Michele F van der Merwe

Universiteit van Stellenbosch

DICTIONARIES AS WEALTH OF KNOWLEDGE? PERCEPTIONS OF MULTILINGUAL EDUCATION STUDENTS ON MOBILE LSP DICTIONARIES

Abstract

Studies in user research with regard to specialised settings have not received much attention in lexicography, as has the use of dictionaries on mobile phones. This study investigated the user perspective by referring to user situations, user needs and user perceptions in a multilingual university setting. The research undertaken was unique in the sense that the author investigated user perceptions of a **language for specific purposes** (LSP) dictionary on a mobile phone. It presents an empirical study on dictionary use by semi-experts in a multilingual higher education setting. The major aim of the study was to describe usage situations, user needs and user perceptions of education students on the use of a multilingual mobile dictionary. A multilingual university setting is described, where the language of teaching and learning is not necessarily the home language of a student, thus highlighting the need for a specialised multilingual dictionary to be used as a source of knowledge. In accordance with the view of a dictionary as a container of knowledge, students express the need for different types of dictionary information in specialised dictionaries. Findings include the affinity of students for a mobile dictionary.

Keywords: Mobile LSP dictionary; user perspective; user needs; user perceptions; dictionary usage; multilingual university setting

1.   Introduction

Technological development, also with regard to mobile dictionaries, is happening at an unprecedented pace in the current era of information. Mobile technologies have become an everyday sight on university campuses and form an indispensable part of our lives. Mobile learning or learning with mobile devices (Kukulska-Hulme & Traxler: 2005) is an expanding field of research and practice, which is increasingly shaped by rapid technological and socio-cultural change that is at odds with the more leisurely pace of evolving pedagogy, especially the formal pedagogy in higher education. Lexicographers (and lecturers) have to take cognizance of technological developments with regard to mobile dictionaries as well as of new possibilities of language teaching and learning opening up. Studies on dictionary use have been gaining ground over the last three decades, but, while dictionary use has moved dynamically into the digital medium, user research on digital dictionaries has been somewhat slow (Lew, 2015: 232).

According to Wiegand (2010: 680), the "user presupposition" should be the focal point in the lexicographical process. The "user presupposition" implies reference to terms such as user perspective, user situations, and user needs. Tarp (2009: 279) emphasises that, for research into dictionary usage to be relevant, it should not only generate knowledge of how dictionaries are used, but also of who the users are, where, when and why they use dictionaries, and with which result. According to Tarp (2009: 279), it is necessary to research the types of user situations, the types of users, the types of user needs, the users' usage of a dictionary and the degree to which user needs are satisfied.

This article is concerned with research on user situations, user needs and user perceptions. It is unique in the sense that the author investigated user perceptions of the LSP dictionary on a mobile phone. It presents an empirical study on dictionary use by semi-experts in a mobile environment in a multilingual higher education setting. The major aim of the study was to report the perceptions of education students regarding the use of a multilingual mobile dictionary. Aims of the study included a description of the linguistic profile of a student cohort, dictionary usage situation, consultation behaviour, users' needs, preference for mobile dictionaries, and the perceptions regarding MobiLex (Van der Merwe, 2016), a LSP mobile dictionary. A test on text translation and production activities in L1 and L2 was also conducted to reflect on usage to triangulate research.

The article is structured as follows: introduction of research questions; research methodology and design; analysis of data obtained regarding the user situation, user needs and user perceptions; and a reflection on a usage situation after a test involving the use of the dictionary. The focus is on the perceptions of first-year education students at a university with regard to the use of a trilingual mobile LSP dictionary called MobiLex.

2.   Research question

The user perspective is very much in the foreground, for example as indicated in articles by Hulstijn and Atkins (1998), Heid (2011), Lew (2011), Koplenig (2014), Müller-Spitzer (2014) and Muller-Spitzer and Koplenig (2014). According to Lew (2015: 232), a special issue of the *International Journal of Lexicography* (2011) devoted in full to the empirical study of dictionary use has appeared, but not a single one out of the six original studies included in the issue focused specifically on dictionaries in digital form. As the move from print to digital dictionaries has been quite vigorous, the same cannot be said for research into digital dictionary use. Chen (2010: 275) is of the opinion that electronic dictionaries have been making an impact on the dictionary scene by gradually yet dramatically changing users' preferences and patterns of dictionary use. It has drawn increasing attention from lexicographers, researchers and language teachers across the world. While pocket electronic dictionaries (PEDs) seem to be in the margins of the western lexicographical circle, PEDs, contrary to the western scene, are particularly popular with language learners from the eastern Asian countries (Chen, 2010: 275).

Lew (2015: 232) reviews Müller-Spitzer's (2014) complete volume on online dictionaries. The volume is the first of its kind and is organised into four main parts, namely (1) an overview of empirical studies on the use of electronic dictionaries, as well as a discussion of empirical methods of studying dictionary use; (2) results of online surveys involving dictionary users; (3) content and presentation of online dictionaries; and (4) design features of the online German dictionary *elexico.* The fact that a large population (Lew, 2015: 235) of the surveyed participants are professional linguists, students of linguistics, translators and lexicographers, had important implications for the results. The assumption could be that participants in the survey included a large number of experts with a lot of knowledge about and serious interest in dictionaries. Responses thus were not typical of the more general dictionary-using public. Relatively naïve and unskilled dictionary users were very much under-represented in the sample.

