole.

Results: The initial test showed the attainment of fourth-year students (mean = 55%, standard deviation [SD] = 21%, $n = 731$) was only 3 percentage points higher than that of first-year students (mean = 52%, SD = 20%, $n = 1177$).

Conclusion: The similarities between the first- and fourth-year students' test results is concerning. There remains much work to be done in building student teachers' English language proficiency in BEd programmes.

Contribution: The findings and recommendations should be useful to ITE lecturers in designing programmes that enable progressive development of English language and literacy competence from first year to graduation.

Keywords: primary teacher education; initial teacher education; PrimTEd project; English; South Africa.

Introduction

This article provides an overview of some English language test background and development and testing results from the Primary Teacher Education Development (PrimTEd) project for the period 2020–2022. The PrimTEd is a voluntary collective of 25 universities that aims to monitor the development of knowledge and skills by students in Initial Teacher Education (ITE) programmes for primary school teachers. Assessments in mathematics and English (first additional language) have been collaboratively developed and administered regularly in first and fourth year of the Bachelor of Education (B.Ed) programmes, in order to use assessment data as a rich source to improve teaching and learning. The importance of strong teacher knowledge is repeatedly mentioned in the literature around ITE standards, with 'high levels of content knowledge constituting a non-negotiable requirement on the basis of which competence in teaching depends' (Rusznyak & Bertram 2015).

The *Norms and Standards for Educators (NSE)*, published in 2000, was the first formal policy to specify academic qualifications for teachers. It was followed in 2014 by the *Minimum Requirements for Teacher Education Qualifications (MRTEQ)* policy framework. This framework outlines language requirements and a broad mix of knowledge expectations for ITE programmes. The MRTEQ (2014) outlines five types of learning associated with the acquisition, integration and application of knowledge for teaching purposes in ITE: (1) disciplinary learning, (2) pedagogic learning, (3) practical learning, (4) fundamental learning and (5) situational learning

(Government of South Africa, 2014, 12). While mathematics subject matter knowledge is an example of disciplinary learning, English language learning spans disciplinary, pedagogical, fundamental and situational learning. Taylor and Mawoyo (2022b) presented a nested approach to standard setting in teacher education. An overview of the sets of standards that teachers as professionals need to attain is summarised in Figure 1.

Within the provisions of the *MRTEQ* is a requirement to establish and monitor standards for both ITE and Continuing Professional Teacher Development (CPTD). The standards advocated in *MRTEQ* span the various phases and demands of qualification, accreditation and continuous professional development of a teacher.

The Higher Education Quality Evaluation (CHE 2010) identified low student performance in language (and mathematics) as a matter of concern and this led to acknowledgement by the teacher education community that teaching, unlike other professions, lacked internal standards initiated and maintained by the professionals themselves. In 2016, the PrimTEd project was established by the Department of Higher Education, with support from European Union funding, to develop knowledge and practice standards for mathematics, languages and literacies. These curriculum standards were collaboratively developed over a period of 4 years by ITE lecturers responsible for teaching mathematics, languages and literacies across all 25 universities.

The PrimTEd community has developed the following knowledge and practice standards for English as a First Additional Language (EFAL). Teachers must be able to:

- demonstrate knowledge of home language acquisition and additional language learning theories and research findings;
- recognise the reciprocal relationships between home and additional languages as resources for learning and development;
- demonstrate sound knowledge of, and ability to use, the English language;
- demonstrate knowledge of how the sounds vocabulary and grammar of the English language are taught;
- demonstrate knowledge of and ability to use a range of instructional strategies and methods to support the development of orality and literacy in EFAL; and
- can source, design, display and manage appropriate EFAL resources.

Source: PrimTEd Languages and Literacies knowledge and practice standards.

Context of initial teacher education for primary school teachers

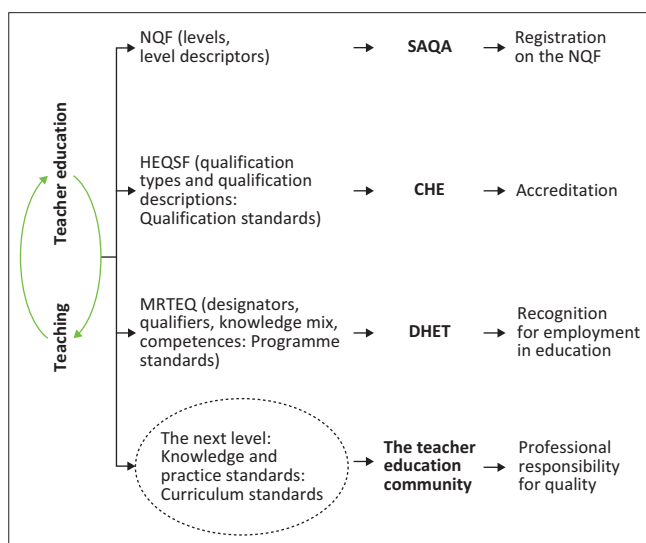
What do we know about the knowledge levels of incoming (first year) and graduating (fourth year) Bachelor of Education students?

Prior to the PrimTEd tests, the main sources of knowledge about students entering the education system were: (1) the National Senior Certificate (NSC) examinations and (2) National Benchmarking Tests (NBTs). Traditionally matriculation results have been seen as an indicator of subsequent academic achievement and also possibly of certain interests, attributes or orientations indicative of future career choices. One problem with the NSC language results is that across languages, the quality and depth of assessment in both home and additional languages are not comparable (Fleish, Schoer & Cliff 2015), therefore not giving a full and reliable result.

The NBT project was commissioned in 2005 by Higher Education South Africa. In 2018, the project reached maturity as a standalone and self-funding project, hosted at the University of Cape Town (see <https://nbt.ac.za>). Academic literacy is one of three tests that make up the NBTs: (1) Mathematics, (2) Academic Literacy and (3) Quantitative literacy (Fleisch, Pather & Motilal 2015:156). Figure 2 presents the academic literacy results of students entering the University of the Witwatersrand's B.Ed programme in 2014. The majority of these students use English as an additional language and wrote the EFAL examination papers.

