

Synergistic teamwork using social media for innovative development of an Arabic Symbol Dictionary.

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Abstract

This paper explores the development of a freely available online Arabic symbol dictionary that will have a wide range of culturally, linguistically and environmentally appropriate symbols leading to an increase in Arabic language skills for those dependent on communication devices and encouraging greater cultural understanding by those therapists working with these children and adults. The use of social media and online systems has provided for participatory research to be undertaken between researchers, therapists and Augmentative and Alternative Communication (AAC) users to ensure the development of meaningful symbols and a core vocabulary. Bespoke systems have also promoted the building of a synergistic team able to respond speedily to users' needs, data collection and analysis as well as collaboratively solving problems that arise.

Introduction

Research teams are often interdisciplinary and may require a degree of empowerment being given to individual members by managers in order to allow for free thinking innovation to occur. This is especially true if the team is working across continents and in different languages. However, to create a cooperative group that can develop a practical product based on a very short research timeline requires a certain synergy to occur between all members of the team. Although good leadership can encourage interdependency and good work ethics; to develop a synergistic team requires personal endeavour from each group member to see the project output as not only being worthwhile, but also something worth discussing and thinking creatively about as a whole rather than just independently.

The Arabic Symbol Dictionary team when it came together as a result of a Qatar National Research Fund project had members from six different countries, four different

professions including speech therapists, computer scientists, an assistive technology specialist and a graphic designer. Only two members of the team had previously worked together. Luckily all members had used certain forms of social media in the past and were aware of the impact it could have on teambuilding. Everyone was also aware that without an initial face to face meeting and a chance to socialise it would be much harder to gain trust and understanding between team members. Two UK team members visited Doha in Qatar and not only learned about the working environment and how Augmentative and Alternative Communication (AAC) was being introduced to users across the country, but also how other team members would be supporting the research. Practical decisions were made about the types of social media to be used and the basis on which the participatory research would be carried out.

Cornwall and Jewkes (1995) point out that "...participatory research is about respecting and understanding the people with and for whom researchers work. It is about developing a realization that local people are knowledgeable and that they, together with researchers, can work towards analyses and solutions. It involves recognizing the rights of those whom research concerns, enabling people to set their own agendas for research and development and so giving them ownership over the process." This is felt to be paramount when working with vulnerable individuals but also working with experts in Doha as it is essential to ensure the Arabic Symbol Dictionary is truly localised with culturally, environmentally and socially correct symbol representations for all lexical entries, alongside the most commonly used vocabulary that has been tailor made for individuals, rather than constantly adapted from external systems.

Statement of the Problem

There are very few Gulf Arabic Speech and Language Therapists or Specialist Teachers working in the field of Augmentative and Alternative Communication (AAC) and no freely available bespoke Arabic symbol sets that take into account the cultural and environmental settings in which their users live and communicate. A census in Qatar (2010) showed that up to 7,643 disabled people (Qatar Statistics Authority, 2010) might benefit from some sort of specialist support and a study concerning the identification of barriers to accessibility. Zetterström (2012) highlighted the fact that the most prevalent disability was one related to learning with a mix of other disabilities and yet this group appeared to have the least experience in the use of assistive technologies such as Augmentative and Alternative Communication (AAC) systems. However, there are a few specialist schools using symbols for communication with children who have severe speech and language disabilities as well as those who are on the Autistic Spectrum or have learning disabilities. There are also clinics and hospitals that have specialists who support adults with life changing disabilities such stroke and head injury where communication may be affected and symbol use can assist rehabilitation. The language used for therapy or specialist teaching is often English and it is hard for those therapists to learn Arabic core vocabularies without appropriate symbols and lexical equivalents. It has also been found that there is limited evidence based research to show the impact of the introduction of appropriate symbol systems within the Gulf Region, although this has been carried out in other countries.

Huer (1997) reports that "observations of communication across cultures reveal that nonsymbolic as well as symbolic forms of communication are culturally dependent" and her later studies suggest that "participants' cultural/linguistic experiences may be significant

elements to consider when selecting graphic symbols and when teaching consumers to represent meaning through them.” (Huer, 2000) This is corroborated by Hetzroni (2002) in terms of professional involvement as she also states that "The literature provides evidence of the need for service providers to be aware of cultural diversity issues and have an appreciation of and respect for cultural differences (Anderson & Fenichel, 1989; Green, 1995; Hanson, 1998)." This can be particularly difficult where only 12% of the Qatari population are nationals with the majority being Indian and Nepalese (bq Magazine, 2014) but therapists and teachers are often working with Arabic speaking children and many others will have English as a second language. Islam is also an important part of many of the children’s lives.