Gromann and Schnitzer (2015: 58) point out that few among the fairly high number of user research studies address the use of specialised resources by semi-specialised users. The majority of studies empirically evaluate specific learner's dictionaries or specialised translation dictionaries and focus mostly on the English language. According to Gromann and Schnitzer (2015: 57), knowledge about dictionary consultation behaviour in various languages is still rare, particularly in specialised settings. In their study, the major aim was to investigate the dictionary selection strategies and dictionary use of L2 learners of five different languages at the Vienna University of Economics and Business. The five languages were English, Spanish, Italian, French and Russian. Two aspects (Gromann & Schnitzer, 2015: 57) of dictionary use were analysed by means of an online questionnaire, a test with non-participant observation and interviews. The results included resources reported and used by L2 learners, as well as reported and observed consultation behaviour.

The current article aims to make a contribution in that it addresses the use of a mobile LSP dictionary by semi-specialised users at a university in South Africa. It can be assumed that these students are not highly skilled dictionary users, due to the lack of a dictionary culture in the country, as reported by Gouws and Prinsloo (2005). Research on a trilingual dictionary aimed at education terminology was undertaken with first-year students in education. The main research questions were:

1.   What is the linguistic profile of first-year education students at university X?

2.   What is the usage situation (dictionary habits) of first-year education students?

3.   What is their preference regarding mobile dictionaries?

4.   How can their consultation needs be described?

5.   What are education students' perceptions regarding the use of a mobile LSP dictionary such as MobiLex?

6.   How do students reflect on their usage of MobiLex after completing a test making use of the dictionary?

Research of users to confirm the need for a trilingual LSP dictionary specifically available on mobile devices was prompted with the development of MobiLex, a mobile dictionary of education terms. It provided the researcher with the opportunity to determine the linguistic profile of students in a multilingual class and to investigate their dictionary habits as well. As the participants were first-year students, they entered university with their own dictionary habits, dictionary culture, or lack thereof. Questionnaires were used in the empirical study as the instrument for obtaining data on mobile dictionary usage.

3.   Research methodology

The research undertaken took the form of a small-scale empirical study (Punch & Oancea, 2014: 47) which allows the researcher to go into considerable depth with a small sample. Currently, there generally is greater understanding for the role and importance of the small-scale research project, especially in education, where lecturers (teachers) conduct empirical research in lecture rooms (classrooms). The study was framed by an interpretative paradigm, which concentrates on the meanings people bring to situations and behaviour, and which they use to understand their world (Punch and Oancea, 2014: 18).

Tarp (2009: 284) criticises the use of questionnaires to investigate the usage of dictionaries, as they only reveal the users' perception of dictionaries, not the real usage. In the current case, the perception of users was being researched, so questionnaires

could be seen as suitable for the research. The advantage of questionnaires is that it is possible to involve quite a number of respondents and that it is relatively easy to analyse the answers.

The study gathered quantitative data by means of a questionnaire presented to first-year education students at the University of X. The questionnaire used in the study consisted of eight questions, with various sub questions. The first question was used to determine the language profile of respondents; the second question concerned usage situations; the third and eighth questions investigated preference for mobile dictionaries; the fourth, fifth and sixth questions dealt with consultation behaviour; and the seventh question focused on MobiLex. The majority of questions were open-ended, in order to gather rich data from participants. The research was triangulated with further reflection by students on the use of MobiLex after completing a test making use of MobiLex.

A total of 80 students responded to the questionnaire. Ethical clearance for conducting the research was obtained from the university and it was made clear to students that participation was voluntary and anonymous. The researcher does not teach a first-year class and questionnaires were distributed on behalf of the researcher before the start of a lecture. It was explained to students that they would have to make use of mobile phones to access information (and some of them indicated in the feedback that they did not have sufficient data or that they were not successful in accessing the internet). It was also explained that answering the questionnaire was optional.

The students' responses were captured and analysed. Noteworthy results are discussed further. A distinction between the different language groups is made with regard to some questions, for example questions on dictionary use, to show interesting and worthwhile results or attitudes towards dictionary usage.

4.   More on MobiLex as Mobile Lexicon

Research on students' perceptions of the use of MobiLex could only be put in context with appropriate background knowledge of MobiLex itself, therefore information is provided on the purpose of the dictionary, its access structure and microstructure. The dictionary forms part of the language plan of the faculty of education where the rationale is that first-year students need language support regarding concept literacy due to the fact that they are from diverse language backgrounds. MobiLex was designed with a pedagogical purpose in mind, namely of providing support to first-year university students on LSP terms in a multilingual environment. Staff and students have access to the dictionary at http://www0.sun.ac/mobilex. The LSP dictionary was thus compiled to meet content-specific needs, as well as linguistic (translation) needs of first-year students in the faculty of education. MobiLex is a multifunctional dictionary with communicative as well as cognitive functions, as it provides data on the subject field (of education), as well as on subfields and also provides translation equivalents for subject terms.