As indicated in Figure 2, the majority of EFAL students (79.8%) achieved scores only at the basic and lower intermediate levels in the Academic Literacy NBT. Fleisch et al. (2015) found that:

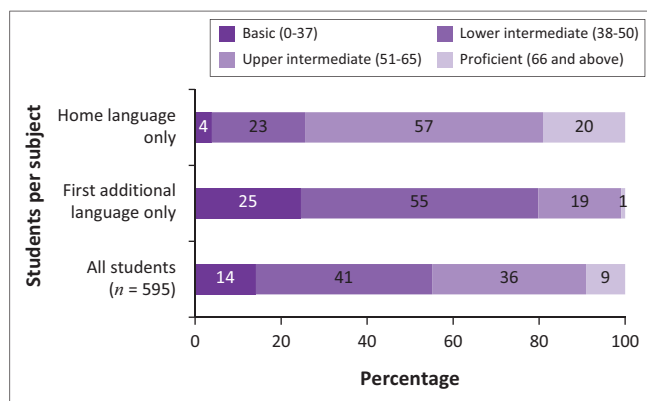
[S]tudents who wrote the FAL papers scored between 0.5 and 0.9 of a standard deviation below students who wrote the Home language paper and will need extensive and ongoing support. (p. 156)



Source: Taylor, B. & Mawoyo, M., 2022b, 'Professionalising teacher education: The case of language and literacy', in E. Pretorius & N. Spaul (eds.), *Early grade reading in South Africa*, vol. 2, Oxford University Press

SAQA, South African Qualifications Authority; CHE, Council on Higher Education; DHET, Department of Higher Education and Training; NQF, National Qualifications Framework; MRTEQ, Minimum requirements for teacher education qualifications.

FIGURE 1: A nested approach to standard setting in teacher education.



Source: Author-created drawing on data from Fleisch, B., Schöer, V. & Cliff, A., 2015, 'When signals are lost in aggregation: A comparison of language marks and competencies of first-year university students', *South African Journal of Higher Education* 29(5), 156–178

FIGURE 2: University of the Witwatersrand education students, National Benchmarking Test Academic Literacy (2014).

Bowie and Reed (2020) report that when researchers administered English and Mathematics tests to a sample of students in B.Ed programmes across six South African universities they found that 'some student teachers are no more proficient in Maths and English than the grade 4 to 6 learners they are preparing to teach' (p. 116). However, what is further disconcerting is that 'very few South African teachers are equipped to teach reading' (Spaull & Pretorius 2022:161). The reasons for this are clear: the Initial Teacher Education Research Project (ITERP) report found that five universities gave 'little attention to explicit teaching of reading and writing and to teaching of English as a First Additional Language' (2014). That all primary teachers need to be able to teach EFAL literacy is made apparent by Deacon's study of newly qualified teachers which noted the alarming lack of training in that 'only 43,2% of NQT's currently teaching English had specialised in English' (2016:13). Years later, the problem persists – as this is given very little attention in most B.Ed foundation phase initial teacher programmes, with Taylor (2018) reporting that at a prominent university, literacy was given only 6% of the B.Ed credits (Spaull & Pretorius 2022:161). This leads Taylor (2019) to sensibly claim that 'the responsibility for building these competencies must rest primarily with university-based teacher educators'. He goes on to note that:

[P]re-service teacher education does seem to provide the optimal point at which to break ... South Africa's vicious cycle of general school mediocrity ... [and] also ... to mitigate the massive inequality gap. (p. 279)

It is in relation to these findings and assertions that the PrimTed project's work in student teacher assessment gained impetus. The development of the test will be outlined further on.

Theoretical framework

The study reported and discussed in this article is embedded within the Rasch Measurement Model (RMM) theoretical framework (Linacre 2012; Boone, Staver & Yale 2014).

The RMM is used to construct assessment and survey instruments. In the assessment context, the model estimates the relationship between the proficiencies of test takers and the difficulty levels of the test items in a probabilistic way and places them on the same equal-interval scale so that direct comparisons of learner proficiency and item difficulty can be readily made.

The simplest mathematical definition of the RMM (dichotomous model) estimates that, a person 'n' of ability β_n , faced with an item 'i' of difficulty δ_i , has the probability P_{ni} of giving a right answer ($x_{ni} = 1$), represented by Equation 1 and Equation 2:

$$P_{ni}(x_{ni} = 1 / \beta_n, \delta_i) = \frac{e^{(\beta_n - \delta_i)}}{1 + e^{(\beta_n - \delta_i)}} \quad [\text{Eqn 1}]$$

where $e = 2.7183$

$$P_{ni}(x_{ni} = 1) = f(\beta_n - \delta_i) \quad [\text{Eqn 2}]$$

Source: Bond and Fox (2015:346)

Equation 2 shows that the probability of a learner 'n' of ability β_n responding correctly to an item 'i' of difficulty δ_i is a function of the difference between the person ability and the item difficulty only. For example, if person ability $\beta_n = 0$ and item difficulty $\delta_i = 0$, then substituting these values into Equation 1, yields Equation 3 as follows:

$$P_{ni}(x_{ni} = 1 / \beta_n, \delta_i) = \frac{e^{(\beta_n - \delta_i)}}{1 + e^{(\beta_n - \delta_i)}} = \frac{e^0}{1 + e^0} = \frac{1}{2} = 0.5 = 50\% \quad [\text{Eqn 3}]$$

Thus, the probability of a learner giving a correct answer to an item of difficulty equal to their ability is 50%. If the learner ability is higher than the difficulty of the item, then the learner has a higher than 50% probability of answering correctly and for ability less than the item difficulty, the probability of answering correctly will be less than 50%.

The Wright Map is one technique used in the RMM to display vertically the hierarchical continuum of person abilities and item difficulties as experienced by the test takers. The most proficient test takers and the most difficult items appear at the top while the least proficient test takers and the easiest items appear at the bottom of the Wright Map, all expressed in logits (Boone et al. 2014). Person measures are presented on the left and item difficulties on the right side of the Wright Map. Usually, the scale of the map ranges from -3.0 to +3.0, with 0.0 logits as the mean score for person abilities but sometimes test items with extreme scores span wider ranges. If the test overall was experienced as being more difficult than the mean ability of persons, the test mean score appears on the right of the map above the mean score of person abilities. If the test overall is relatively easy for the sample of test takers, the test mean score will appear below the mean person ability score.