Successful AAC systems offer users the chance to communicate with the use of acceptable symbols or pictures to express needs and wants along with emotions and self-determination. The symbols or pictures may be used in an exchange of cards (PECS) (Bondy et al 1993) or by simply pointing at an image that may accompany a word, phrase or referent that best suits the user’s needs. Systems can include the alphabet when the user is literate and have other abstract symbols to represent parts of speech, tenses and additional elements in speech. Options to use Arabic letters or images are hard to find as most AAC symbol sets offering different languages just have a straight Arabic for English word translation rather than a symbol or alphabet change. Graphical symbols or pictograms tend to have been developed in Europe and USA and when used to encourage Arabic language and literacy acquisition they may cause misinterpretation (Trembath, Balandin & Rossi, 2005).

Research undertaken with Palestinian Arab teachers (Patel et al 2005) revealed that there is “the need to adapt AAC resources to meet characteristics of the Arabic written system, and to address the presence of diglossia [two variations of a language in different social situations] and a lack of culturally appropriate vocabulary”. Also identified were several key cultural and family values/ orientations that should be considered in order to increase the effectiveness of AAC interventions with individuals who use AAC from Arab communities.

A research grant that requires team members to work across countries, languages, cultures, professions and very different environments needs to have an extremely flexible set of processes available for the gathering of data, reflection and processing of information and ease of analysis, production of results and reporting for evaluators as well as the development of the final aim of the project – an Arabic Symbol Dictionary for AAC users and those who have communication difficulties.

Significance and relevance of the work

The development of a freely available online Arabic symbol dictionary that has a wide range of culturally, linguistically and environmentally appropriate symbols will not only lead to an increase in Arabic language skills for those dependent on communication devices but will also encourage greater cultural understanding by those therapists working with these children and adults. The dictionary will also encourage literacy skills by providing phonemic segmentation to aid auditory perception alongside definitions and sentences to provide examples of use. There will be localised versions of words and word phrases as well as Modern Standard Arabic. The symbols can be used in hospitals, clinics, schools, libraries and any public areas where image localisation is important (Hock, et al 2011).

The spin off from the work of the Arabic symbol dictionary team is also the introduction to forms of social media that will allow participants in the research to continue to collaborate once the research project has been completed. Those participating in research to date have been a group of speech and language therapists and specialist teachers forming an AAC forum using a mailing list to discuss project outcomes. Face to face communication is already occurring with the AAC users, their carers and families but it is hoped that they will also begin to use online forms of communication, as the dictionary goes online. By allowing those actively involved in the use of AAC to collaborate independently with a means to share knowledge, the Arabic symbol dictionary will have a life beyond its three years of grant funding, although it is accepted that further support will be necessary to encourage use of the symbols on AAC devices and to disseminate its use more widely around the region. The dictionary could also be used for Arabic language learning, public signage and the improvement of literacy skills.

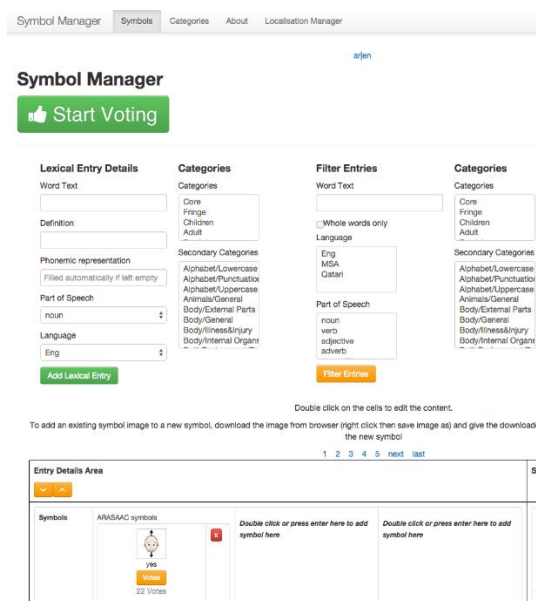
Description of research method

As has been mentioned a participatory approach is being used during the lifetime of the Arabic Symbol Dictionary project. The team members based in Qatar are working with the AAC forum supporting symbol users, individual AAC users, parents, carers and school teachers and team members in the UK have collated the data. Team members use Voice Over the Internet Protocol (VOIP) and e-mail for instant discussions and even mobile phone conversations where written language fails and the colleague is not online. The AAC forum are reached via a mailing list and this channel is used to alert members that there is an updated 'blog'¹ or news item about the project and when the next batch of symbols require evaluation.