The access structure to MobiLex was designed to ensure fast, efficient access to subject terms on a first-year level. Students could find subject-specific terms on a web-mobile application. The MobiLex dictionary offers students the opportunity to look up words on their smartphones in Afrikaans, English or isiXhosa.

This LSP dictionary currently provides descriptions and translations for terms in mathematics, social sciences, natural sciences, educational psychology and curriculum studies. Dictionary data is firstly ordered according to subject. A thematic access structure is thus being used as primary dictionary structure, where users see a display of the various subjects in which terminology is supplied. Secondly, there is an alphabetical trajectory which appears during a search as part of the incremental search function. This forms a further macrostructural element as nested articles are supplied to the user.

Users have to click on a subject, for example curriculum studies, to find the term and to reach the appropriate article. Please refer to the screenshot below in Figure 1.
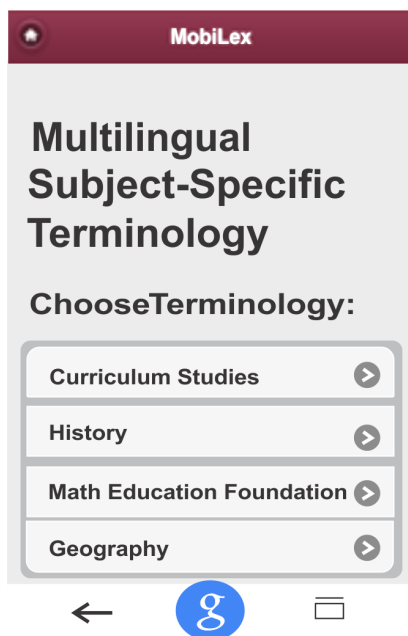

Figure 1: MobiLex homepage

The access structure provides the user with a choice of source language, namely Afrikaans, isiXhosa or English. In the example in Figure 2, English was chosen as the source language.
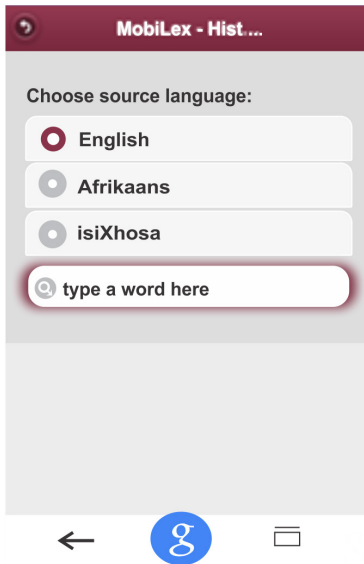
Figure 2: Access structure for MobiLex

The macrostructure is accessed by typing in the desired term. An alphabetical trajectory appears during a search as part of the incremental search function. Nested articles are then supplied to the user. During the incremental search process, the application also extrapolates as each letter is typed in. If the student is not completely sure of the spelling of the term in question, assistance is provided through the supply of a possible term starting with the specific letters that are searched. Please refer to the screenshot in Figure 3.
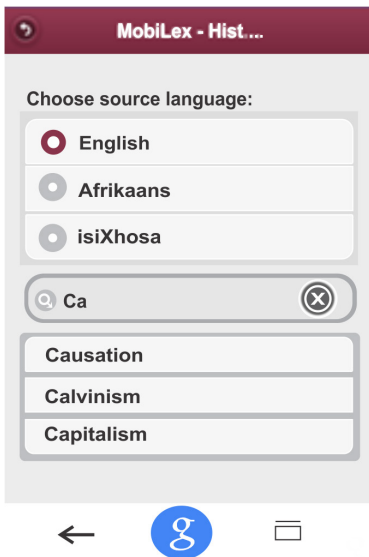

Figure 3 Access structure of MobiLex, showing the process of extrapolation

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Two translation equivalents are provided per lemma, ensuring that a term is thus translated into the L2 or L3 of a student. Depending on the language selected, the English, Afrikaans and isiXhosa translation equivalents are provided during the search. A short, subject-specific definition on first-year level is also provided in the preferred language, usually the L1 (the source language). Brief definitions ensure that the user does not need to scroll down, because the whole article can fit into the screen of a smartphone. The microstructure of MobiLex is very simple, thus adhering to users' needs to find a concise, meaningful definition in a short time. Peters, Jones, Smith, Winchester-Seeto, Middledorp and Petocz (2008: 234) refer to them as "need it now" definitions, referring to definitions that allow students to understand their course material and wider reading. One datatype is supplied in the microstructure, namely semantic information. Please refer to the screenshot in Figure 4.
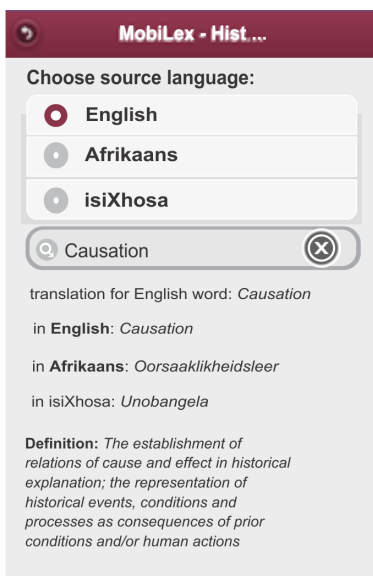

Figure 4: Microstructure of MobiLex

All students, but especially first-year students, need academic support regarding the language of teaching and learning in university subjects. This served as one of the main motivations for creating MobiLex. In the next section, results from a questionnaire regarding the perceptions of students on the use of MobiLex are discussed.

