Media-Related Or Generic-Related Features In Electronic Dictionaries: Learners' Perception And Preferences

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Abstract

A corollary of the electronic era in the area of electronic lexicography is the development and use of electronic dictionaries in language learning. This paper is concerned with the identification and examination of dictionary features perceived as helpful by ESL learners in assisting them in a sense differentiation task. Anecdotal data were analysed through a process of data reduction, data display and conclusion drawing and verification (Miles & Huberman, 1994). Qualitative coding categorization was adopted to classify and categorize media-related and generic-related dictionary features at three levels; macrostructural level, microstructural level, and interstructural level. Results generally indicated that preferred dictionary features mostly occurred at the microstructural level and that generic-related features were a priority as compared to media-specific features.

Keywords: **e**lectronic dictionary, generic-related, media-related, features, dictionary access.

Introduction

One of the impacts of the electronic era in the area of electronic lexicography is the development of electronic dictionaries in language learning. The shift from the print to the electronic medium has influenced the way information is presented and accessed in a dictionary. This paper looks at the features of electronic dictionary in helping learners access information. The two types of dictionary features examined are categorized into media-related and generic-related features. Media-related features are dictionary features that are specific to the medium whether electronic or print. Generic-related features refer to dictionary features that are pertinent to the dictionary content regardless of the delivery medium. This paper discussed both categories of dictionary features. The media-related features were further examined and analyzed at three levels that are at the macrostructural, microstructural and interstructural or mediostructural levels.

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The Three Levels of Dictionary Features

i. Macrostructural features

In print dictionaries, macrostructure usually refers to the overall list structure which allows a user to locate information (Bejoint, 1983). It is to do with the arrangement of entries. The most common format in Western dictionaries is the alphabetical wording which constitutes the central component 'although there are other ways of ordering the headwords e.g. thematically, chronologically or by frequency (Hartmann & James, 2001).

Macrostructure in e-dictionaries, however, refers to the procedural structure of how the user goes about accessing entries. Access and retrieval of information are no longer determined by the alphabetic organization of the dictionary. Alphabetical sorting, though, facilitates usage and, admittedly an essential element in a reference tool, does not go beyond expediency.

In e-dictionaries, a word can be made searchable by any piece of information by systematically coding the information in a form amenable to search routines. For example, the macrostructure in Dodd's (1989:89) sense, is what he called search routes. He suggested that future e-dictionaries should take into account search routes (macrostructure) such as: "sounds like A", "rhymes with B", "is spelt like C", "has an etymology of D", "dates from year/century e", " is used in style of F", "is used in technical field G", "is an antonym of H", "is a synonym of I", "is a hyponym of J", "is a superordinate of K", "includes the word(s) L in its definition", "is of grammatical class M" and "has syntactic valency or pattern N". This liberates users from the alphabetical order of the print dictionary (Atkins, 1996; Leech & Nesi, 1999) Thus, there can be as many macrostructures in a given e-dictionary as there are search methods that the programmers and lexicographers have provided. The possibilities are possibly limitless.

ii. Microstructural features

While macrostructure is the structure of the dictionary, microstructure refers to the structure of an entry. It is the way that the content of each entry is organized or in Bejoint's (1983) sense what is 'inside the entry'. It is the internal design of a reference unit. The microstructure provides detailed information about the Headword, with comments on its formal and semantic properties (p. 94). Online media has implications on this.

Space is no longer an issue in e-dictionaries. Digital storage media enables storing of immense amounts of text information. The implication being one can do without abbreviations. In an e-dictionary, a word can therefore be stored in different classification systems, in the alphabetical as well as in the semantic grouping that gives it its sense. However, to do completely without abbreviations in electronic dictionaries is still idealistic to say the least. It would appear that some dictionaries have not fully utilized the potential of digital storage media.