The utility value of the Wright Map is that it makes it possible not only to rank test takers according to their levels of proficiency but also to segment the sample of test takers according to the knowledge and skills that are contained in the sets of items that match the abilities of the sample sub-groups. The RMM makes very strong assumptions about test items and the test takers. One such assumption is that all the items in a test are unidimensional in that collectively they measure the same construct, within an estimated measurement error. Fit (Infit and Outfit) statistics are used to identify items that violate this assumption. Those that do are further examined to determine whether they define a dimension that is different from the main dimension of the test or are simply errors that require correction.

Research methods and design

The study followed an exploratory descriptive design. We wanted to explore changes that happen between entry to and exit from a B.Ed programme in terms of student performance in EFAL as a language used for teaching. The research questions are the following:

1. What changes in EFAL performance take place between the first and the fourth year in a B.Ed programme in South Africa?
2. How does performance differ in relation to the two subtests: items related to Persuasive language (CALs) and items based on authentic texts?
3. What performance level descriptors can be generated for each subtest, to inform the pedagogical moves of ITE lecturers?

We used cross-sectional data that were collected from first- and fourth-year ITE students ($n_1 = 1177$ and $n_2 = 731$, respectively), from six universities that participated in the PrimTED testing between 2020 and 2022 and wrote the two language subtests ($n = 1919$). The Persuasive language text (based on CALs) consisted of 30 items and the test on Authentic texts consisted of 36 items. All the items were scored dichotomously for correct (1) or incorrect (0).

Primary teacher education development test design

From the outset, academics participating in the PrimTED project were invited to join the PrimTED assessment workstream, which was tasked with designing assessment instruments for administration at first- and fourth-year levels of the B.Ed programmes. As the EFAL assessment workstream began its tasks at the same time as the EFAL standards development process began, it was not possible to design an assessment instrument against the PrimTED standards (as these were still in development). Instead, existing instruments were drawn on and adapted.

Roberts and Mort (2023) describe the design process for the initial PrimTED English test, which comprised of two subtests: Persuasive language and Authentic texts.

The Persuasive language subtest was adapted from Core Academic Language Skills (CALs) developed by Uccelli et al. (2016) and was premised on the research finding that when core academic language knowledge and skills were developed, English first additional language learners' proficiency improved not only in English as a subject, but across the board in all subjects taught in English. The Authentic texts subtest (English), adapted from the Academic Language Skills test, was a comprehension test that had been designed by Alan Cliff (2014) at the University of Cape Town (UCT). The test assesses vocabulary, separating the essential from the non-essential, inference, metaphorical expression and text genre and editing and understanding the communicative function of sentences.

The initial PrimTED English test offers a measure of students teachers competencies in English, pertaining to only two of the PrimTED standards: '3. Demonstrate sound knowledge of, and ability to use, the English language' and a component of PrimTED standard 4. 'Demonstrate knowledge of the sounds, vocabulary and grammar of the English language are taught'.

The original initial PrimTED English test was comprised of two subtests made up of 66 test items. Its focus was on the use, knowledge and comprehension of the English language. As indicated precedingly – and described in detail in Roberts and Mort (2020), the initial PrimTED English test was comprised of two subtests: Persuasive language and Authentic texts. The test was administered online under invigilation of at least one lecturer. Students were expected to complete the test within 90 min. It was developed by ITE colleagues as a 'good enough' initial measure of the knowledge and skills expected of teachers completing a B.Ed programme. The same test was administered at two points in time – at the beginning and end of the B.Ed programme. The test aimed to measure, firstly, student teachers' entry level English language and literacies competence at the start of the first semester of the B.Ed degree and secondly, to compare their results on this test with those obtained by students in their fourth year of study. First-year students' answers to test questions could be used by language and literacies teacher educators to redesign aspects of their curricula and to reconsider their pedagogic approaches in ways that would both fill knowledge and skills 'gaps' and enhance and extend students' knowledge and skills.

The test makes use of generic performance level descriptions. *Level 1 Not achieved* signals very limited understanding of the constructs assessed in the test, while *Level 4 Advanced* defines a student as demonstrating comprehensive understanding.

We wanted to apply this four-level framework (Figure 3) to each of the PrimTED language (English) subtests to inform ITE lecturers of possible pedagogical moves for their teaching interventions in B.Ed programmes.

Level	Level description	Progression implications	Intervention implications
Advanced	Performance at this level indicates that a student demonstrates comprehensive understanding of the knowledge and skills required to function at this level	Student has high likelihood of success in the next year	Student requires little or no academic intervention but needs to be provided with more challenging tasks to maximise their full potential
Achieved	Performance at this level indicates that a student demonstrates sufficient understanding of the knowledge and skills required to function at this level	Student has a reasonable likelihood of success in the next year	Student may require some assistance with complex concepts to progress to the advance level
Partly achieved	Performance at this level indicates that a student demonstrates partial understanding of the knowledge and skills required to function at this level	Student unlikely to succeed in the next year without support	Student requires specific intervention to address knowledge gaps, while also requiring additional support to progress to the required Achieved level
Not achieved	Performance at this level indicates that a student demonstrates very limited understanding of the knowledge and skills required to function at this level	Student unlikely to succeed in the next year without significant support	Student requires specific intervention to address knowledge gaps, while also requiring additional teaching time and extensive and continued support to progress to the required Achieved level

Source: Moloj, M. & Kanjee, A., 2018, 'Beyond test scores: A framework for reporting mathematics assessment results to enhance teaching and learning', *Pythagoras* 39(1), a393. <https://doi.org/10.4102/pythagoras.v39i1.393>

FIGURE 3: Generic performance level definitions.

