PEDs for South African Schools

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Abstract

South Africa has a literacy crisis. The 2021 PIRLS results showed that 81% of South African children in Grade 4 cannot read for meaning, against an international average of 6%. Reasons for this poor result will be discussed in this paper. One of the resources used in schools in the fight against illiteracy is a school dictionary. There are excellent school dictionaries produced in South Africa, but the two complaints from learners are that there are not enough words, and that the dictionaries are too big and heavy to carry to and from school. Electronic dictionaries have been developed and are available online or from publishers. These offer more presentation space for each entry, more storage space for more entries, as well as more support for learners in the form of colour illustrations, audio, hyperlinks, and other features. However, most South African schools are not equipped to provide electronic dictionaries to learners – either on a central class computer, or on tablets. The devices are too expensive, data is costly and unreliable, and electricity is a problem. The solution that I will present is an updated version of a PED, a personal electronic dictionary, which has the capacity of an electronic dictionary, while being small and light enough for learners to carry to and from school. This device would not need data or electricity to run. The sample entries that I will present will be suitable for a PED and have been specially designed to contain more support for learners learning in their second language.

Keywords: literacy, school dictionaries, electronic dictionaries, pocket electronic dictionaries, PEDs

1   Introduction

South Africa has a literacy crisis. The 2021 PIRLS results show that 81% of South African learners in Grade 4 cannot read for meaning, against an international average of 6%. This is up from the 2016 results, in which 78% of South African learners could not read for meaning. This paper will discuss some of the reasons for this by giving the South African school context. School dictionaries are one of the resources used to aid literacy in schools, and this paper will describe existing school dictionaries that are available to primary school learners. It will also discuss the capabilities of electronic dictionaries, and show how they can be appropriate for learners, but also why they are not feasible for use by primary school learners. I will then offer pocket electronic dictionaries as a potential solution to the literacy crisis, as they have the capabilities of electronic dictionaries, with the portability of printed dictionaries.

2   The South African school context

In South Africa, 90% of the population does not have English as a home language, but most schooling is done in English. The language in education policy (LiEP) promotes the use of home language as Language of Learning and Teaching (LOLT) for Grades 1 to 3, and beyond if feasible, but most schools are teaching in English or Afrikaans from Grade 4. So, in Grade 4, many learners are switching to English or Afrikaans for the first time.

According to Spaull and Pretorius (2019) 'the teaching of reading literacy should be the 'core business' of primary schools' (Spaull and Pretorius 2019: 148). As a result of this core business, by Grade 4 'children around the world are expected to read fluently and with understanding in at least one language' (Spaull and Pretorius 2019:148). In South Africa, according to the PIRLS (Progress in International Reading Literacy Study) 81% of Grade 4 learners cannot read for meaning in any language. This means that over 80% of Grade 4 learners, that's 9 – 10 year olds, in South Africa, cannot read for meaning in any language.

This means that instead of continuing their education from Grade 4 reading to learn, 81% of learners are still learning to read. According to Spaull and Pretorius, 'the majority of children in South Africa come to school with some degree of

oral language proficiency in their home language and considerably less proficiency in either English or Afrikaans' (Spaull and Pretorius 2019: 150). While they have oral proficiency in their home language and possibly another language, they do not have literacy in any language. And therefore, 'these children must overcome two consecutive hurdles to succeed at school': literacy in their home language and literacy in English (Spaull and Pretorius 2019: 150).

According to Pretorius (2015) 'comprehension is what reading is all about' so the 'reading for meaning by Grade 4' is about understanding what is being read on the page. It is not simply turning written words into sounds. 'The richness of a reader's vocabulary and syntactic knowledge also has a bearing on comprehension' (Pretorius 2015: 55).

Lack of reading comprehension is as a result of lack of learning: learning to read, learning vocabulary, and learning grammar. These concepts are not being taught sufficiently as a result of systematic inequality in South Africa.

> 'In South Africa children in high poverty contexts in urban areas often come from multilingual communities and may display rich multilingual oral proficiencies, but they also come from poor homes where parents have low levels of literacy and are employed, if they are so fortunate, in sectors that do not require high levels of literacy. These children typically do not have ready access to print based material in the home, nor are they exposed to literate activities such as storybook reading by parents or other family members' (Pretorius 2015: 58).

These children are attending schools 'that are often poorly managed and resourced, and which do not usually attract highly qualified teachers' (Pretorius 2015: 58). There is no means of catching up when they are not given individual attention and support by their teachers and schools.