5.   Results and discussion

The results and discussion will focus on the linguistic profile of participants, their dictionary usage with regard to frequency of usage and their need for usage of dictionaries, their preference regarding the use of technology, as well as descriptions of their consultation needs and behaviour.

5.1. *Linguistic profile of home language of participants*

The 80 students who completed the questionnaire comprised 51 students who were Afrikaans speakers, 23 students who were English speakers and 6 students who were isiXhosa speakers. They formed a linguistic diverse cohort as they were thus from various different language backgrounds.

Table 1: *Linguistic profile of home language of participants who completed the questionnaire*

Home language	Number of speakers
Afrikaans	51
isiXhosa	6
English	23

The linguistic setting in the higher education sector in South Africa has changed dramatically over the past two decades with increased access of speakers from various language groups, as well as a growing internationalisation of universities. Monolingual lecture halls are a thing of the past and universities must be able to meet the demands of a multilingual student corps. A multilingual student cohort also implies adapted responsibility for language support for users of language of teaching and learning on various levels, ranging from mother tongue-speaker level to the level of learners of a second or third language. According to Olivier (2013: 44), multilingualism can refer to the multilingual abilities of an individual or the state of having more than one language when referring to a society. Societal or institutional multilingualism is a reality for many South Africans and in many university lecture rooms. Hibbert and Van der Walt (2014: 4) note that the multilingual practices of students outside formal educational encounters (such as lectures, seminars and tests) find their way into the classroom, where students are able to draw on literacies that they might have developed to a high level at secondary school level. Students bring other languages into the classroom by means of translanguaging (Klapwijk & Van der Walt, 2016: 5) when speaking one language while writing in another, or listening to one language and speaking in another. These authors view translanguaging as a defining characteristic of multilingual students. Klapwijk and Van der Walt (2016: 5) also view codeswitching as a common phenomenon in multilingual classrooms.

Afrikaans and English were used as languages of teaching and learning (LoTL) within the faculty at the time when the research took place. Leibowitz (2001) investigated possible reasons for low throughput rates at universities and found that a low level of competency in the language of teaching and learning is one of the main reasons for the lack of academic success among South African undergraduate students. Read and Ambrose (1999) indicate that the key to accessibility in academic subjects is vocabulary and it is on that basis that the commonly-used academic and word lists by Nation and Coxhead were developed. It is problematic, however, that technical glossaries on the internet and their definitions do not target the needs of novices in the discipline or those

users with limited English abilities (Peters et al, 2008). The above-mentioned findings thus support the development of a trilingual LSP dictionary like MobiLex as educational tool for novice students to underpin their conceptual knowledge and sharpen their ability to define important concepts.

5.2. *Results on the usage situation*

a. Dictionary usage

The second question consisted of three sub questions, namely: (a) Would you make use of a LSP dictionary in which subject terms are explained? Motivate your answer. (b) How often would you make use of such a LSP dictionary? Mark the relevant block. (c) Do you need a LSP dictionary in which curriculum terms for undergraduates in Education are explained? If so, for which modules?

In the first sub question, namely (a), a large majority of students expressed the need to make use of a LSP dictionary. All isiXhosa speakers (100%) expressed the need to make use of such a dictionary, while 92% each of Afrikaans and English speakers expressed this need. The result presents an overwhelming majority of speakers expressing the desire and need for the use of a LSP dictionary on terms in the education environment.

Motivation for needing subject dictionaries was expressed through comments by the students on the purpose of their dictionary use. As motivation for their needs was quite diverse, the researcher decided to group dictionary needs according to dictionary functions, as described in the theory of lexicographical functions. Thus, the purpose of using a dictionary was connected to the functions of dictionaries. Tarp (2008: 84) distinguishes between cognitive and communicative functions of a dictionary. Cognitive functions assist users with general, cultural and encyclopaedic data, specific data on the subject field and data on language. These dictionary functions link up with concept literacy where it is expected of students to have command of the appropriate LSP vocabulary in order to understand the subject field adequately. Communicative functions of a dictionary assist users on problems regarding text production in the mother tongue or additional language and text reception in the mother tongue or additional language, as well as the translation of texts from the mother tongue to the additional language or vice versa. Bergenholtz and Bothma (2011: 63) argue that communicative functions have to be divided according to different user competencies in different situations regarding:

What is the users' native language?

1. At what level do users master their native language?

2. At what level do users master a foreign language?

3. How extensive is the users' experience of translating between the languages in question?

What is the level of the users' general cultural and encyclopaedic knowledge?

The following comments by students can be associated with cognitive dictionary functions, as they refer to specific data on a subject field:

- "It is necessary to understand new terms."

- "To explain concepts."