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Microstuctural features can be looked upon in two ways; one perspective is related to the e-dictionary's capabilities in presenting the entry, the other is to do with the multimedia features or typographical devices to assist in the description of an entry. Some features are the ability of the e-dictionary to check whether two particular words collocate and to list words with particular collocates (Lemmens & Wekker, 1990 as cited in de Schryver, 2003), plan of article plus full treatment per clickable sense (Selva & Chanier, 1998), to provide user with the correct equivalent for a word as used in the passage at hand (contextivity) (Michiels, 2000). In regards to multimedia graphics and audio, are features such as enhanced illustration throughout: procedures, relations and uncommon objects may be clarified graphically, non-static representations of actions and processes in order to illustrate certain verbs and nouns, video sequences, visualization of semantic and associative fields by means of interactive coloured computer graphics, waveform display of a 'record-and-compare' facility (Sobkowiak, 1999 as cited in de Schryver, 2003), audible pronunciation of lemma signs (viva voce, in real sound, thus unnecessary to learn IPA (International Phonetic Alphabet), sound connected with certain words, diphone-based generated speech for lemma signs, record-yourself facility (i.e. comparison of one's own pronunciation with the stored ones(s).

iii. Interstructural or mediostructural features

Interstructure denotes the way in which a lexicon's structure integrates itself into resources external to the lexicon (Burke, 1998). The Cambridge Learner's Dictionary on CD ROM (CLD) for example provides links within entries and outside to exercises, pictures and study pages over the internet. This level is also known as 'mediostructure' (de Schryver, 2003; Hartmann, 2001) which is a system of cross-referencing, which connects different components of a dictionary. Some typical mediostructural features proposed by de Schryver are grammatical pop-up windows (Geeraerts, 2000), hyperlink grammar notes and the unavoidable abbreviation to specific grammar cards explained in the learner' mother tongue (Dodd, 1989), meticulous Dictionary-external links (COBUILD2&3 on CD-ROM, 2001), definition chaining also known as hyperlinked cross-referencing, searches by chaining or hyperlinking, internal cross-referencing (Duval, 1992) and cross-references only showing the proper sense in a parallel (non-overlapping) window (Selva & Chanier, 1998).

It would appear that the demands on the learner of e-dictionary would now be greater as the emphasis is less on following a predetermined path through the dictionary structure, and more on navigating relationships across and within entries via a choice of internal and external links. Dictionary user skills, particularly e-dictionary skills should not only be brought to the forefront, but also given a higher priority, particularly in institutions of higher learning.

Method

Qualitative Coding Categorization was adopted for the analysis (Seliger & Shohamy, 1989; Miles and Huberman, 1994; Mason, 2003). Qualitative data collected were

analyzed through the process of coding and categorization. Frequency counts brought to a percentage were used to quantify the data for qualitative interpretation. (Refer to Tables 1, 2, 3 and 4 and Figures 1 and 2 for the coding and categorization schemes)

The Participants

The data were obtained from the analysis of literal comments of a hundred ESL learners after the subjects have completed a Sense Differentiation task with the help of an electronic dictionary. The participants were university undergraduates majoring in English Language Studies at a local public university in Malaysia. They did not have any systematic training in dictionary use but were expected to have made some use of their ESL dictionaries during their school days. The proficiency level of the students was determined by their Malaysian University Entrance Tests (MUET) bandscores. The proficiency level of the undergraduates was generally average to semi-advanced; with lesser numbers at the extreme ends; weak and advanced level. This was comparable with the English proficiency level of the average educated user of ESL dictionaries in any English language programmes in Malaysian public universities.

Sense differentiation task

The task set in the Sense Differentiation Task required students to identify and circle the correct sense of a particular word in a sentence from the given range of senses of that word. Subjects were then asked to write down dictionary features that particularly helped them in their task and also dictionary features that they would prefer in an electronic dictionary. The CD-R version of the Collins Cobuild English Dictionary for Advanced Learners was used as a reference in the task completion exercise.

Data were analysed through a process of data reduction, data display and conclusion drawing and verification (Miles and Huberman, 1994). Qualitative coding categorization was adopted to classify and categorize media-related and generic-related dictionary features.

At the data reduction stage, the literal comments were categorized into media-related features and generic-related features. Unlike media-related features which were dictionary-specific depending on the delivery medium whether electronic or print, generic-related features were common, content-related features in dictionaries regardless of delivery medium. The dictionary features identified were classified into macrocategories, microcategories and microtypes, and further labelled ‘helpful’ and ‘unhelpful’ status based on the comments. Media-related features were further analyzed at the macrostructural, microstructural, and interstructural levels. Percentage based on frequency count was tabulated at the data display stage and conclusion drawn from the analyzed data.