Persuasive language core academic language skills subtest

This component of the test draws on an extension the construct of 'cognitive/academic language proficiency', as defined by Cummins (1979:175). Cummins defined CALP as a dimension of language proficiency, which can be assessed by a variety of reading, writing, listening and speaking tests and as distinguished from basic interpersonal communicative skills (BICS). This concept was subsequently refined and advanced for English Language Learners as 'core academic language skills' by (Barr et al. 2019:978–1021). The Persuasive language (English) subtest was adapted from the CALS-1 test, which was initially designed for pupils in North American schools with multilingual populations. For many of these pupils, English was an additional language, and they experienced challenges in the classroom that related to their lack of core academic language skills (Gee 2004; Snow 1986). According to Gee, a core feature of 'academic languages is that they demand that learners learn how to produce lots of explicit language around one focussed topic' (2004:24–25). Thus to succeed in the classroom, learners require strong language knowledge and skills as well as the ability to use the discourse and terminology specific to the discrete content and processes of certain subjects. To promote equity in education, it is necessary to focus on academic language skills in teaching and in testing because these are crucial for 'supporting students' independent learning from text in school and beyond' (Uccelli & Galloway 2016:1).

Uccelli and Barr (2016) recognise that high frequency or commonly used words and terms are required as a foundation for the development of the academic language knowledge and skills that are core to progression and success – not only in English but also across other subjects. Similarly, the PrimTED team, in developing the first iteration of an English test to be used with South African student teachers (2016–2020), recognised that all primary school teachers need not only to be able to communicate in English but also to

have the language and literacies knowledge and skills to teach all subjects across the curriculum. Uccelli and Galloway maintain that 'academic texts across content areas exhibit some recurrent language patterns' (2016:2). This means that specific language features appear in academic texts repeatedly, and if students are not proficient in these 'core academic language skills', they are precluded from understanding academic texts and thus from performing optimally at school.

The CALS-1 test, on which the initial PrimTED language test was based, is described as a test designed to assess CALS of learners in Grades 4 to 8. It included seven tasks: connecting ideas, tracking themes, organising texts; breaking words; comprehending sentences; interpreting epistemic stance markers and understanding metalinguistic vocabulary (Uccelli et al. 2016:1).

One of the areas that has fallen away from Uccelli's 2016 work is 'identifying definitions'. This relates to the 'Lexical inferencing', as defined by Haastrup (1991), and refers to the processes involved in:

[M]aking informed guesses as to the meaning of a word in light of all available linguistic cues in combination with the learner's general knowledge of the world, her awareness of the co-text and her relevant linguistic knowledge. (p. 13)

A critical factor of lexical inference in a second language is vocabulary knowledge (Zhang & Koda 2012), thus while lexical inferencing has fallen away, the prior knowledge of vocabulary remains in the test.

Subtest based on an authentic text

The authentic text (English) subtest was adapted from the Academic Language Skills or 'Tea Test', so named because of its content being about tea. This test was designed by Prof Alan Cliff at UCT and used by academics from Cape Peninsula University of Technology (CPUT) for several years (Cliff 2014). The initial intention was to design and research 'the theoretical basis' for the development of tests

of academic literacy that downplay the role of prior learning in the assessment of academic readiness (Cliff & Hanslo 2010:265) so that students from schools who either failed to develop their potential or mitigated against it could be identified and brought into higher education. Thus an element of redress was involved in the development of these tests, which were also later used diagnostically at CPUPT to first assess and then to strengthen the English language knowledge and skills of student teachers. The subtest aims to assess the following: vocabulary, separating the essential from the non-essential, inference, metaphorical expression and text genre, editing and understanding the communicative function of sentences.

The PrimTED assessment team reduced the length of the 'Tea Test' and renamed it 'Authentic Text' in recognition of the need for subsequently designed assessments in African languages to make use of texts and passages originating in the language being assessed (rather than being translations from English). The concept of a test using authentic passages on a common theme was considered valuable. The underlying constructs being assessed could then be applied when the test was re-versioned into specific African languages. The version of the Tea Test used at CPUPT initially included a composition writing component, but when the test was moved online (to save the labour of physical marking), this component was dropped.

Analysis

The data were subjected to Rasch analysis using Winsteps software (Version 5.5.1.0, July 2023) separately for each subtest. To analyse the overall performance, summary statistics (Table 1 of Winsteps) were run for each test, and the mean score, standard deviation (SD), maximum and minimum scores were obtained. To analyse the spread of performance across the test items, a Wright Map was run on Winsteps for each test. Two senior language experts and a data analyst subsequently examined the Wright Maps and reached consensus that for each test, four sub-groups of the sample were identifiable in terms of the student measures (in logits) and they labelled the sub-groups as PL1 (≤ -1.0), PL2 ($-1.0-0.0$), PL3 ($0.0-1.0$) and PL4 (≥ 1.0). The findings are reported in the next section.

Ethical considerations

The PrimTED assessment work has been approved by the University of Johannesburg Faculty of Education Ethics Committee with study approval number 2017-072. Student teachers writing the PrimTED assessment were asked for their consent to include their work in the PrimTED research. If they refused, they wrote the test, but their data were excluded from the study. The data were anonymised, with all reports reflecting aggregated data.

Results

The same initial PrimTED languages (English) assessment was administered at the start (first year) and near the end

(fourth year) of B.Ed programmes for student teachers teaching in the primary school. It was anticipated that while first-year students might be predominantly at levels 1 or 2, it was hoped that by fourth year, the majority would be at level 3 or 4 proficiency. The findings are presented in relation to each subtest and then the combined PrimTED language (English) results are presented.

Persuasive language (CALP) subtest

On this subtest, Year 1 and Year 4 students performed similarly, with Year 1 (Mean = 64% SD = 26%, $n = 1177$) doing slightly better than their Year 4 (Mean = 61%, SD = 29%, $n = 731$) senior counterparts by 3% points (Table 1).

A wide range of performance levels was evident in the subtest (almost 100%), with a relatively high SD (of about 27.5%) in both year groups. Of interest was that the mean score for the fourth year students (61%) was lower than the mean score of the first-year students (64%). Given the different sample sizes, we used Hedges G, to calculate the effect size, and found $G = 0.11$, which shows that while the two samples are distinct the distinction is very small. The first- and fourth-year students performed at about the same attainment level on the CALP subtest. We therefore combined the 2 year groups into a single data set of B.Ed students (both first and fourth years).

We then shifted our attention to exploring performance on individual items. The Wright Map in Figure 4 shows how the student scores were spread across the Persuasive language (CALP) test items.

