THE EFFECT OF LANGUAGE ON THE ADOPTION OF THE GOOGLE SEARCH ENGINE AMONG THE BANYANKORE

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ABSTRACT

We are living in an information age, and the use of technology to perform daily tasks has become very common, with new technologies being developed to solve more and more of our daily needs. The adoption of these new technologies into new markets has been explained to be determined by several factors: social, economic, political, infrastructural, organizational, and cultural. One determinant that is not often taken into account is language. In Uganda and for other indigenous peoples around the world, language is considered to be central to their cultural identity. As a result, their ability and extent to which they can adopt new technologies is affected by the language in which the technology is presented. This paper presents the results from a focus group composed of twenty-four participants who were queried to ascertain the effect of language on the adoption of new technologies among the Banyankore, an indigenous group in Uganda. The Google search engine in English and Runyakitara was used as a research tool; and it was generally found that 62.5% of participants found it easier to search in Runyakitara for information over the internet as compared to 20.883% in English. The results from this research activity add to the growing body of knowledge regarding the relationship between language and the adoption of new technologies; and can be applied to justify the use of technology to revitalize the world’s dying indigenous languages.

Key words: Language and technology adoption, indigenous languages and technology adoption, adoption of Google in Runyakitara

INTRODUCTION

The adoption of a new technology is “a process by which some type of innovation is ‘communicated through certain channels over time among the members of a social system,’” (Mahajan and Peterson, 1985 cited in Milner, 2003). The members of the social system who are the recipients of the innovation can be referred to as the adopting society, and in the case of an individual, the adopting individual. Several factors affect the adoption of new technologies, including: individual, social, economic, political, infrastructural, organizational, cultural, and language factors (Hall and Khan, 2002; Milner, 2003). This study was focused on analysing how language affects adoption.

Language has been defined as the identity of a people, (Hennessy and Moore in Dyson et al., 2007); this is especially true for indigenous peoples. Crawhall, (2007) explained that “indigenous peoples’ languages are the primary vehicle for the transmission of knowledge.” Kinuthia in Dyson et al., (2007) defines indigenous knowledge as “unique, traditional and local knowledge existing within and developed around the specific conditions of local peoples resulting from their long-term geographical residence,” and infers that the ability for indigenous people to use such knowledge forms is pertinent to their understanding of themselves and their world, and will have an influence on their education systems. It can therefore be inferred that since language plays such an important role in the knowledge systems of indigenous peoples, their willingness and ability to adopt new technologies can be limited or hindered by technologies presented in foreign languages.
Throughout this paper, “adoption of new technologies” or simply “adoption” will be defined as “the choice to acquire and use a new invention or innovation,” (Hall and Khan, 2002). Google is a technology company which provides the following services: an email client, operating system, cloud platforms, search engine, web browser, social networking website, and hardware, (https://www.google.com/about/company/products/).

For the purposes of this paper, the term “Google” will only refer to the search engine. Indigenous peoples are “peoples in independent countries who are regarded as indigenous on account of their descent from populations which inhabited the country or a geographical region to which the country belongs, at the time of conquest or colonization,” and who, irrespective of their legal status, retain some of their own social, economic, cultural, and political institutions, (Crawhall, 2007). The Banyankore are one of the fifty-six indigenous peoples recognized in the Constitution of The Republic of Uganda, (1995); they originally inhabited western Uganda. Runyankore is the language of the Banyankore. Runyakitara is a generic form of four indigenous languages spoken in western Uganda: Runyankore, Rukiga, Rutoro, and Runyoro.

LANGUAGE AND TECHNOLOGY ADOPTION

Hall and Khan, (2002) explain that the decisions on whether to begin using a new technology are often the result of a comparison between the uncertain benefits of the new technology and the uncertain costs of adopting it; and that “at any point in time, the choice being made is not a choice between adopting and not adopting, but a choice between adopting now or adopting later.” For most people in Uganda, the costs associated with adoption include learning costs, especially learning the language and linguistic context in which the technology is presented.