Spaull and Pretorius go on to say that the 'status quo in South Africa is that children with the

biggest backlogs attend schools with the least capacity. Thus the initial home disadvantage is compounded by a school literacy disadvantage' (Spaull and Pretorius 2019: 152). Jansen warns that these inequalities are reproductive, as 'poor students from dysfunctional schools attend weak universities to become inadequately trained teachers in the same class of schools from which they barely graduated' (Jansen 2019: 361). Jansen refers to the chapter by Taylor (2019) which states that 'some fourth-year BEd students [are] not functionally literate' (Jansen 2019: 361).

Researchers have described what is needed in order to solve this literacy crisis.

According to Jonathan Jansen, there is a need for 'an urgent national intervention in the teaching resources available to disadvantaged schools' (Jansen 2019: 367). 'The evidence suggests that such interventions should happen in the foundation years of primary schooling' as this is where inequality originates and is sustained if interventions do not prevent this (Jansen 2019: 368).

Pretorius suggests that there is a need for a 'shift to a literacy oriented pedagogy', and 'schools that serve poor communities especially need to become literacy-rich learning contexts' (Pretorius 2015: 73). She goes on to say that 'discussions about the role of language in education should thus be articulated in terms of how literacy can best be developed within the framework of existing or desired school language policies, and within the context of poverty constraints' (Pretorius 2015: 73).

As Spaull and Pretorius explain,

> 'while schools cannot change the socioeconomic status of their learners' home backgrounds, they can change what happens in their schools and classrooms. Given that at least 75% of South African primary schools serve poor communities, making schools centres where children receive rich language and literacy input irrespective of their home background

should be a priority' (Spaull and Pretorius 2019: 152).

According to Spaull and Pretorius, 'getting reading right is not only necessary for success at primary school but also for secondary and tertiary education, not to mention economic prosperity' (Spaull and Pretorius 2019: 164).

Spaull and Pretorius conclude by saying 'ultimately the solution to the South African reading crisis will depend entirely on whether the Department of Basic Education, and the government more generally, prioritizes the universal acquisition of basic literacy above all other policy priorities' (Spaull and Pretorius 2019: 165).

A necessary weapon in the literacy arsenal is a dictionary. The dictionary needs to be appropriate to the user's age and particularly their fluency in order to be an effective weapon. The appropriate dictionary needs to have all the words that a learner would come across and want to look up and it needs to contain as much easily accessible information about the words and support for language production (writing and speaking), language reception (reading and listening), as well as translation and general understanding.

3 South African school dictionaries

According to Nielsen-figures, dictionaries being bought for use in primary schools are predominantly those published by OUP and Pharos (Louw 2022). They are designed specifically for the South African market, and contain lemma lists selected from corpora made from South African literature and school textbooks. The entries are designed for learners with the age or grade range specified by the dictionary, and they contain support in the form of example sentences, and usage, spelling, grammar, and word building notes. The example sentences in many cases are written or chosen from South African school textbook corpus to have a South African context. The advantages of printed school dictionaries are that they are specifically designed to be pedagogically sound, and accessible to the learners in their target market.

Unfortunately, printed dictionaries come with disadvantages. Many of these disadvantages are as a result of the space constraints imposed by the fact that the dictionary is a printed book and thus there is not enough space for more coverage, both macrostructurally and microstructurally. School dictionaries could do with more entries, and these entries in turn, could do with more illustrations, more examples, and more support for learners. Another disadvantage is that they are 'too heavy to keep in their bags' (Morris 2021: 150) for learners to carry to and from school. Thus, the two disadvantages of printed school dictionaries are that they are too small and too big.

Certain schools may have access to online dictionaries. However, most schools do not have access to reliable data, and often, electricity. These make computer-based or internet-based electronic dictionaries unusable for primary school learners. 'Of Gauteng's approximately 1,600 primary schools, nearly half are English-LoLT. It is striking that of nearly 800 English LOLT primary schools in Gauteng (arguably the country's wealthiest province), only 36 (5%) had functional computer laboratories' (Olivier, et al 2022: 175). The lack of infrastructure required for the use of a printed dictionary is a significant advantage.

Another advantage of a printed dictionary over an electronic dictionary is that each learner can have their own dictionary to consult or browse when they need to, without having to ask their teacher, or get up from their desk.