Macrocategories, microcategories and microtypes

At the data reduction stage, largely, the macrocategories identified were generic features and specific media-related features. For generic dictionary features, categorization was done with the positive features and negative features as the microcategories as there were only three microtypes identified in comparison to fourteen microtypes identified for the media specific features. The three microtypes of generic features were definitions, example sentences, and annotations (Table 1).

Table 1: Microcategories and microtypes of generic dictionary features

Microcategories	Microtypes
Group^{e} and Group^{p}	
Positive features	definitions, example sentences, and annotations
Negative features	definitions, example sentences, and annotations

Due to the small number of microtypes, there was no requirement to create further categories as in the case of the media specific features. Thus, generic dictionary features was labeled macrocategory, the positive and negative features as microcategories followed by example sentence, definitions and annotations as the microtypes. This categorization is depicted in the form of a taxonomic chart below (Fig. 1)

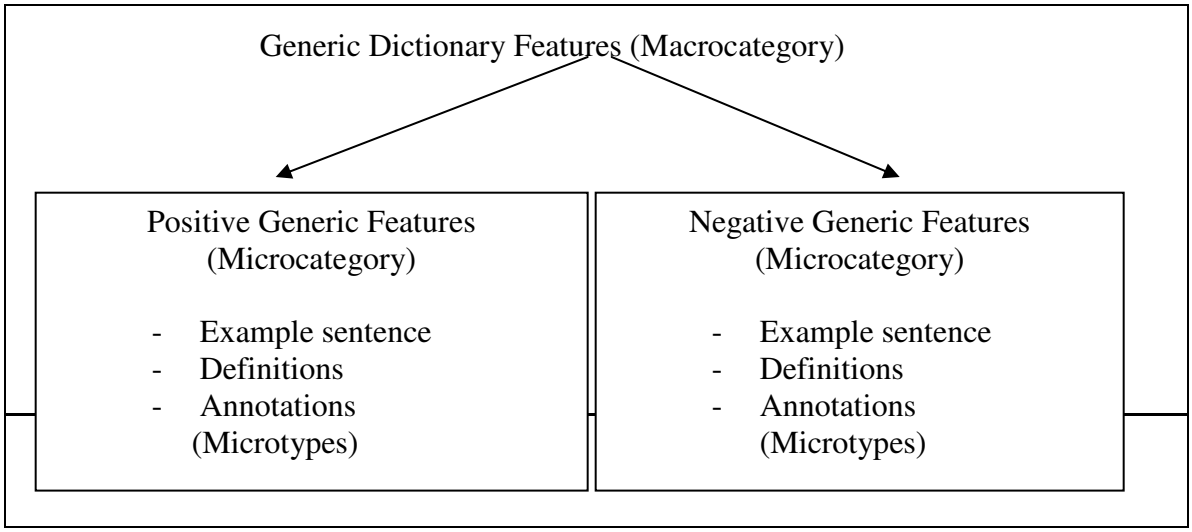

Fig. 1: Taxonomic classification of generic dictionary features

For media specific features, the microcategories and microtypes identified for Group^{e} were as illustrated in Table 2.

Table 2: Microcategories and microtypes of specific media features

Microcategories	**Microtypes**
Group[e]	
Search procedure	search speed, search type
Navigation within	hyperlinks, windows switching
Typography	bolding, font type and size, colour
Layout	screen layout, text layout
Sound	Pronunciation
Navigation without	external links
Group[p]	
Navigation within	alphabetical ordering
Layout	text layout
Typography	bolding, font type and size, colour
Orthography	phonetic transcription
Sequencing	Numbering
Navigation without	cross references

To illustrate the categorization in Table 2, microcategories 'search procedure' and 'typography' were depicted as examples (Fig. 3) in the form of a hierarchical taxonomic chart. The rest of the microcategories followed the standard form of classification as in Fig. 2

