
Introduction
There has been a growing demand for the use of Augmentative and Alternative Communication (AAC) systems with the use of symbols in the Arabian Gulf region. Research carried out by Zetterström (2012) supports this, suggesting that those with learning disabilities including speech, language and literacy difficulties may have very little knowledge regarding the use of assistive technologies. Further research has shown that where there are specialist centers serving a wide ranging population of both English and Arabic speakers, individual AAC users are learning language through the use of westernized symbols. Huer (1997, 2000) and Patel et al (2005) comment on the need to think about the cultural and linguistic experiences of those using graphical imagery to communicate and Patel et al also highlight the issues that surround the diglossic nature of the Arabic language where what is written may differ from what is spoken. Modern Standard Arabic (MSA) may be used in news broadcasts and for the written language across the Arabian Gulf and other Arabic speaking nations but colloquial Arabic, which varies immensely, is used in the home and other social settings.

Many of the imported symbol sets are inadequate in terms of supporting the very important needs of users in different social and religious settings, such as being able to choose certain types of food at meal times or being able to take part in regular prayer times.

Local centres of expertise may be able to offer excellent support for AAC users, but it takes time to develop bespoke symbols and when carried out on an individual basis these are rarely shared with the outside world.

Aim
There are very few Arabic core vocabulary lists of spoken Arabic available (Zaghouani et al, 2014) and those that are available may not necessarily be suitable for AAC users. In English, Speech and Language Therapists have come to depend on lists gathered by experts from recordings of both adults’ and children’s spoken language as well as lists from actual AAC users, such as those cited by Cannon and Edmond (2009). These lists are usually based on the most frequently used words and tend to consist of a core set of less than 500 words. Before assembling an Arabic dictionary of culturally, socially and linguistically suitable symbols with their referents that would complement those already in use, there was clearly a need for a localized core vocabulary.

There was also a need for guidelines as to the type of symbols that would match the iconicity of those already in use and could be evaluated for their acceptance in the community with additional appropriate fringe words to further aid communication, language and literacy skills.
Methodology.

Lists of words and phrases were collected from local special schools, clinics and AAC users. These provided the core of 500 words but were also compared to other Arabic frequency word lists such as language learning lists (Buckwalter et al 2014), The Kelly project (Kilgarriff et al 2013), 101 language.net and Aljazeera comments (Zaghouani et al 2014).

Whilst data collection took place, groups of participants made up of teachers, therapists, AAC users with their families and carers were asked to join an online forum for discussions, together with face to face meetings and use of an online journal (blog)\(^1\) describing the activities taking place. Voting systems were set up to allow participants to compare symbol sets available as well as make recommendations on individual symbols developed by the team’s graphic designer. An open source symbol management database was developed for the uploading of lexical concepts in Arabic as well as English plus designer developed symbols. The dictionary had to be bilingual, due to the fact that most therapists used English in the workplace despite the fact that many teachers and families spoke Arabic.

Results

63 participants took part in the symbol voting over eighteen months. 203 newly developed symbols were initially offered for download and trialling with users. A set of guidelines were produced that outlined the type of symbols requested resulting from initial voting sessions. These included the non-acceptance of stick symbols, with a preference for gender specific symbols clothed appropriately for the region. Lexical concepts were to be in MSA with a colloquial equivalent where appropriate and where different parts of speech were required, a verb conjugation system would be offered and a series of additional symbols to represent number and tenses. An automatic diacritisation system was added to the Arabic text to allow users to understand words out of context with the support of text to speech.

Conclusion

The research undertaken has shown that the links between culture, social settings and linguistics are intertwined to such an extent that it is essential for teams to work in a participatory manner with all stakeholders and to have a wide range of expertise when taking on projects such as has been discussed in this paper.

More research is required into the type of core vocabularies required in bilingual settings and the impact they have on symbol set requirements. There may be some similarities in word lists but due to the linguistic complexities of certain languages the actual referents required to make up a small symbol set of around 500 words may appear very different when gathered together in a symbol dictionary.

It should also be noted that personal preferences in terms of user requirements remain all important and although the idea of an Arabic Symbol Dictionary allowing more users to have access to freely available symbols under a creative commons

\(^1\) Web address for online journal
licence should be seen as beneficial to many, there will always be times when bespoke symbols are required.

Acknowledgements
To be completed after review as they would affect the anonymous nature of this extended abstract.

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References


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