Quantitative and qualitative research methods have been introduced using online systems such as Google+ with comments for the initial symbol evaluation. This is followed by the use of a bespoke browser based Symbol Manager system (Figure 1) that provides the upload area for finalised symbols followed by a further online voting area, offering a range of criteria for making symbol choices and meaningful matches to core vocabularies. The analysis of vocabularies in use has begun and guidance is also being sought from an international Advisory Group. This group have also been contacted by e-mail and individual meetings to seek advice and to provide impetus for the ongoing work.

¹ <http://access.ecs.soton.ac.uk/blog/symboldictionary/>

Figure 1 Bespoke browser based Symbol Manager System.



Results

The initial lack of core vocabularies (Van Tatenhove, G., 2005) and appropriate symbols in Arabic meant that the research team needed to collect word lists from AAC users, their therapists, teachers and carers around Doha. The content of the word lists were compared to English core vocabularies used by speech and language therapists and matched to freely available symbols developed by ARASAAC (Aragonese Portal of Augmentative and Alternative Communication) using a creative commons licence². As has been mentioned these symbols and their lexical entries were added to the symbol manager system so that they could be viewed by anyone who had been provided with a log-in based on their e-mail address and a personalised password. Those voting on the symbols were offered a ‘thumbs up’ or ‘thumbs down’ to say whether they voted yes or no to the symbol. The symbol was checked for acceptance as some might say this is a culturally insensitive way to vote, but the sign is now used universally on social media websites. The voters then had a chance to explain why they voted in this way ... was it because of the match of the symbol to referent (word or phrase), colour contrast, look and feel or whether the symbol complemented one possible already used by the therapists. There was also the chance to make other comments.

The pilot study illustrated the importance of making use of social media and online systems to analyse results from 30 voters. Not only were the team able to collate 1,645 comments with ease, but it was also possible to show that out of the comments, it was felt that 47% of the symbols used in the study were not representative of the word or referent and had poor translucency (Bloomberg et al, 1990; Evans et al 2006), 12% lacked cultural sensitivity, 11% did not complement symbols already in use and 30% were either poorly drawn or had insufficient colour contrast levels for those with visual impairments.

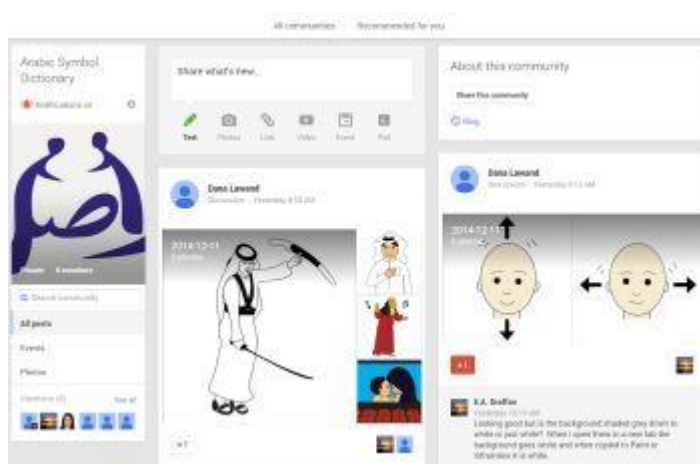
The speed and accuracy of analysis could not have taken place without the use of the Internet as those in UK captured the results as they came in and also supported any

² <http://www.catedu.es/arasaac/>

misunderstandings. They could share queries with the team in Qatar who had direct contact with those voting. Having successfully completed the initial pilot because the online system stores the votes for each symbol, the graphic designer could see where issues were arising with some symbols. It should be noted that she had not been employed at the outset of the project, but was able to pick up on the results from the voting by going online and selecting individual symbols to see what had been written in the comments boxes and checked against the voting criteria.

Now that the second phase of the project is underway adaptations to symbols can be made almost immediately any voting has taken place and posted onto Google + (Figure 2) for the team's approval and then back onto the Symbol Manager system for another voting session in batches by those on the AAC forum.

Figure 2 Using Google+ for initial symbol discussions



This process is iterative and allows for a very collaborative approach to be taken by the team as well as one that is based on an understanding that any disagreements can be respected when it comes to symbol acceptance or any other changes that might be needed before they go before the AAC Forum or are made public on the blog. The team can continue to collaborate in a very flexible way despite distance and time differences.