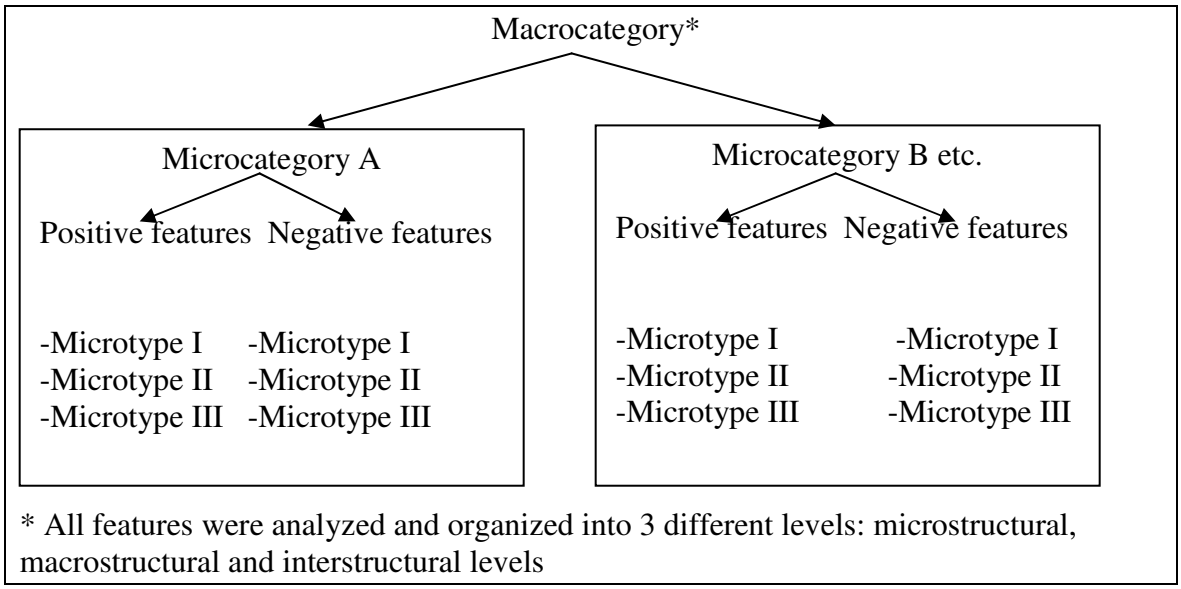

Fig. 2: Template for taxonomic classification of specific media-related features

An example of the sub-classification of the 'Search procedure' and 'Typography; 2 specific media-related features are illustrated in Fig. 3.