- "Understanding certain concepts."

- "Since not everybody had the subject in school, it would be handy to have the new terms nearby."

- "It would help me to use the correct terms when I study and it would be so much easier to study."

- "I would like to know the meaning of terms that I do not understand."

- "I do not understand all the terms and not all the dictionaries have the words I'm looking for."

The following comments by students can be associated with communicative dictionary functions, as they refer to translation of terminology:

- "Translate the terminology in English."

- "Non-Afrikaans speakers can then fully understand terminology."

- "As my mother tongue is not used in class, I would appreciate such a dictionary to understand in class."

- "To be able to translate English slides better."

It is evident from the answers of students that translation of terminology would be a definite motivation for the use of such a dictionary. Due to the nature of a multilingual group of students, as well as the medium of instruction in lectures as described, the need for translations of terms is not surprising.

Results of the questionnaire also highlighted further motivation for the need of a subject dictionary besides the above-mentioned needs associated with dictionary functions. Such needs that were expressed refer to adaption at the entrance to student life at university level and the undeniable convenience of technology. Here are some of the motivations that were given:

- "First year can be very confusing and any support can help. Google is not always reliable."

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- "The transition from school to university is difficult."

- "It would help with the adaption to new theoretical concepts at university."

- "It can make studying easier."

- "It can help to narrow down useful vocabulary."

- "It would be easier and quicker to look up a term on your mobile than in your textbook."

- "Some students are too shy to ask the lecturer in class and thus it would be easier and more convenient to look it up on your mobile."

The above-mentioned comments by students confirm the need for a LSP dictionary, especially at first-year level.

The results of the second sub question ((b) How often would you make use of such a LSP dictionary?) are presented in Table 2. The data is displayed according to different language groups. Students were asked to tick off the appropriate number of times they think they would make use of a LSP dictionary on education terms.

Table 2: *Dictionary usage (frequency of)*

How often would you make use of such a LSP dictionary?

Daily	Five times a week	Three times a week	Once a week	Once a month	Once a quarter
Afrikaans students (some questions were not marked)					
14%	14%	42%	24%	2%	2%
isiXhosa students					
50%	17%	33%	0%	0%	0%
English students					
0%	12%	32%	44%	12%	0%

The very high reported frequency of supposed daily usage by isiXhosa students, namely 50%, in contrast with the much lower 14% of usage by Afrikaans and no usage by English students is notable. Very high frequency of daily dictionary consultation could be ascribed to the fact that isiXhosa students are not taught in their mother tongue at university level and that they would need to rely on a dictionary for translating and clarifying terms. Overall supposed usage is quite high, with a large majority of respondents indicating dictionary consultations on a weekly basis. This is quite surprising as well as very promising for cultivating a dictionary culture in the faculty. The result of sub question 2 links up with results from sub question 1, where a decided need for a LSP dictionary was expressed by various groups.

The results of the third sub question, namely (c) Do you need a LSP dictionary in which curriculum terms for undergraduates in Education are explained? If so, for which modules? are indicated in Tables 3 and 4. The data are presented according to different language groups.

Table 3: *Dictionary usage*

Expression of need for a LSP dictionary in which subject terms are explained

Affirmative answer	Percentage of speakers
Afrikaans	77%
isiXhosa	100%
English	92%

This third sub question received 95% affirmation from students. A discrepancy occurs, however, between expressed needs and results displayed in Tables 1 and 2 where Afrikaans-speaking students are concerned. Afrikaans-speaking students did not express the same high need for a LSP dictionary as identified in the previous questions. An equally high need for a LSP dictionary was expressed by isiXhosa and English students.

The next point of discussion on the questionnaire sought to determine the specific subject for which students perceived having a need for a dictionary.

Table 4: *Dictionary usage*

Expression of need for specific subject terminology

Name of module	Percentage of speakers
Educational Psychology	35%
Curriculum Studies	35%
Philosophy	20%
Afrikaans and Dutch	32% (of Afrikaans respondents)
English Studies	21% (of English respondents)
Social Sciences	18%
Natural Sciences	15%
Economic and Management Sciences	8%
Mathematics	1%

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Highest scores were obtained for the subjects Educational Psychology, Curriculum Studies and Philosophy. These subjects are not taught at school and the responses supported the notion that students have a need for a subject dictionary for subjects of which they have little prior knowledge of or which they are confronted with for the first time in their academic careers. The importance of academic literacy, as well as concept literacy, is highlighted by these results.

The reported results are important and useful to the lexicographical planning of MobiLex, as subjects have been prioritised by the needs of students. It would make sense to start with terms in the fields of Educational Psychology and Curriculum Studies rather than Mathematics, for example.

5.3. *Preference with regard to mobile dictionaries*

The next section in the questionnaire dealt with preferences regarding mobile dictionary usage and the context of mobile dictionary usage. Table 5 presents the preference for technology and the question was asked to determine the technological platform on which students would like to find a subject dictionary like MobiLex. They were asked whether they preferred the information on a mobile phone or on the university's electronic learning platform, called SUNLearn.