The lefthand side denotes the students taking the test (where each '#' denotes 17 students, and '.' denotes 1 student), with the students sequenced from poorest to highest attainment (from bottom to top). The righthand side denotes the items in the persuasive language (CALP) subtest, sequenced from easiest (higher percentage correct) at the bottom to most difficult at the top. Thus, Q_PC12 and Q_PUR32 were the easiest items. The test showed both floor effects (with 204 students on the bottom scale) and ceiling effects with a significant number of students at the top end of the scale. The power of the Wright map lies in sequencing both the items (from easiest to hardest) and the students (from lowest to highest attainment) on the same scale. From logits -2 to 4 , there is a relatively normal distribution of students; however, the absence of difficult items for the top attaining students indicates the ceiling

TABLE 1: Summary performance by year level: Persuasive language core academic language skills.

Statistics	Year 1 ($n = 1177$)		Year 4 ($n = 731$)	
	Score (%)	Rasch (logits)	Score (%)	Rasch (logits)
Mean	64	0.55	61	0.4
SD	26	2.23	29	2.45
Max	97	4.00	100	5.24
Min	0	-5.36	0	-5.37

SD, standard deviation; Max, maximum; Min, minimum.

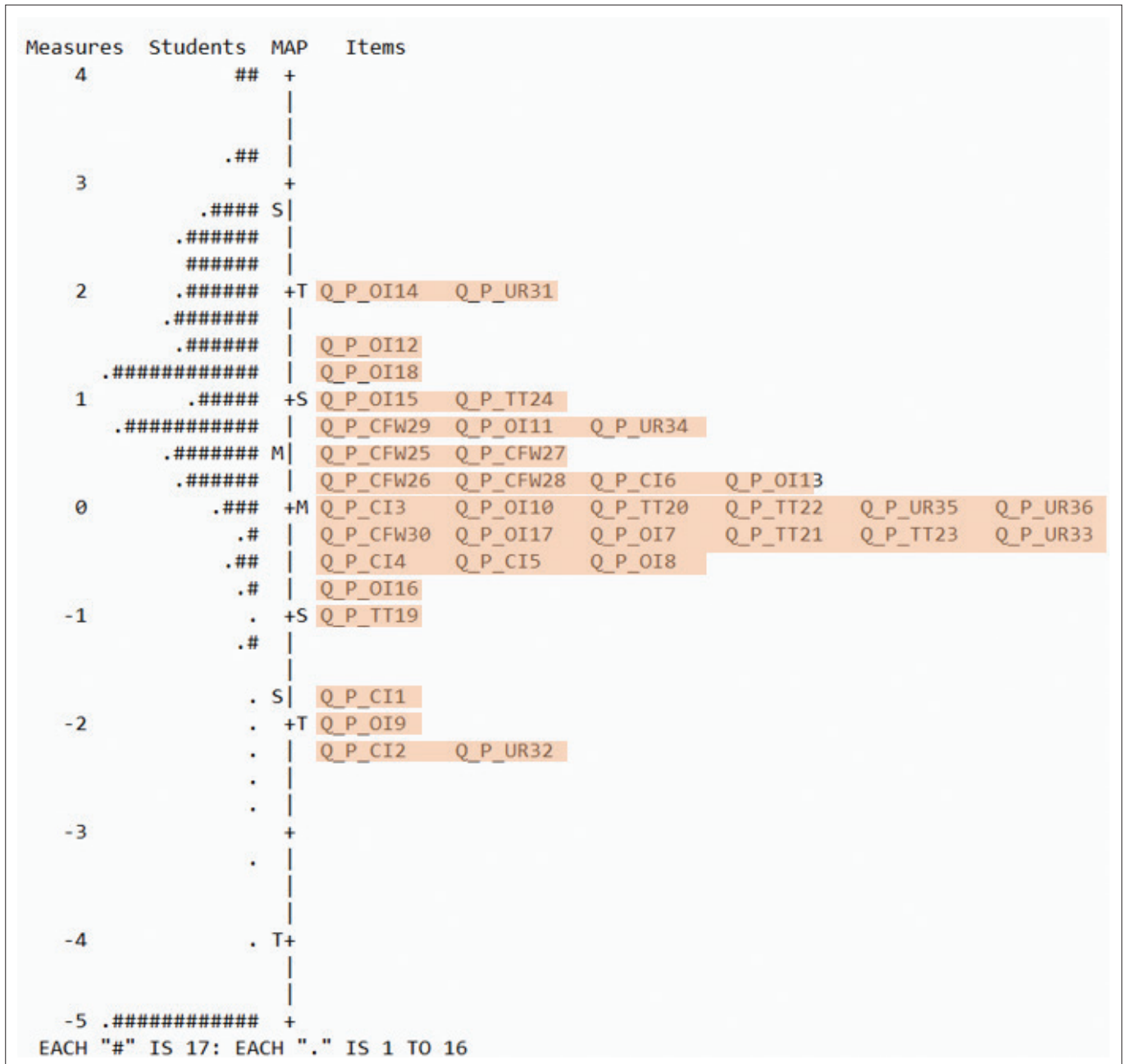


FIGURE 4: Persuasive language core academic language skills subtest wright map.

effect – where there were no items suitable for these top attaining students.

Drawing on the Rasch measures and the coding frameworks for the assessment, we were able to define four performance levels for the persuasive languages (CALs) subtest (Table 2).

The proportion of students at each performance level is presented in Figure 5 for Year 1 ($n = 1177$) and Year 4 ($n = 731$).

In sum, the persuasive language (CALs) subtest was generally too easy for the student group – demonstrating ceiling effects (not enough difficult items for the students). However, there were numerous students who were not able to answer any items correctly. This means that for future test design, a greater

range of test items need to be developed, from very easy to very difficult, to reduce ceiling and floor results.