Combining the advantages of both forms of dictionaries, and eliminating the disadvantages would generate an ideal school dictionary.

Print dictionary advantages:

- portable
- reliable
- South African
- does not need data
- does not need electricity

Electronic dictionary advantages:

• no storage space constraints – can contain more entries

• more presentation space – space for more support in each entry

• hyperlinks

• audio capability

Thus, an ideal school dictionary would be portable, reliable, without the need for a data connection, without the need for electricity, but with more storage space, more presentation space, as well as hyperlinks and audio capability.

A solution that has all of this is an updated PED – a portable, pocket, or personal electronic dictionary.

4   PED background

PEDs were popular in Asia in the 1990s and early 2000s. They were especially popular with students who were learning English, or people whose job required communication in English, as they provided a quick way to access translations. They were about the size of a pocket calculator and contained a small screen and an alphabetical keypad. They were battery operated. Different versions had different features, but they all contained one or more dictionaries and users could search for definitions, spelling, pronunciation, and translations.

'What sets PEDs apart from online or CD-ROM based dictionaries is their portability; while other electronic dictionaries can only be accessed from a computer terminal, PEDs can be carried into the classroom' (Midlane 2005: 17).

According to Kobayashi (2006) the first portable electronic dictionaries were available in Japan in 1979, in the form of an electronic translator with English-Japanese and Japanese-English wordlists. Later, in the 1980s, electronic bilingual dictionaries were developed, with translation equivalents and definitions. These were 'as big as a mini laptop computer' (Kobayashi 2006: 41). In the 1990s a new type of electronic dictionary was introduced. These were 'equipped with the full contents of printed dictionaries, including grammatical and usage information' (Kobayashi 2006: 41). These

dictionaries became mainstream, while the earlier type was still available for users who only needed definitions. Finally, the type of PEDs that contained more than one dictionary and many extra features was introduced. Different manufacturers, such as Casio, Sharp, Seiko, and Canon, focused on different features, such as the inclusion of multiple dictionaries, word games, sounds, among others. Between 1996 and 2007, 48 billion pocket electronic dictionaries were sold in Japan alone (Tono 2009: 36).

Much research went into PEDs in the 1990s and early 2000s when they were popular, especially to compare them to the available print dictionaries.

Chiu and Liu (2013) found that in a study comparing print dictionaries with PEDs and online dictionaries in terms of vocabulary retention in high school students, all the dictionaries performed equally with regard to short term memory. 'Based on the results of the pre-intervention, the follow-up, and the two delayed vocabulary tests, the use of any type of dictionary could enhance the participant students' vocabulary recognition' (Chiu and Liu 2013: 629). However, Chiu and Liu found that word retention decreased over time, regardless of which dictionary type was used. Printed dictionaries performed better over the longer term, but the students preferred using the electronic dictionaries – both online dictionaries and PEDs. They found that 'electronic dictionaries were more convenient to use, mainly because they could retrieve the meanings of unknown words quickly and were used to employing this kind of dictionary' (Chiu and Liu 2013: 627) and that 'most participants agreed that the electronic dictionaries … also were least likely to interrupt their reading' (Chiu and Liu 2013: 627).

Zheng and Wang (2016) discussed the advantages and disadvantages of PEDs compared to print dictionaries. They note that 'the electronic dictionary is faster in search speed, lighter in weight, smaller in size and more mobile than the paper one' (Zheng and Wang 2016: 146).

Zheng and Wang say that 'although electronic dictionaries can be used as a tool in the same ways that paper dictionaries can, they are capable of

more than such tools, and both learners and teachers must understand both the advantages and liabilities of using electronic dictionaries' (Zheng and Wang 2016: 144).

Zheng and Wang noted that 'the growth in electronic use is a bottom-up movement. It is led by students, not by teachers or lexicographers', a fact which can be used to encourage more use of dictionaries in the classroom (Zheng and Wang 2016: 147).

Nesi noted the distinction between usefulness and usability. Usability is the willingness on the part of the consumer to use the dictionary, and their satisfaction with it, while usefulness is the extent to which a dictionary is helpful (Nesi 2012: 7). While PEDs of the past were lacking in usefulness, they can be improved to have both usability and usefulness. Nesi concluded by saying that 'although restricted size of PED screens doubtless impedes consultation of longer entries, and there is certainly scope for further investigation into the pedagogical effects of e-learning, the evidence so far suggests that teachers' reported dislike of e-dictionaries is largely due to the low quality of some [PEDs], and their ignorance of better-quality [PEDs], rather than the electronic medium itself' (Nesi 2012: 7).