Table 5: *Preference for technology*

Plat form	Afrikaans	isiXhosa	English
Mobile phone	16%	33%	27%
SUNLearn	4%	33%	50%
Both platforms	76%	33%	8%

The majority of Afrikaans students preferred both platforms, the majority of English speakers preferred the electronic learning platform, while the isiXhosa speakers were evenly split between the three options.

The second part of the question asked for motivation for their responses. The use of a mobile application to provide students with a subject dictionary can empower students with the touch of a button. Applications are very fast, easy and convenient. It is also effective, because students always have their mobile phones with them and they "are always connected". Mobile phones are not heavy like paperback dictionaries and thus easy to carry around. The only real concerns regarding applications for subject dictionaries involve data usage and costs.

Students were then asked whether they were currently making use of a dictionary on their mobile phones. This question produced the following results: 43% of the Afrikaans participants made use of a mobile dictionary; 42% of the English participants made

use of a mobile dictionary and 33% of the isiXhosa participants made use of mobile dictionaries. Less than half of the participants therefore made use of a mobile dictionary. Three of the participants preferred using paperback dictionaries over mobile dictionaries.

Regarding the motivation for mobile dictionary usage, the question was asked to determine the kind of tasks for which respondents used mobile dictionaries. As in the case in section 5.2 on dictionary usage, the researcher decided to group motivations according to dictionary functions.

The following comments by respondents are associated with cognitive dictionary functions:

• "When I do not understand something."

• "To look up words that I do not know or understand."

• "When I am interested in a word."

• "To find a definition of an unknown word."

• "For syntax and grammatical reasons."

• "Check spelling of a word."

• "To find the meaning of common words that I do not understand."

• "To find the meaning of a word instantly, especially when my friends and I debate on the work the lecturer explained in the lecture hall."

• "During lectures when I hear an unknown word or phrase."

The last two comments highlight the suitability of dictionary usage on a mobile phone, which makes it possible for students to find answers immediately and when needed.

The following comments by respondents are associated with communicative dictionary functions:

• "Finding keywords to complete writing in other languages."

• "Translation of words and meanings."

It can be deduced from the various responses of respondents that they used mobile dictionaries for text production, as well as translation.

When asked which mobile dictionaries respondents preferred, the dictionaries that were mentioned included the *Oxford Dictionary*, *Merriam-Webster* and *Dictionary.com*. The answers of the respondents did not illustrate a thorough knowledge of mobile dictionaries, as was expected from semi-experts lacking a dictionary culture. No mention, for example,

was made of the *Cambridge Dictionary* or *Macmillan, Thefreedictionary.com, Urban Dictionary,* or *Wiktionary.* The lack of knowledge of lexicographical resources is further illustrated by the mentioning of a search engine like Google and Google Translate to solve lexicographical queries.

LSP dictionaries are not mentioned as being used and this finding is consistent with Gromann and Schnitzer's (2015: 58) findings that reporting of knowledge of a specialised resource was significantly lower than 10% in the population.

When asked about the context for mobile dictionary usage, most respondents referred to text production, as illustrated by the following answers:

• "Essay writing, short reports."

• "When I am interested in a word."

• "Assignments, assessments and tasks."

• "To help when I study."

Only one respondent referred to text reception, namely: "when reading books". It seems that students would make more use of MobiLex for text production, as for text reception.

Results pertaining to consultation behaviour regarding the purpose of specialised mobile dictionaries were also grouped under motivation in accordance with dictionary functions. The following comments by respondents are associated with cognitive dictionary functions:

• "To understand the terms."

• "Understand the subject and general knowledge."

• "To identify terms that you do not understand."

• "To understand the lecturer better."

• "To understand the content of the lecture."

• "Enhance understanding when language barrier is an issue."

• "Help understand content."

• "To have better insight in the subject."

• "To extend vocabulary."

• "Improve spelling."

• "Improve language skills."

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Most of the answers were relevant to improving concept literacy and to understand subjects better, illustrating a definite need among students for a specialised dictionary on mobile phones.

Respondents' needs associated with communicative dictionary functions involved the translation of terminology.

Another aspect of consultation behaviour that was highlighted was the improvement of academic literacy. Respondents presented a strong case in motivating for dictionary use other than those associated with dictionary functions. Motivations included:

• "Assisting tool when doing research."

• "Assisting in assignments – especially when terms are used to search for more information on the subject."

• "Improving academics."

• "Improving studies."

• "Making life easier as a student."

• "Help first years to adapt to university."

The very nature of dictionaries was also emphasised in remarks on mobile dictionaries as reference tools by one of the respondents: "Quick reference during a lecture when you cannot remember a term."

5.4. Description of consultation needs

In the next question, students were asked about lexicographic information they would like to find in a specialised dictionary. Findings are presented in Tables 6 to 8. Table 6 depicts the consultation needs of students with regard to information categories in specialised dictionaries. A distinction is made between the different language groups.