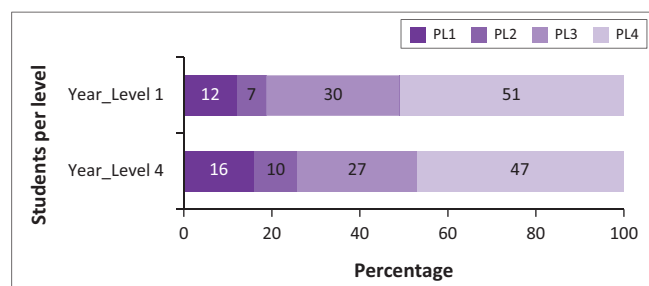
Subtest based on authentic texts

In the authentic texts subtest, the Year 1 score (Mean = 38%, SD = 28%, $n = 1177$) was very low, and even though the Year 4 cohort (Mean = 49%, SD = 20%, $n = 731$) did better, the mean score remained below the 50% mark (Table 3).

The Wright Map in Figure 6 shows how the student scores were spread across the items based on an authentic text. In this case, each '#' denotes 31 students, while each '.' denotes 1 student. Once again, floor effects are evident with 373 students at the very bottom of the scale. The authentic texts subtest did not suffer from ceiling affects, as there were difficult questions

TABLE 2: Performance levels for persuasive language core academic language skills subtest.

Performance level	Performance level description
Performance Level 1	Students are not yet demonstrating the knowledge and skills evident at Level 2 in English.
Performance Level 2	<p>Students at Level 2 have a fairly solid understanding of how to <i>use connecting words</i> and <i>connecting phrases to connect ideas</i> in English. They demonstrate this ability most of the time. This relates to Uccelli's 'Connecting ideas' (2016)</p> <p>In an English text, they can <i>track some themes</i> and can <i>change the word form</i> to make meaning in sentences (reflecting knowledge of vocabulary, syntax and meaning). <i>Changing the form of words</i> relates to 'breaking words' (Uccelli 2016) in that it shows being able to break down and remake words into the correct form for a context of syntax and shows an understanding of morphology. It also represents the idea of Rose (Rose Report of 2006) that if words can be broken down then they can be rebuilt in different ways.</p> <p>Tracking themes comes from Uccelli's work. It is also related to Uccelli's 'Comprehending sentences' as invariably compound sentences are harder to make sense of. They can <i>organise some ideas</i> in English, especially it seems when the content is familiar (such as a text relating to school). However, these are entry-level CALP language knowledge and skills in English – which are <i>not yet stable</i>, as shown by the fact the students cannot do this in every instance.</p>
Performance Level 3	<p>Students at Level 3 demonstrate the knowledge and skills in Level 2 and with greater consistency.</p> <p>They show a much greater fluency reflected in a better <i>vocabulary and understanding of syntax</i>. They show greater flexibility in their handling of words and adapting them to different contexts.</p> <p>They can <i>identify the purpose</i> of English texts, are able to <i>build an argument, understand responses and organise texts</i> in English.</p> <p>Therefore, the students have a more stable or advanced level of</p> <p>Level 2 skills namely <i>Connecting Ideas, Tracking Themes, Organising Texts, Breaking Words, Comprehending Sentences</i> (Uccelli)</p> <p>In their ability to identify the purpose of a text, they are showing that they understand language in a more interpretive way for less simplistic purposes; therefore they are showing the beginnings of an understanding of metalinguistic language.</p> <p>They consistently respond well to tasks requiring <i>organising ideas</i> (arranging texts to be logical) and <i>understanding responses in English</i>. Understanding responses relates to 'interpreting epistemic stance markers' (Uccelli 2016),</p> <p>That they can organise a text and build an argument shows that they can use language powerfully and in a metalinguistic way.</p>
Performance Level 4	<p>At Level 4, students demonstrate the knowledge and skills relating to persuasive language in English referred to at both Level 2 and Level 3.</p> <p>But in addition, at level 4, students can <i>identify the parts of an English text</i> and <i>describe the roles those parts of text</i> play. This involves both comprehension ('Comprehending sentences'-Uccelli), interpreting epistemic stance markers and understanding metalinguistic vocabulary'.</p> <p>They can <i>arrange an argumentative text</i>, which reflects on their increased comprehension and suggests a writing ability in English.</p> <p>They can <i>track themes</i> as they develop in English texts.</p> <p>This is the highest level of comprehension and language ability in the test, and as one could expect, embodies a trapezium of language skills. According to researchers, metalinguistic awareness involves two components – the analytical ability to reflect upon and manipulate formal properties of language and the attentional control of the mental mechanism that operates language processing. (Bialystok, 2001; Bialystok & Ryan, 1985)</p>

**FIGURE 5:** Persuasive language Core Academic Language Skills subtest – Proportion of students at each performance level.**TABLE 3:** Summary performance by year level: Authentic texts subtest.

Statistics	Year 1 (n = 1177)		Year 4 (n = 731)	
	Score (%)	Rasch (logits)	Score (%)	Rasch (logits)
Mean	38	-1.47	49	-0.20
SD	28	2.75	20	1.59
Max	90	2.83	90	2.85
Min	0	-5.51	0	-5.55

SD, standard deviation; Max, maximum; Min, minimum.

(QA_30 and QA_24), which were at a suitable difficulty level for the top attaining students.

Drawing on the Rasch measures and the coding frameworks for the assessment, we were able to define four performance levels (Table 4) for the authentic text subtest.

Figure 7 presents the proportions of students at each performance level on items based on an authentic text.

Notice that there is an improvement, with fewer students at level 1, and more at level 4, for the fourth year data.

Initial primary teacher education development English test – Combined results on both subtests

Having analysed each subtest independently, we then combined the two to reflect on the item-person maps and related performance levels for the two tests combined. We weighted each item equally. Using all 30 items in the CALP test and 36 items in the test based on an authentic text, for each student, we summed the items correct and obtained a combined test result across the 66 items. We then converted this to a percentage. Once again we developed a Wright Map (Figure 8) to explore the spread of items from the combined test, defined four level of attainment and reported on the proportion of students at each level, by year group.

The fourth-year students (mean = 55% SD = 21%, n = 731) attained only 3% points higher than the first-year students (mean = 52% SD = 20%, n = 1177)

By using the Wright map (Figure 9) for the combined assessment, we have a more balanced distribution of both student ability and item difficulty. In this case, each '#' denotes 12 students, while each '.' denotes 1 student. Notice that the floor and ceiling effects evident when analysing the subtests independently, no longer feature. The combined assessment has a better on-ramp, with students getting onto the scale and offers more challenging items for the top performing students.