Milner, (2003), though briefly, considered the role of language in the adoption of new technologies as one of the factors important to the spread of the internet; stating it as “linguistic practices,” specifically the percentage of the population that speaks English. Warschauer, (1998) stated that “The internet developed and still remains overwhelmingly in an English Environment;” and that by June 1997, about 82% of the websites in the world were in English. He further went on to explain that among the many questions raised by indigenous peoples about new technologies is the role of technology in promoting or hindering linguistic diversity. This uncertainty can lead to low adoption rates of new technologies among indigenous peoples.

This situation however does not have to remain this way; some measures can be taken to encourage adoption by making new technologies more friendly and attractive for indigenous peoples to use. Warschauer, (1998) presented an alternative view of technology as being devoid of any values, and is as such indifferent to the variety of ways it can be applied; the problem is not technology itself, but how it is put to use. Robins in Dyson et al., (2007) encouraged the use of technology that promotes indigenous approaches and values, and cited several sources of research from the South Pacific that showed that the use of indigenous languages in education aided comprehension and deeper learning, where English alone could fail. Gómez in Dyson et al., (2007) described the rapid pace at which the Yanomami (an indigenous group in the Brazilian Amazon) mastered reading and writing in their indigenous languages and applied the same skills to acquire computer literacy, and how they were transformed into users of software programmes designed for highly literate, technologically advanced societies, to produce literacy materials adopted to their needs. Kinuthia in Dyson et al., (2007) concludes that incorporating indigenous knowledge in technology assumes that the coexistence of the two different knowledge structures is conceivable, and that they can both compliment and contradict each other, as was illustrated in the case study by Gómez.
The utilization of language to promote adoption among indigenous peoples is also evident in Uganda today, especially in broadcasting media (radio and television) and Automated Teller Machines (ATMs). In order to increase the adoption of radio and television technologies to areas beyond large towns and urban centres, the government of Uganda, in addition to developing the necessary infrastructure, promoted the use of radio and television stations that presented all or most of their programmes in the indigenous languages. For ATMs, Centenary Bank, for example, provides at least three language options on all its ATMs throughout the country. English and Kiswahili are standard options, and the other language options depend on the region of the country where the ATM is found; Runyakitara in the west, Luganda in the central, Lusoga in the east, and Luo and Lugbara in the north, (http://www.centenarybank.co.ug). This has resulted in the use of ATMs by persons who do not know English, but are learned in the ways of banking services.

The focus group activity was aimed at studying the same phenomenon on internet technologies. The activity took place on Saturday 10th August 2013 in the computer laboratory of Uganda Martyrs University Nyamitanga Campus. The desktop computers in the laboratory run Windows 7 and Mozilla Firefox was the web browser used. Two laboratory attendants, Mr. Victor Bakunzi and Mr. Rogers Mugambe, were available throughout the day to provide additional assistance to the study participants. The study lasted from 09:00 to 17:00, and was divided into four ninety minute sessions: the first taught the use of Google in English, the second taught in Runyankore and Google was in Runyakitara, the third taught in both languages (bilingual approach) and Google was in the preferred language of the participant, and the last session was used for assessment. The details, findings, and implications of the activity are presented below.

RESEARCH TOOLS

The chief research tool during this focus group was the Google search engine (www.google.co.ug). Google was chosen because it is the only internet search engine that provides language translations for a language close to Runyankore, Runyakitara. The translations offered by Google were adequate for use in this focus group activity; key words like “Search,” “Images,” “Groups,” “Blogger,” “I’m Feeling Lucky,” “Google.co.ug offered in:” and “About Google” were properly translated as “Ronda,” “Ebishushani,” “Ebibina,” “Omunyarugambo,” “Ndi ow’omugisha,” “Ebihereziibwe omu Google.co.ug,” and “Ebirikufa ahari Google” respectively.

However, some of the biggest drawbacks of using Google in Runyakitara were: (1) only thirteen links, some of which are named above, were available for Google in Runyakitara; this, when compared to what is available for Google in English, greatly limits the number of uses to which Google can be put; (2) two links “Options” and “Search” were not translated into their Runyakitara equivalent and were left in English; (3) clicking on any of the translated links took one to a page entirely in English; and (4) search results for words in Runyankore or Runyakitara were presented in English.