Research quoted in Midlane (2005) shows that the advantages of PEDs identified by learners are:

- speed

- ease of use

- size

- audio pronunciation

- storage facility for recent look-ups.

According to teachers, the advantages of PEDs are:

- speed

- security of seeing translations

- fostering of independence

- possible encouragement of general dictionary use

- better than nothing.

(Midlane 2005: 25)

As most of the disadvantages of PEDs have to do with the lexicographic quality of the dictionary loaded onto the device and thus can be countered by designing better dictionaries to go into PEDs, the advantages can still be harnessed in new, improved devices.

Another advantage of PEDs as identified by Stirling is their social use. Users could use their PEDs while engaged in conversation, which they would never do with a printed dictionary. Students also used their PEDs while travelling and engaging in everyday activities, if these activities were happening in their target language (Midlane 2005: 28).

After discussing the advantages and disadvantages of PEDs, Sharpe offers the warning that 'whatever the advantages, fun, or novelty of [PEDs], the value of the information displayed upon their screens depends entirely upon the quality of the original (usually printed) dictionary used as their database' (Sharpe 1995: 41).

5   Current state and availability of PEDs

The development of PEDs has largely remained stagnant since the early 2000s, after they became less popular and smart phones took over as the device of choice for translations and other dictionary functions. Smart phones have the advantages of being just as portable as PEDs, while also allowing the user to access the internet wherever they are, and allowing the user to download any dictionary app onto their phone. Smart phones also have many other functions, so the pocket device can be used for so much more. PEDs are still available, although I could not find any to purchase in South Africa. They can be purchased from Amazon.com, and there is a small range. The bilingual PEDs are mostly English-Spanish, to cater for an American user. The monolingual ones contain Merriam-Webster or Collins dictionaries and they still have very small screens and no colour. It is not in the scope of this article to discuss available PEDs in detail, suffice to say that they do still exist and can be found.

6   PEDs for South African schools

In terms of the South African school situation, advantages of PEDs are that they are portable and can be carried to and from school easily. As an electronic dictionary, a PED will contain more support for learners in the form of illustrations, more examples, audio, translation equivalents, hyperlinks between entries giving learners quick access to synonyms and related words and other features; a PED is used independently of the internet, so there are no data or connectivity costs. Once it is owned, there are no costs to keep it running, apart from occasional battery replacement. Early PEDs only had batteries, but recharging capabilities could be preferential for PEDs with colour screens and higher batter usage. PEDs are more appropriate than smart phones for primary school learners, as these learners do not have their own phones and often do not have access to smart phones. PEDs also do not have other functions that would be distracting to the user. They would be cheaper than smart phones or tablets to produce as they would not contain cameras or other unnecessary hardware.

However, in terms of the disadvantages: existing PEDs cannot be used effectively by school children, as the screen is too small and would not support full colour illustrations, or the kinds of entries that are best seen without scrolling, so a new device would need to be developed using updated technology. Considering the dictionary loaded onto a PED: this needs adapting too, as a school dictionary, specifically designed for use in a PED would be most appropriate for learners, rather than a print dictionary simply being loaded onto the device. In terms of the concerns about learners' overreliance on their PEDs: in primary school, there is little independent use of dictionaries, as learners are still learning how to use dictionaries. A dictionary that is appealing and easy to use will go a long way in encouraging its use and realising its benefits. The lack of a dictionary culture in South Africa means there is a long way to go before there is overreliance on any dictionary.

7   Current research

The research that I am currently conducting is into PEDs for South African schools. I have installed 30 dictionary entries that have been designed specifically for primary school learners onto tablets, which I am taking into schools. I am giving Grade 5 and Grade 6 learners a tablet to play with. They are able to browse the entries, use the hyperlinks between entries, and test the audio. I then ask the learners questions about their experience with the entries, and we have a discussion in focus groups. I have not completed enough of this research to report back on the findings yet. The entries that are being used are based on the model entries that were designed as part of my PhD dissertation (Morris 2021).

The entries are bilingualised, with the headword in the learner's home language, as well as other support in the form of illustrations, clear sense division, audio for definitions and example sentences, synonyms and opposites where applicable, a word bank at each sense, as well as extra features such as a Did you know? box, Usage Notes, Word Origin, and Word Family.