Table 6: *Consultation needs with regard to information categories in specialised dictionaries*

Informati on category	Afrikaans	isiXhosa	English
Explanation of term in home language	98%	50%	85%
Explanation of term in additional language	90%	67%	73%
Translation equivalent in additional language	86%	67%	85%

Afrikaans- and English- speaking students place quite high emphasis on an explanation of a term in their home language, with Afrikaans-speaking students scoring a high 98%. In the South African context, Afrikaans has been used as Language of Learning and Teaching (LoLT) at university level since the 1930s. In contrast with Afrikaans- and English- speaking students, only half of the isiXhosa-speaking respondents expressed the need for an explanation of a term in their home language. It may be speculated that, since isiXhosa has not been used as a LoLT in schools and at university, students do not express a need for explanations in their home language.

Afrikaans and English respondents were very much in favour of the explanation of a term in an additional language, showing a preference towards bilingualism. Afrikaans respondents scored exceptionally high in the question, in comparison with English and especially isiXhosa students. The high score of Afrikaans students could also reflect increasing exposure to English, especially at university level.

Regarding the need for a translation equivalent in an additional language, Afrikaans and English respondents were greatly in favour of it and isiXhosa respondents also expressed a need for that. The positive response towards translation equivalents in an additional language could be ascribed to the fact that students are part of a multilingual educational setting and are confronted with more than one language of instruction in lectures.

Consultation behaviour regarding the support of concepts is illustrated, also with regard to language groups in Table 7.

Table 7: *Consultation needs*

User-oriented support with understanding of concepts:

Information type	Afrikaans	isiXhosa	English
Simple definition	78%	67%	96%
Extended definition	75%	33%	69%
Further reading	61%	67%	73%
Refer to other sources	67%	67%	73%
Pictures/illustration	67%	50%	73%

When analysed, it is clear from the responses that users put a high premium on the importance of support regarding elucidation of concepts. With regard to the need for a simple definition, the English-speaking component of respondents scored particularly high, but the other language groups also highlighted the importance of a simple definition, probably with regard to quick and easy access.

With regard to the need for more complicated definitions, Afrikaans- as well as English-speaking respondents scored high, while isiXhosa respondents were not particularly keen on complicated definitions. The opportunity for further reading as well as reference to other sources appealed to all the language groups and this again highlights possibilities for mobile dictionaries, through being able to supply links for further reading and reference.

Respondents, especially English and Afrikaans respondents, but also isiXhosa respondents, also expressed the need for illustrations in elucidating concepts.

The last question regarding consultation behaviour dealt with needs expressed for information types in LSP dictionaries, as depicted in Table 8.

Table 8: *Consultation behaviour*

Information needs in LSP dictionaries

Information type	Afrikaans	isiXhosa	English
Synonyms	88%	67%	81%
Antonyms	82%	67%	54%
Parts of speech	69%	83%	42%
Plural forms of nouns	63%	83%	58%
Derivative forms	75%	67%	54%
Pronunciation	75%	67%	65%
Example sentences	80%	67%	77%

Results such as these were quite unexpected and surprising in the sense that respondents expressed the need for particular lexicographic information that is not typically associated with LSP dictionaries, for example information on semantic relations between terms. The need expressed for synonyms and antonyms was notably high, especially among Afrikaans respondents.

isiXhosa respondents prioritised syntactic information, for example parts of speech, whereas English respondents did not have a great need for it. Afrikaans respondents also indicated a reasonably high need for it.

Grammatical information, referring to plural forms of nouns and derivative forms, scored high on the needs list for isiXhosa speakers, as well as for Afrikaans speakers.

Pronunciation was a most definite need for Afrikaans speakers, but for isiXhosa and English speakers as well.

All respondents indicated a preference for the use of example sentences, with Afrikaans speakers scoring 80% and English speakers scoring 77%.

Other information needed by students conveyed via open ended questions also included the origin of the word, spelling of the word and other possible meanings of the word.

The analysis of the findings revealed that all respondents expressed the need for a trilingual LSP dictionary, with features or lexicographic information categories of explanatory dictionaries, such as semantic information, information on semantic relations between terms, grammatical information, syntactic information and information regarding pronunciation.

5.5. Reflection on a usage situation

In order to triangulate the research findings from the questionnaire, a test on text translation and production activities in L1 and L2 was conducted to reflect on usage of MobiLex, as in addendum A.

Students were asked to reflect on their experience of MobiLex by means of statements on a Likert scale ranging from 1-5. Regarding the difficulty of the task, 21% of students found it very difficult, with a score of 5 on the Likert scale, 31% found it quite difficult, with a score of 4 on the Likert scale, whereas 30% found the task to be of average difficulty.

While attempting the task on translation from L1 to L2, 58% of THE students made use of MobiLex, whereas 31% of the students did not make use of MobiLex. (There was a no response rate of 11% to the question). The fact that double the number of students used MobiLex to look up terms indicated a need for translation equivalents of subject terminology in the L2 and the communicative function of dictionaries within the specific user situation. The target language of the translation task happened to be an additional language of the students, a very relevant task within the framework of multilingualism, as students are often confronted with texts in text books, academic journals and lectures that are not in their home language. The results of the reflection on the translation task correspond with the results in the questionnaire regarding dictionary usage, as described in 5.2.

In their reflection on the usefulness of MobiLex, comments ranged from very positive, for example:

• "Definitions are very meaningful as it helped me to understand the work."

• "Easy to use and understand."

• "Translations very relatively useful."