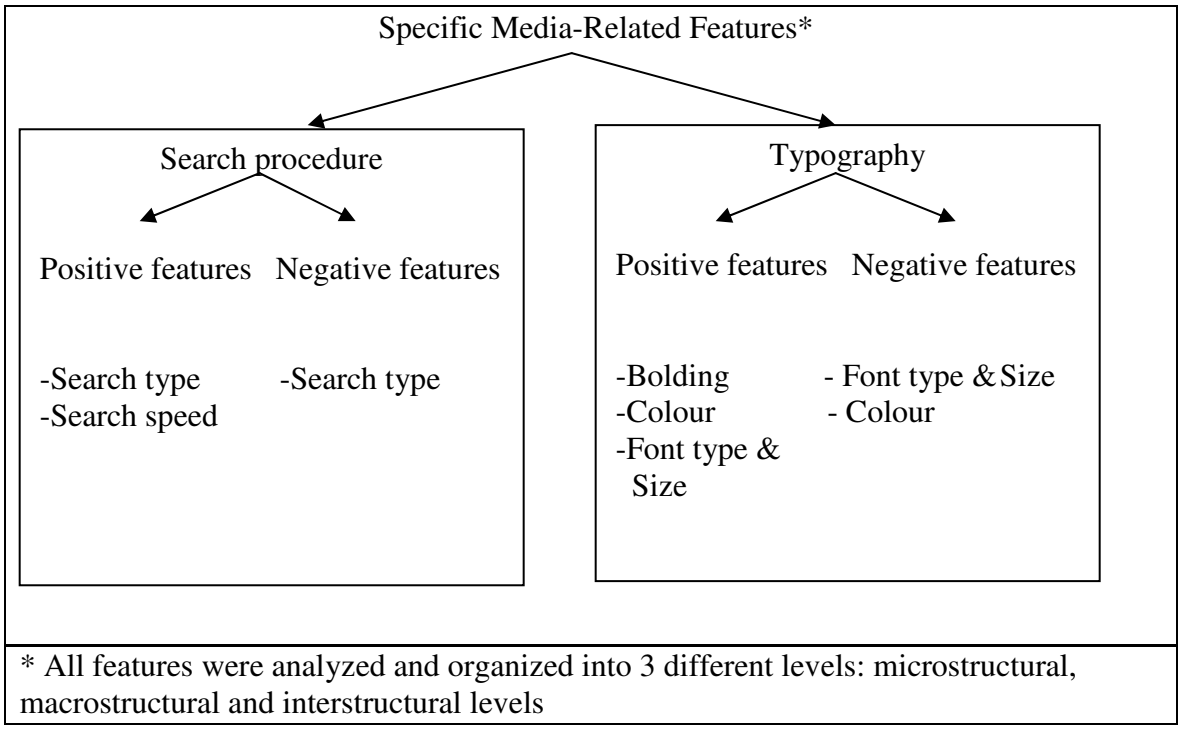

Fig. 3: Taxonomic classification of 'Search Procedure' and 'Typography'

Coding scheme for dictionary features

Once the categories had been identified, a coding scheme was devised to accommodate these categories.

The coding scheme for generic dictionary features and media-specific features were devised based on the most frequently occurring microtypes. The description of the coding is as in Table 3 and Table 4.

Table 3: Coding scheme for generic dictionary features

Generic features	
Coding scheme	Interpretation
1. Def^{H}/Def^{U}	Definition Helpful/ Definition Unhelpful
2. Ex^{H}/Ex^{U}	Example Sentences Helpful/ Example Sentences Unhelpful
3. Ann^{H}/Ann^{U}	Annotation Helpful/ Annotation Unhelpful
4. $DefEx^{H}/DefEx^{U}$	Definition & Example Sentences Helpful/ Definition & Example Sentences UnHelpful

Table 4: Coding scheme for media-specific features

Media Specific features	
Coding Scheme	Interpretation
1. SS^{H}/SS^{U}	Search Speed Helpful/ Search Speed Unhelpful
2. ST^{H}/ ST^{U}	Search Type Helpful/ Search Type Unhelpful
3. Hyp^{H}/ Hyp^{U}	Navigation within the dictionary e.g. hyperlinks , thesaurus
4. WS^{H}/ WS^{U}	Navigating from window to window within the dictionary
5. F^{H}/ F^{U}	Font Helpful/ Font Unhelpful
6. C^{H}/C^{U}	Colour Helpful/ Colour Unhelpful
7. B^{H}/B^{U}	Bolding Helpful/ Bolding Unhelpful
8. CR^{H}/CR^{U}	Cross referencing
9. SL^{H}/SL^{U}	Screen Layout Helpful/ Screen Layout Unhelpful
10. TL^{H}/ TL^{U}	Text Layout Helpful/ Text Layout Unhelpful
11. P^{H}/ P^{U}	Pronunciation Helpful/ Pronunciation Unhelpful
12. $Nout^{H}/Nout^{U}$	Navigation out of the dictionary e.g. cross references
13. A^{H}/ A^{U}	Alphabetical Order Helpful/Alphabetical Order Unhelpful
14. Pt^{H}/ Pt^{U}	Phonetic Transcription Helpful/ Phonetic Transcription Unhelpful
15. Num^{H}/ Num^{U}	Numbering Helpful/ Numbering Unhelpful

The whole data were then manually tagged with this coding scheme. This enabled systematic clustering of the same features. The frequency of occurrence of each code was calculated.