Overall, our findings confirm results obtained in other PrimTEd assessments that show no marked changes

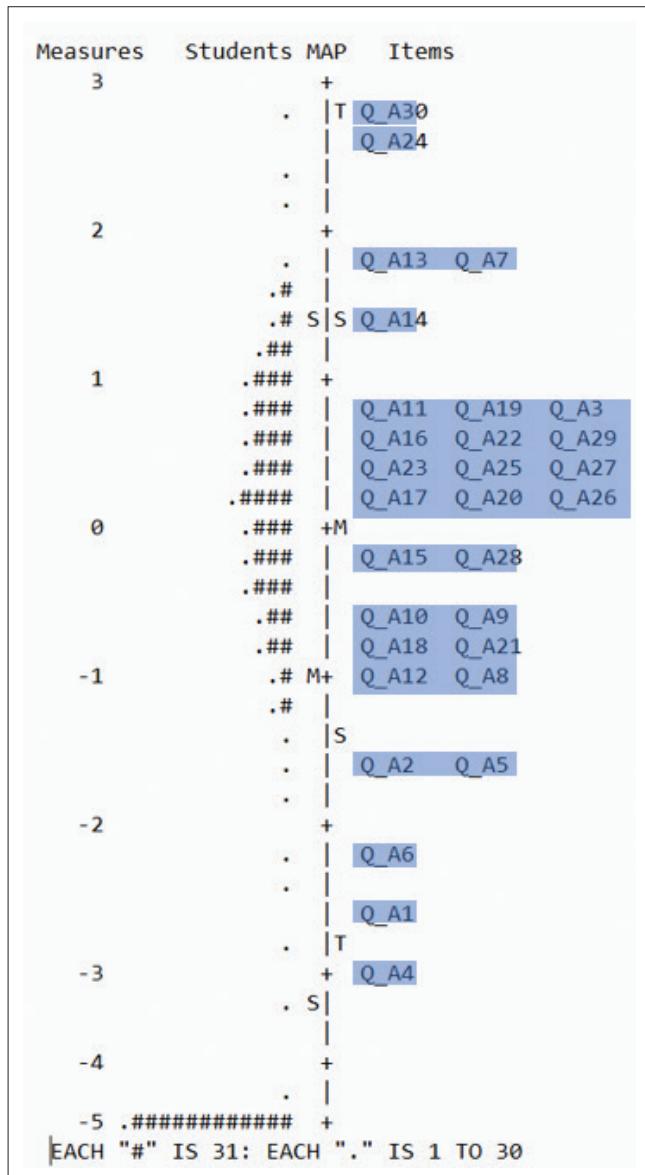


FIGURE 6: Authentic texts substest item map.

in attainment between the time students enter the B.Ed programmes and when they exit to start their teaching career. This is very concerning, given that the 4 year degree is a key period to improve the student teachers' English language skills. However, these tests were taken during the coronavirus disease 2019 (COVID-19) disruption, which left many educational institutions closed (Robinson & Rusznyak 2020) and meant limited contact between lecturers and students. For some students, especially those who come from backgrounds where hearing English is less common, the lack of contact with university coursework and lecturers might have critically affected their language skills.

Conclusion

This article presents several sets of evidence that make the following features of the South African initial education landscape for primary teachers very clear:

1. Universities start where secondary schools finish; thus, first-year students entering primary education careers have weak English language literacy results and very poor English language knowledge.
2. Candidates entering the education faculties at universities have the weakest literacy skills (as measured by the NBTs) when compared to Grade 12 candidates entering other faculties (see Figure 2 from Fleisch et al.)
3. Universities have the herculean task of developing English language proficiency in a matriculant with a NSC Bachelors' degree pass, many of whom have EFAL level.

Given point 3, coupled with concerns about ITE lecturers' capacity and specialised primary teaching skills, universities are not adding significant value in relation to English First Additional knowledge for teaching in primary school. It is incumbent on ITE lecturers and course designers to address the shortcomings in student teacher English language skills in their B.Ed programmes (Rusznyak 2015; Spaul & Pretorius 2019; Taylor 2019; Winch 2014). Therefore, given that PrimTed English language assessments can help directly analyse weaknesses and gaps in student knowledge, using this knowledge in course design can make universities more accountable.

From 2017 to 2021, PrimTed has collected assessment evidence that shows fourth-year students not significantly improving on the first-year results and only performing 3 percentage points higher than first-year students, on the same PrimTed English test. As shown in Bohmer et al.'s (2022) analysis of the grade 12 language results of university entrants, it is evident that the limited competence in English that student teachers bring from school persists to the end of the 4-year B.Ed programmes. This limited competence does not only present a challenge to universities but also suggests that the vicious cycle of low standards in schooling continuing into ITE reported in Taylor (2019) is yet to be broken. Bohmer and Pampallis (2022:2) note that Education degrees have grown in popularity enormously, realising in the last decade a more than 200% increase in take-up, noting that '...universities opened more spaces or otherwise encouraged students to study teaching, or alternatively the teaching profession gained popularity among students for other reasons'. This can also be seen as indicative of the strategy to increase the production of ITE graduates by the Department of Higher Education and Training (DHET) as a part of their Teaching and Learning Development Capacity Improvement Programme (2021).

However, Bohmer et al. (2022) also note that in order to sustain this increase of ITE graduates, 'it will be necessary to improve matric outcomes and hire all graduating teachers' noting that:

[I]f we do not increase the number of high-achieving candidates writing the NSC exams, it is likely that with further growth in student numbers, the average quality of the students entering ITE will drop. (p. 2)

TABLE 4: Performance levels on the authentic text subtest.