The research is being conducted with tablets, as they are easy to obtain, but the idea is for a device to be designed and developed that will suit the requirements of a PED, in that it will have no internet connectivity, no camera, and no other applications, other than the dictionary.

Learners who have already been part of this research have been very positive about the idea of an electronic dictionary device that they could use at school and at home.

If this research shows positive outcomes to the use of PEDs, such as their appeal to learners and improved English literacy at school, and if these devices could be produced cheaply, then the South African education department is likely to consider them as a solution for primary schools in South Africa.

If this project is successful in terms of getting reliable and portable dictionaries to primary school learners in South Africa, this could be be used as a model for other developing counties

where disadvantaged learners are learning in English when it is not their home language.

8   Conclusion

According to Spaull and Pretorius, 'No country can succeed when half of its workforce are excluded because they have not mastered foundational numeracy and literacy skills. More importantly, it is difficult to think how one can live a truly dignified life in the twenty-first century without being able to read for meaning. And those who cannot read for meaning will not read for pleasure' (Spaull and Pretorius 2019: 164).

South African needs solutions for the literacy crisis. This paper has shown how an updated PED with a dictionary designed specifically for primary school learners who do not have English as a first language could be part of the solution.

The implications of the use of a reliable and accessible school dictionary are improved language skills of learners, which will have an enormous benefit to the rest of their education. Such a school dictionary that is appropriate for learners' age and fluency will improve their dictionary skills and in turn lead to a more established dictionary culture in South African schools. This can culminate in a dictionary culture of lifelong learning. Access to a reliable school dictionary with more language support will lead to better fluency and literacy, which will enable learners to progress through school, affording them better advantages later in life.

Acknowledgements

References

Chiu, LL & GZ Liu. 2013. Effects of printed, pocket electronic, and online dictionaries on high school students' English vocabulary retention. *The Asia-Pacific Education Researcher*, 22(4), 619-634.

Jansen, J. 2019. Inequality in education: what is to be done? In: Spaull, Nicholas and Jansen, Jonathan. (eds) *South African Schooling: The Enigma of Inequality. Policy Implications of Research in Education*, vol 10. Springer, Cham.

Kobayashi, C. 2006. The use of pocket electronic dictionaries as compared with printed dictionaries by Japanese learners of English. The Ohio State University.

Louw, P. 2022. 'Publishers' session'. *26th International Conference of the African Association for Lexicography*. Stellenbosch University.

Midlane, V. 2005. Students' use of portable electronic dictionaries in the EFL/ESL classroom: A survey of teacher attitudes. Unpublished master's thesis, Faculty of Education, University of Manchester, Manchester, Britain.

Morris, L.H. 2021. *A model for a comprehensive electronic school dictionary for South African primary school learners* (Doctoral dissertation, Stellenbosch: Stellenbosch University).

Nesi, H. 2012. Alternative e-dictionaries: uncovering dark practices. In Granger, Sylviane and Paquot, Magali (eds), *Electronic Lexicography*. Oxford University Press, Oxford, UK.

Olivier, J., Harris, N. & Borole, M. 2022. Using technology to improve English literacy: The case of 'Reading Eggs' in South Africa 2012-2021. In: Spaull and Taylor (eds) *Early Grade Reading and Mathematics Interventions*, Oxford University Press Southern Africa.

Pretorius, E. 2015. Failure to launch: matching language policy with literacy accomplishment in South African schools. *International Journal of the Sociology of Language*, Vol. 2015 (Issue 234), 47-76.

Sharpe, P. 1995. Electronic Dictionaries with Particular Reference to the Design of an Electronic Bilingual Dictionary for English-speaking Learners of Japanese. *International Journal of Lexicography*, 8 (1) 39-54.

Spaull, N & E Pretorius. 2019. Still Falling at the First Hurdle: Examining Early Grade Reading in South Africa. In: Spaull, Nicholas and Jansen, Jonathan. (eds) *South African Schooling: The Enigma of Inequality. Policy Implications of Research in Education*, vol 10. Springer, Cham.

Tono, Y. 2009. Pocket electronic dictionaries in Japan: User perspectives. In Bergenholtz, Henning, *Lexicography at a crossroads: dictionaries and encyclopedias today, lexicographical tools tomorrow* (Vol. 90). Peter Lang.

Zheng, H & X Wang. 2016. The use of electronic dictionaries in EFL classroom. *Studies in English language teaching*, 4(1), 144-156.