The appearance of some links in English stated in (2) above is similar to the case study presented in Hughes and Dallwitz in Dyson et al., (2007), where the user interface of the digital archive database system for the Anangu (indigenous peoples of Australia) maintained some words in English, words like “photo” which were generally accepted, or “Print” which had no matching words in the indigenous language. However, “search” and “options” do have direct Runyakitara translations, “ronda” (which is translated on some links of Google) and “torana” (which means “choose” or “select”) respectively; so the reason for this lack of translation is not clear. The reason for (3) and (4) stated above was because there are very few internet web pages in Runyankore or Runyakitara; and in order to ensure that the desired search results were
achieved when using Google in Runyakitara, all searches were limited to the website of the Orumuri newspaper (www.orumuri.co.ug), a government newspaper which is published every Monday and Thursday in Runyakitara.

Other research tools included:

a document with an exercise in English, which was given to each participant at the end of the day, as an assessment tool; and another document in Runyankore, with an exercise given to the participants at the end of the day, also as an assessment tool.

The purposes of these assessment tools were to measure (1) the nature of learning in each language, which was measured by the different kinds of information that the participants used Google to find; (2) the speed of learning in each language, which was measured by the time taken to complete the exercise; (3) the ease of learning in each language, which was measured by the number of requests for assistance from the laboratory attendants; (4) the role of bilingual options in bridging the indigenous language-technology gap; and (5) the choice of each participant between maintaining one’s indigenous language at the expense of learning how to use more internet technologies, or maintaining the indigenous language and remaining limited in one’s knowledge of internet technologies.

STUDY POPULATION

This focus group was initially intended to be composed of all Banyankore who were fluent in their indigenous language, had at least primary level education in English, of ages from twelve to thirty, and with no prior computer experience. However, participants in the age group from twelve to nineteen who either had no prior computer experience and/or were fluent in the indigenous language were almost impossible to find in the primary, secondary, and technical schools surrounding the university campus.

This was because firstly, persons aged twenty and younger represent the largest part of Uganda’s population of indigenous people of any ethnic group who do not properly know their indigenous language. Some speak only English; others combine English and their indigenous language to form a sort of “hybrid” language; and others still combine English and two or more indigenous languages (for example Runyankore and Luganda) as they speak. Most of this population are unable to read text written in their indigenous language, and when they try, they pronounce the words as if they were meant to be read in English (for example, the word “amate” would wrongly be pronounced as [uh-meyt] instead of [uh-muh-teh], which means “milk” in Runyakitara/Runyankore). Secondly, all the surrounding schools teach computer literacy as part of their subjects. This made it difficult to select anyone from the intended study population.

The resulting study participants were selected by ensuring that they fit the two most important criteria for this study: that they were fluent in Runyankore and that they had no prior computer experience. Following the above, 24 individuals took part in the focus group query.; their average age was 31.29 with 23 as the youngest and 42 as the oldest; 8 were female and 16 were male; they were all primary school teachers by profession.

FINDINGS

Teaching Sessions

By the end of the day, all participants had been taught and were able to identify and launch Mozilla Firefox web browser from the desktop, go to the Google home page, decide the relevant keywords to type in the search bar in order to get appropriate search results, select the links that were considered to contain the most relevant content given the URL and page summary, and limit the search results using criteria such as definitions, geographical location, URL, or institution. The completion of tasks was judged using the following criteria: pass (the expected search results were obtained on the first try) and fail (no search results were obtained, different
search results were obtained, the correct search results were obtained after the first try, or Google offered an alternative link to search as correction for incorrectly spelled words.

During the teaching sessions, the average time taken for a participant to complete a test task (task time) involving the typing in of a search term and selecting the desired link from the list of search results was 5.33 minutes. However, the longest task time was observed to be during the English session, where the average time for completion was 10 minutes, as compared to 2 minutes for the Runyakitara session and 3 minutes for the bilingual session. In order to ensure that learning time (the time taken to learn how to use the web browser and Google) was not accidentally included when measuring task time, each session took into account learning time separately before administering a simple task whose results were taken into account. This was intended to avoid the rationalization of the results as being due to the English session having been conducted first, hence the significantly longer completion time resulting from learning time plus task time. The only remaining variable that could therefore be used to explain the difference among the three task times was the different languages used in the three sessions.