Discussion of Findings

This section concerns itself with the examination and interpretation of the data. After the qualitative data in the form of literal comments were collected and analyzed through the process of coding and categorization, frequency counts brought to a percentage were used to quantify the data for qualitative interpretation. The discussion and interpretation are largely supported by excerpts of the subjects' comments where the letter '*E'* refers to the electronic dictionary group and the number that accompanies it refers to Subject Number. Dictionary features that assisted the subjects in the identification of the senses of the dictionary were identified, categorized and discussed.

Generic-related features

The three most common microtypes cited for generic features were definitions, example sentences and annotations. 78.87 percent found the three features helpful (Table 5). Only 21.13 percent had uncertainties toward it.

Table 5: Microtypes and frequency count of generic dictionary

Feature description		**Microtypes**	**Percentage count**
Content-related features	Helpful	Definitions, Example Sentences & Annotations	78.87%
	Unhelpful	Definitions & Example Sentences	21.13%

The comments centred around the ease of understanding and clarity of definitions and ample example sentences. Most of the subjects found the definitions useful, complete and easily interpreted (*E1: The explanation of meaning is very clear and it [is]easy for student to look up the meaning that they want).* To a number of subjects, example sentences went hand in hand with definitions in enhancing the understanding of the meaning of word *(E2: The definition is very specific and [comes]with clear example).* Others found it easier to guess the correct sense of the word from the example sentences. *(E3: A lot of meaning with examples are helpful to find out the appropriate meaning related to[the]right context).* Comments that touched on annotations were mostly related to grammatical information provided in the electronic dictionary (*E4: there are also description about the part of speech like noun, adj or verb for each word. (easy for us (students) to use correct grammatical form of words).* The few subjects that did not take to the generic features made very general comments without justifying or explaining their claims *(E5: Many meanings made me confused).* In contrast to those who found the features helpful as stated above, these few subjects were of the opinion that either the

example sentences in the dictionary were too long or too short, confusing at times or there were too many meanings to a word.

Media-related features

a. Macrostructural level

At the level of macrostructure, the two most frequently cited microcategories quoted were search procedure (96.15 percent helpful, 3.85 percent unhelpful) and navigation within (75 percent helpful, 25 percent unhelpful) (Table 6).

Table 6: Percentage count of microcategories and microtypes of media specific features at the macrostructural level

Level	**Micro-categories**		**Micro-types**	**Percentage count**
Macrostructure	Search Procedure	Helpful	Search Speed & Search Type	96.15%
		Unhelpful	Search Type	3.85%
	Navigation (Within)	Helpful	Hyperlinks (Thesaurus, English Usage, Word Bank)	75%
		Unhelpful	Windows switching	25%

The frequently recurring features of search procedure were the microtypes search speed and search type.

Most of the comments with regard to search speed here referred to download time *(E6: Hardly 3 secs to locate the word)*; time between clicking after entering data and the retrieval of the requested data on screen *(E7: Just type the word and Enter. How quick and convenient)*. It was obvious that most dictionary users prefer to have dictionaries that could help them locate meaning of words as quickly as possible. Rundell (1999) claims that most of the time, dictionary users were not interested in engaging themselves with the dictionary, they just wanted to find the information quickly and be able to grasp it immediately once they found it. Similarly, in this study, search speed also appeared to be a priority and the comments were thus, not unexpected.

Search types, the other microtype grouped under Search Procedure, were mostly related to search functions available in the dictionary *(E8: Actually, it's helpful in sense of*

searching for words eventhough it's a past tense word). However, it was not apparent as to what kind of search functions were intended in the comments. The e-dictionary has complex search options available such as the use of the Boolean symbols "AND", "OR", "+" and "-" that can be used and also functions in relation to looking for synonyms, antonyms or even homonyms to help users to arrive at the appropriate meaning. However, it was not clear from the data which functions the subjects were referring to.