Good advice from a student was: "Use a combination of your own translational skills and MobiLex."

There were also negative comments on the usefulness of MobiLex, for example:

• "Bring a bilingual dictionary."

• "Google it, it would be easier."

• "Rather use Google translate."

The negative comments reflect on MobiLex, but also on the dictionary users' knowledge of dictionaries, and the notion that these students are semi-experts and are not highly skilled dictionary users, is reflected in the above-mentioned comments. Firstly, a bilingual dictionary would probably not satisfy translational needs regarding subject terminology and this demonstrates a lack of knowledge regarding dictionary typology. The second and third comment, on the use of Google and Google translate, could not be dismissed outright as being unknowledgeable about dictionary typology, because Google could be used as a search engine to find dictionaries, although the search route would be longer than for a specific dictionary like MobiLex. Whether the user would be able to find the correct term, remains to be seen. The possible solution of making use of Google translate is not a feasible option at the moment.

Gromann and Schnitzer (2015: 33) found that user research needs to go beyond the investigation of dictionaries, and should be defined more broadly to include search engines, translation programmes and human beings as resources. This is echoed in the above-mentioned paragraphs in the expressed sentiments of some of the students.

6.   Conclusion

The aim of this paper was to explore the perceptions of education students on the use of a multilingual specialised mobile dictionary with reference to their dictionary habits and usage situations. A 14-item questionnaire and reflection following a test on the use of a mobile dictionary were employed as the main data collection tools. This was administered to 80 first-year education students at a university.

An overwhelming majority of the respondents expressed the need and desire for a multilingual LSP dictionary in an environment where non-home languages are used as languages of teaching and learning. Such a dictionary presenting subject terms in "easy to understand language" to semi-experts aspiring to become experts is considered an important resource in the lecture room in a multilingual society. It could play a pivotal role in underpinning students' conceptual knowledge and their ability to define key concepts, as well as expand their multilingualism.

Based on the research question regarding the usage situation of first-year students, it was found that a definite motivation for the use of a dictionary would be for translation of terminology. Another motivation for the use of dictionaries apart from text production and text reception was discovered through the research. The academic pressures of novice students could be relieved by the use of a user-orientated dictionary. Respondents argued that they found their first year at university difficult, that the transition from to school to university was difficult and that a dictionary would help with elucidation of new concepts.

A dictionary like MobiLex is viewed by multilingual students as a "language resource" and a wealth of information. According to McNelly (2015: 13) the language as a resource framework opts for pluralism in society, where language is viewed as a community asset and is used to create a bridge between different communities.

Regarding their preference for technology, respondents showed great affinity for electronic and mobile dictionaries. Although less than half of the respondents made use of mobile dictionaries, only three of the participants preferred using paperback dictionaries over mobile dictionaries. This finding is in agreement with Chen (2010: 288) who found that PEDs are used much more frequently than paper dictionaries, as 56% of students use PEDs more than five times during regular school days.

A need for certain lexicographic information that is not typically associated with LSP dictionaries was highlighted in responses to the research question on consultation needs. This included information on semantic relations between terms, grammatical information, syntactic information and information on pronunciation.

In the light of the findings in this study, it can be concluded that respondents expressed the need for a trilingual LSP dictionary, with features or lexicographic information categories of explanatory dictionaries readily available on a mobile device.

Addendum A

Reflection on the use of MobiLex

Research notes in italics.

Answer the following questions after you have completed the task.

(1)   *Difficulty of task:* how difficult was the task on a scale of 1-5
        (1 = easy – 5 = difficult)?

(2)   *Dictionary use:* did you make use of MobiLex during the task?

(3)   Underline the words in the text (in Question 11) with which you had problems.

(4)   Write down all the words that you looked up in MobiLex. *Usefulness of dictionary definitions:* Did you find the dictionary definitions in MobiLex meaningful on a scale from 1-5?

(5)   *Usefulness of dictionary definitions*: Did you find the dictionary translations in MobiLex useful (on a scale from 1-5)?

(6)   What recommendations for answering the questions in the task successfully would you make to other participants?

(7)   *Reflection on reference process:* How would you describe the reference process? Was it successful?

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ABOUT THE AUTHOR

Michele F van der Merwe

Departement Kurrikulumstudies, Fakulteit Opvoedkunde, Universiteit van Stellenbosch.

michelevdm@sun.ac.za

Dr Michele F van der Merwe is a lecturer in the Department of Curriculum Studies: Afrikaans. She lectures Afrikaans Language education, with specific focus on linguistics education on undergraduate and postgraduate level. Her research field is lexicography, with specific focus on educational lexicography, LSP lexicography as well as electronic lexicography. She also does research on the use of technology in language education. Dr Van der Merwe is the convener for the Language Focus Group and co-ordinate the BEd Honnors Language education course module. She is the project manager for the *Suid-Afrikaanse Wynindustriewoordeboek* (South African Wine Industry dictionary, as well as *MobiLex,* which is a cellphone LSP dictionary for students at the University of Stellenbosch. Dr Van der Merwe is a member of the subject associations, The African Association of Lexicography (Afrilex) and Research in Lexicography (RELEX).