Performance level	Performance level description
Performance Level 1	Students are not yet demonstrating the knowledge and skills evident at Level 2 on an authentic text in English.
Performance Level 2	<p>At authentic text, Level 2 students are able to read for meaning in English at the most basic level. Students can:</p> <ul style="list-style-type: none"> • follow anaphors, • ascertain the purpose of a text, • swap out (find synonyms) for certain easy words, and • deduce the meaning of simple phrases within the context of the text. <p>The student is able to answer simple comprehension questions about an English text.</p> <p>Following anaphors means that students can track the meaning in sentences which allows them to ‘understand the communicative function of sentences’ (Cliff 2014) ‘Finding synonyms for’ is quite like identifying definitions, in Uccelli’s 2016 work. Ascertaining the purpose of a text involves understanding it, having some knowledge of different text types and understanding the text’s purpose as a whole. This involves comprehension not only at a sentence level but at a more sustained level and also being able to identify and ‘interpret epistemic stance markers’ (Uccelli 2016),</p>
Performance Level 3	<p>Students at authentic text Level 3 demonstrate the knowledge and skills in Level 2 and with greater consistency. The students demonstrate a wider vocabulary and agility in using English. Students can:</p> <ul style="list-style-type: none"> • select synonyms, • fill in missing words accurately, • choose the appropriate words, • identify the kind of text used, • understand why simple writing devices, phrases or expressions might be used; and • identify the main idea in a text. <p>They have a deeper understanding of text and also understand the implications of something.</p> <p>In order to fill in the missing words (an editing function), the students would need to have a vocabulary and also understand syntax and what the sentence is about and is trying to convey. To ‘understand why simple writing devices, phrases or expressions might be used’ is linked to ability to identify epistemic stance markers and to determining key academic phrases and positionings, which show a significantly higher level of understanding than that shown in earlier levels.</p>
Performance Level 4	<p>At authentic texts, Level 4 students demonstrate the knowledge and skills relating to persuasive language in English referred to at both Level 2 and Level 3.</p> <p>Students show a higher level of comprehension and understanding of syntax as well as increased vocabulary. They demonstrate a more complex facility with English texts that typically involves:</p> <ul style="list-style-type: none"> • separating the essential from the unessential; • inferencing; • understanding metaphorical expressions; • ability to edit by identifying missing words in a text and proposing suitable insertions of words and • understand the communicative function of particular sentences (such as a rhetorical question as a literary device). <p>In this category, all the other skills are included but are more developed, but we see for the first time the ability to separate out the essential from the non-essential. This requires a deeper level of comprehension.</p>

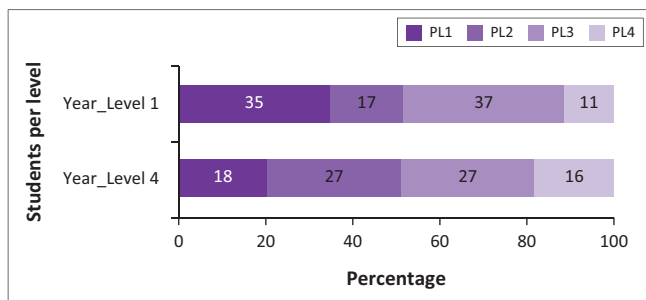


FIGURE 7: Authentic texts subtest – Proportion of students at each performance level.

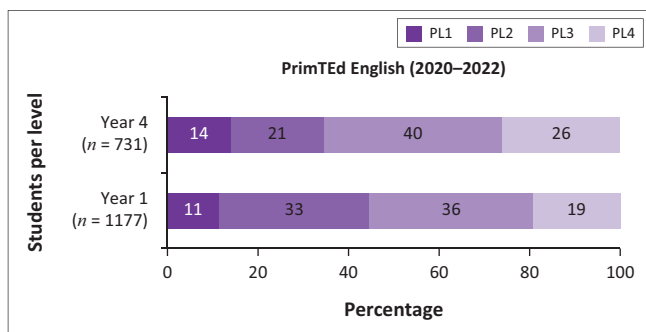


FIGURE 8: Initial Primary Teacher Education Development English test – Proportion of students at each performance level.

Therefore, teacher education is in a very pressured situation – of needing to improve ITE graduates and raise standards internally in schools simultaneously. One of the key challenges in both contexts is to improve the teaching and learning of English as this subject affects all other attainment areas.

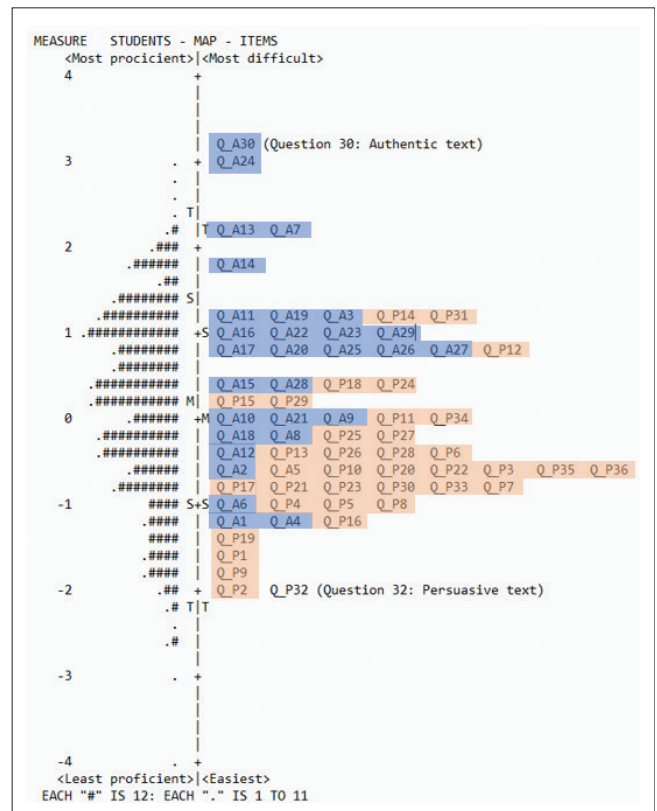


FIGURE 9: Initial Primary Teacher Education Development English wright map.

The PrimTEd process is being driven by the ITE lecturing staff themselves, who are concerned about the lack of progress and have sought ways to collaborate and improve

language course offerings. The ITE lecturer appetite for change and for gaining specialised knowledge and skills in EFAL for teaching well at primary school level is evident across at least 10 universities.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

N.R. led the PrimTEd assessment workstream, conceptualised and wrote the article. Q.M.M. developed the methodology and conducted the analysis. T.M. framed the article, described the test development and wrote the first draft of the article.

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Data availability

Data are stored and can be accessed from the PrimTEd assessment workstream (contact the first author, N.A.R.)

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