For navigation within the dictionary (macronavigation), subjects cited hyperlinks as a useful microtype particularly links to resources in the dictionary such as thesaurus and wordbank *(E9: The features are helpful because it contains thesaurus, English usage, grammar and wordbank)*. Looking further on at macronavigation, some of the difficulties faced were windows switching problems. *(E10*: *It took time for me to get back to the dictionary once I went out of the dictionary. Click wrongly; E11: It is confusing to have 3 windows changing at the same time).* Most of the responses pointed towards 'moving back to a previous screen; escaping and exiting and coming back' as major navigational problems faced. The difficulties were either due to inadequacy in terms of using the icons and menus or coping with the presence of multiple windows simultaneously on the screen in the interface. Contrary to Alessi & Trollip (1991) who claimed that 'programmes that use a number of different windows make it less easy for a user to get "lost" in a programme", some of the subjects found it difficult to cope with different windows appearing simultaneously. Another feature that some of the subjects were uncomfortable with was the presence of navigational icons. Despite the belief that iconic navigation is more effective because the icons can be universally understood regardless of what language the user speaks (Hofstetter, 2001), familiarity with iconic navigation was lacking among the subjects, possibly because of their preferences or simply, the lack of knowledge of the usability of icons.

b. Microstructural level

At the microstructural level, more varied features were quoted by the subjects. Recurrent features quoted were typography (33.33 percent helpful, 67.67 percent unhelpful), layout (63.64 percent helpful, 36.36 percent unhelpful) and sound (100 percent helpful).

Table 7: Percentage count of microcategories and microtypes of media specific features at the microstructural level

Level	Micro-categories		Microtypes	Percentage count
Microstructure	Typography	Helpful	Bolding, Colour, Font type and size	33.33%
		Unhelpful	Font type and size, colour	66.67%
	Layout	Helpful	Screen Layout Text Layout	63.64%
		Unhelpful	Screen Layout	36.36%
	Sound	Helpful	Pronunciation	100%
		Unhelpful	None	0%

Typographical features quoted were boldface, colour, font type and font size with more of the subjects citing the features as unhelpful *(E12: The font type of size of the interface is rather small and lacks creativity; E13: Even though the colour words, it does not have any benefits for people).* Generally, a large number of them (66.67 percent) was dissatisfied with the typography as it impeded readability (Table 7). The limitation of the computer screen and the dictionary book form to incorporate as much information as possible has inevitably reduced the font to a less than desired size. Some subjects also questioned the functionality of colours in the e-dictionary Nevertheless, a few but much lower number commended that the highlighting techniques such as colours and bold face managed to draw their attention to information and that they found these attention getters useful. The most frequently quoted microtypes in relation to Layout (63.64 percent helpful, 36.36 percent less helpful) were Screen Layout and Text Layout. Most of the screen layout features that were deemed to be beneficial were related to appearance *(E14: The words are displayed neatly on the screen)* and ability of the screen to accommodate information *(E15: The screen displayed all the information on a page, look at the information by going down the screen).* 100 percent of the subjects found the microtype pronunciation in the e-dictionary helpful. They stated many benefits of the sound system in the dictionary particularly pronunciation, however without further explaining how it had helped them in their task. Many second language learners of English do not have the luxury of learning English language in the native speaker environment and therefore are deprived of the spoken input. It was therefore self-evident that the subjects would be appreciative of the pronunciation feature; a feature that was notably absent from the conventional print dictionary.

c. Interstructural level

At the inter structural level, external links and cross references were mentioned and quoted in the data as illustrated in Table 8.

Table 8: Percentage count of microcategories and microtypes of media specific features at the interstructural level

Level	**Micro-categories**		**Micro-types**	**Percentage count**
Interstructure	Navigation (Without)	Helpful	External links Cross references	100%
		Unhelpful	None	0%
		Unhelpful	None	100%

The percentage count (100 percent) was, however, less reflective of the significance of the features because only two occurrences of this feature that quoted external links and cross referencing were discernible from the data at the interstructural level. Both comments cited the feature as useful *(E16: Helpful in the sense that it is link[ed] for cross references purposes).*

Preferred dictionary features

The preferred dictionary features that were put forward could be categorized into generic dictionary features and media specific features. These features were however not necessarily related to their task at hand. Among the media-related features identified, three features in the order of descending frequency of occurrence were visuals, phonetic transcription and colours.