Discussion

“A team is termed "synergistic" when the members working together are able to achieve results significantly beyond what could be expected from the same team members working relatively independently.” (Bartol, K.M., 1977) The author of this quote goes on to describe the important structural factors needed to develop a successful team working on Electronic Data Processing (EDP). These include team member selection, team size and reward systems. In the case of the Arabic Symbol Dictionary team, member selection has taken place during the first year the project by different organisations, team size has largely been affected by costs and the reward systems vary for each member depending on their employer. Bartol also talks about ‘process factors’ such as communication skills, team leadership and conflict resolution modes and points out how hard it is to work in a synergistic fashion in a short space of time. It is felt that with the judicious use of online systems including social media all the process mentioned can be organised and successfully

implemented more speedily, whilst allowing for the empowerment of individual members that would not have been possible in the past.

It has been found that when team members joined the research project at different times, having a history of online collaboration (whether it was via a blog, mailing list, e-mail threads or access to past VOIP conversations), it has been possible for new members of the team to catch up on events in a very short space of time. Perhaps it should be pointed out that those joining the team at a later date had experience using social media communication and were females in the 30-49 age range (Pew Research, 2014). However “research shows that social media in the Arab world is dominated by young men under 30, with only 1 in 3 social media users in the region being a woman.” (Arabic Social Media Report, 2014) The team members are all degree holders and have worked previously in technologically enabled environments.

An unanswered question is whether online communication systems would have provided a successfully innovative and collaborative working environment if everyone was new to this form of dialogue or had not met at least once. It is felt that social media cannot work in isolation to gain a truly synergistic team and using intermittent face to face meetings with social events and even a conference to focus on the project outcomes allows the team to unite with a common cause. The online communication can then continue with a feeling of reinvigoration as well as a chance to share successes experienced during the meetings or dissemination sessions. The chance to share the research with others also provides time for the team to reflect on the aims of the project, once again using social media such as the blog or online discussion forum to act as a time line of activities that can be provided as evidence in reports and evaluations.

At the outset of the project it was decided that it was very important to not only carry out the research in a participatory manner with AAC users, their carers, families and specialists, but to also have a group of critical friends who could act in an advisory capacity. Once again this group was made up of individuals who were not only residing in different countries but also came from different professions. Initial requests to join the group came via e-mail but each one was known to a team member and it was through personal meetings that the project relationships arose. During the first year these individuals each provided very different types of support, but all have responded via online communication with a speed that would not have been possible in the past. The result has been a much richer experience for team members in terms of research knowledge, links and critical analysis. This has provided a level of confidence in the outcomes that has come thanks to shared expertise that can be collated and published.

Specific aspects of the research work, such as the results of symbol voting sessions have required a more bespoke system of data collection; in this case to support the needs of the graphic designer and those entering data to the dictionary. The Symbol Manager system has taken time to develop but it is considered essential for a three year project where there is a risk that team members may change. The cost benefit of the system, is that it can be used to form the basis of the Arabic Symbol Dictionary database that will be used to present the content online at the end of the research period. The system has been built in a modular fashion, so that it can be adapted should the need arise. It will also have a responsively designed interface to suit user devices, whether they are large screen computers or small portable smart phones. In other words the content is kept separate from the presentation or interface online. This aspect will also be essential as technologies change over time. There

is also the important aspect of localisation, where every aspect of the database has been designed to allow for a language change from English to Arabic or any other language. It caters for left to right and right to left character orientation and in the lexical entries it is possible to add both Modern Standard Arabic (MSA) and colloquial Arabic words and phrases. The fact that these types of adaptations can be made highlights the importance of the different skills each team member brings to the research and how discussions around the different aspects of the development need to be captured, so that when changes are made they are founded on general agreement and constant checking that all members are still happy with the outcomes. Synergy in a team has to be nurtured and never taken for granted.

Conclusion

As a pilot for the ongoing research into the development of an Arabic Symbol Dictionary, the initial work has illustrated how the use of online social media and bespoke database systems can encourage participation, collaboration and ease of data collection as well as speedy analysis for those working with disparate groups such as hospital based therapists, those in clinics, schools and individuals in research departments.

It has also shown how experts in a wide range of professions who have never met and work in different countries can come together to collaborate on a research project that has practical outcomes by using virtual communication mechanisms to ensure on going innovation and creativity with limited face to face meetings and minimal funding for the development of system processes.

The systems have also promoted the building of a synergistic team (Nurmi R., 1996) where a small group of researchers in different organisations and countries have been able to work together to solve the problems they have encountered. It could have been an overwhelmingly daunting task to develop an online Arabic Symbol Dictionary but by using social media and an online database, thanks to a mix of professional skills and good communication with participants, the research project remains on target.

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