Six of the tasks given during the teaching session were passed by all participants. These tasks included: finding information about Uganda’s president from Wikipedia; obtaining the contact details of the Vice Chancellor of Makerere University from the official university website; obtaining admission information from the official website of Uganda Martyrs University; using Google to get the definitions of certain words; using Google to search for academically relevant information in websites, articles, and books; and obtaining stories from official newspaper websites. However, two of the tasks involving the retrieval of a contact address and a story from the website of an online newspaper were failed by some participants; the failure was attributed to incorrect typing of a URL and/or misspelling words. The failure rate was higher for the English task (33.33%) than for the Runyakitara (16.67%) or bilingual (20.83%) tasks. These results concur with the opinion presented by Crawhall, (2007) that good educational performance is related to a student being taught in a language in which he or she is fluent.

The number of participants who required further personal assistance from the laboratory attendants, in addition to the instructions given by the researcher during the teaching sessions varied according to the language used. All the participants required personal assistance during the English session, as compared to 62.5% during the Runyakitara session and 41.67% during the bilingual session. Several factors can be used to explain the above trend, including: the English session was conducted first, and because these participants had no prior computer experience, they required additional personal assistance to understand and learn their way around this new technology; those participants who had better understood the use of the new technology were observed to provide assistance to their colleagues seated nearby, and so the required assistance did not have to be given by the laboratory assistants; and/or the language used in the latter two sessions made it easier for more participants to understand without the need for further assistance.

Assessment Sessions

The English assessment required the participants to use Google to find a story on a dissident Ugandan army general published between June and August 2013 on the official website of the Daily Monitor, a Ugandan newspaper. This exercise was successfully completed by 62.5% of the participants in the allocated 30 minutes; 12.5% of the participants required personal assistance from the laboratory assistants in order to perform the exercise. The Runyankore assessment required the participants to use Google to find a story published on Monday 5th August 2013 on page five of the official website of the Orumuri, a biweekly Ugandan newspaper published in Runyakitara. This exercise was successfully completed by 79.16% of the participants in less than 15 minutes; 16.67% of the
participants required personal assistance from the laboratory assistants in order to perform the exercise.

The above results reflect findings of similar studies presented by various authors including Crawhall, (2007) and Gómez, Kinuthia, and Robins published in Dyson et al., (2007), who all showed that the use of indigenous languages in education aids comprehension and deeper learning, where English alone sometimes fails. Kinuthia consequently argues in favour of the integration of indigenous knowledge into curricula and for instructional purposes.

Other Findings

During the interviews conducted as part of the activities to end the study, most participants said that their difficulty when using Google in English was not because they were not good in English, as they were all teachers and had studied and taught in English, but rather because they had to relearn the English words in the context of the technology and then learn to use the technology. Most of them agreed that Runyakitara was easier for them because Runyankore was their first language and they understood and could apply it a lot better than English. However, 12.5% of the participants said that their most significant problem with Google in Runyakitara was its inability to offer options for misspelled words as it did in English; this would often result in incorrect or no search results. Other views from the participants are summarized in Table 1 below.