Visuals were suggested by subjects mostly for the enhancement of meaning of difficult words and for creating interest. Visual sense modality seemed to be more significantly favoured in comparison to the other sense modalities such as textual or auditory modalities among the subjects of this study who were young adults. There were grounds to this preference as previous studies (Wright, 1998; Wallace, 1988) have indicated that visuals or illustrations were influential in helping learners create visual information which would otherwise be difficult to provide briefly or meaningfully in simple language. The studies showed that pictures or illustrations could enhance language learners' listening and reading skills (Wright, 1998).

More colours were suggested as a preferred feature because most textual content in the dictionary are either in black, or blue only. Generally, colours were recommended as attention getters to highlight key words and different meanings of words. However, the e-

dictionary had the headwords and the different senses of the word in blue to differentiate them from the example sentences. Colours in this sense were functional and not cosmetic. Besides, Olson & Wilson (1985) point out colours should also enhance the impact and legibility of the screen and not disadvantage the colour-blind. In other words, the subjects were aware of functionality over aestheticism in relation to colours.

Another point brought up by the subjects was phonetic transcription. Despite the fact that the e-dictionary possessed sound features like pronunciation, subjects preferred that it be accompanied by phonetic transcription. This could be for further enhancement of understanding of the sounds as all subjects were undergraduates who had gone through courses in Linguistics including Phonetics and Phonology. Reading phonetic fonts would not be new to them and thus, the phonetic transcription was of relevance to them.

There were also generic dictionary features suggested such as '*more example sentences*' and *'explanation of the meaning in another language possibly Malay or Chinese'*. Other suggested features were varied and interesting. Some suggestions were availability of flexible search functions such as "when you type a sentence, the dictionary can interpret the meaning", "include a guide on how to pronounce words", and "search functions should shortlist the answers based on the requirements asked". They were mostly miscellaneous comments that generally centred around the provision of more elaborate and also functional dictionary features.

Conclusion

Although generic-related features are common in all dictionaries regardless of delivery medium, the findings in this study pointed towards the fact that dictionary users appreciated definitions, example sentences and annotational features more than the other dictionary features. For media-specific features, among the occurrences at the three levels, features most frequently quoted were at the microstructural level, followed by macrostructural and interstructural levels. The implication here is that the structure of each dictionary entry is deemed more important than linking features within the dictionary, or out of the dictionary. In summary, the dictionary features identified that were quoted as 'helpful' were Search procedure (search speed, search type); Navigation within (hyperlinks); Typography (bolding, font type and size, colour); Layout (screen layout, text layout); Sound (pronunciation) and Navigation without (external links). These dictionary features could be highlighted as significant dictionary features for educationists, and indicators for dictionary developers and lexicographers alike, in the development of electronic dictionaries. The subjects' comments suggested that certainly some media-specific features are functional and could be a potential aid to understanding and accessing information in the electronic dictionary.

Both electronic dictionaries and print dictionaries are not without merits. The two different modes are suitable for different purposes. It is perhaps too early to say that the electronic dictionary has the capability to replace print dictionaries as Sharpe (1995:49) puts it, "It is my view that the advantages of the electronic dictionary and the familiarity

of today's young people with electronic devices will eventually relegate the printed notion of "dictionary" to a secondary sense."

If the potential of the electronic dictionaries or print dictionary is to be realized fully, the position of dictionaries at universities and its implication on teacher training should be relooked. Training in dictionary skills has to look at needs of the tertiary learner and teacher trainers must be retrained in dictionary skills so that they can in turn train others. This requires time and immense effort and only a concerted effort such as the Thematic Network Project (TNP) in Europe can bring us nearer to studying dictionary efficacy. For instance, the TNP team in the Area of Languages in Europe comprising educators from universities in Europe found in the formulation of its original Policy Paper in 1996, that there is still no dependable documentation on lexicographic training and research into dictionary-making and dictionary use (Hartmann, 1999). Collaboratively, the committee conducted a series of country-by-country surveys of the dictionary scene in Europe with the intention of filling in some of the gaps in their knowledge. The result is the comprehensive report on the Sub-Project 9 (Dictionaries) in the Area of Languages, bringing together ideas, recommendations, national reports and thematic reports from universities all over Europe. Building a corresponding network in Asia would help in looking at the needs of our own tertiary students which might be country specific due to differing education policies and contexts of learning a Second Language.

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