<table>
<thead>
<tr>
<th>Participant’ Views</th>
<th>Google in English</th>
<th>Google in Runyakitara</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found it easy to use</td>
<td>20.83%</td>
<td>62.5%</td>
</tr>
<tr>
<td>I found it difficult to use</td>
<td>29.16%</td>
<td>16.67%</td>
</tr>
<tr>
<td>I found it neither easy nor difficult (fair) to use</td>
<td>16.67%</td>
<td>4.16%</td>
</tr>
<tr>
<td>I required further instruction from the laboratory assistants</td>
<td>37.5%</td>
<td>16.67%</td>
</tr>
<tr>
<td>I would like to learn how to use more internet technologies beyond the Google search engine</td>
<td>45.83%</td>
<td>50%</td>
</tr>
<tr>
<td>I loved this new technology and found it very useful</td>
<td>33.33%</td>
<td>33.33%</td>
</tr>
<tr>
<td>I hated the entire experience and I have no desire to ever use Google again</td>
<td>0%</td>
<td>0%</td>
</tr>
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Ms. Jacqueline Tushemereirwe said that she had had a good experience during the study, and added that she was glad to have acquired the skill of searching for information over the internet, and felt more educated and technologically advanced; Mr. Rudoviko Byonaneyebe admitted that he was quite scared in the beginning when he was told that he would be taking part in a study to do with internet technologies, but he was glad he had taken part; Mr. Donozio Tumugabe proudly and confidently announced that he was able to answer any question using Google; Mr. Januarious Mukwatanise expressed his excitement to have been given an opportunity to relearn what he had learnt and forgotten ten years ago; Ms. Merab Twinomugisha, Mr. Yonah Kamoga, Ms. Jennifer Kajungu, and Mr. Denis Arinaitwe said that they had learnt some additional computer skills like typing and using the mouse, and had generally liked interacting with many different people.
Mr. Denis Arinaitwe explained that he preferred using English because “English is the commonest medium of communication among different tribes in Uganda;” Mr. Duncan Rubijemu preferred using English because he taught in English; while Mr. Cyprian Baryagumaho said that he found English easier to use because he knew it better than Runyakitara. Others further explained that in certain situations, using English was easier as Google in English offered more content.

One participant, Mr. Januarious Mukwatanise, said that he especially appreciated the ability to obtain academic information from Google like the longest river in Africa and maps of Uganda for geography. “Runyankore is my mother language and is easier for me to read. It also makes difficult technical English words easier to understand” Mr. Rudoviko Byonaneybe said, when asked to explain why he preferred using Google in Runyakitara; Ms. Jacqueline Tushemereirwe justified her preference for Runyakitara stating “It is easier to identify difficult words because it is our language; there’s no need for dictionaries as is the case in English.” She added that she preferred the online news in Runyakitara to that in English because “It has our local news which we care about.” Mr. Evalisto Tutungye said that Runyakitara was better for him because it is the language he understands most.

Regarding the bilingual option, Mr. Bernard K. Tumwesigye found it more user-friendly because “Translations help me to understand difficult words in another language.” This view was supported by Mr. Justus Nabasa. Ms. Jennifer Kajungu preferred the bilingual option because it resulted in her getting an explanation and understanding both languages; Ms. Jacqueline Tushemereirwe added that though she preferred Runyakitara, she was willing to make use of a bilingual approach because the translations offered made understanding another language easier. 29.16% of participants said that they generally preferred the bilingual option; and together with the 62.5% who found Google easier to use in Runyakitara argued that their internet searching skills would be put to more use if there was more content in Runyakitara on the internet.

Only Mr. Justus Nabasa said that he would be willing to give up his indigenous language, Runyankore, if it meant that he would become very knowledgeable in internet technologies. The other participants offered an opposing view to his, explaining that their language was their identity, and that they would never give it up, even at the cost of using internet technologies. 91.67% of participants affirmed their willingness to use what they learnt that day in the future if they had access to computers with the internet; 8.33% gave no answer. 4.16 participants requested for a remedial course on internet technologies, stating that though they had managed to actively participate in the day’s activities, they would have liked some more time and instruction to learn better.

CONCLUSION

The focus group study whose findings are presented in this paper helped to analyze the effect of language on the adoption of new technologies among indigenous peoples, specifically the Google search engine among the Banyankore in Uganda. The results obtained, though similar in nature to those previously published by various authors, have highlighted the gravity of this situation within a single indigenous group in Uganda. Several steps can therefore be taken to improve the current situation by drawing from the best practices applied elsewhere: (1) literacy should no longer be based on one’s ability to read and write in English, but rather by one’s ability to read and write in any language; (2) technology should be presented in the languages of indigenous peoples in order to promote adoption and illustrate the application of technology to literacy skills at a grassroots level as argued by Gómez in Dyson et al., (2007); (3) the research done by several authors (Crawford, 1995; Crawhall, 2007; Dyson et al., 2007; Hall and Khan, 2002; Krauss, 1992; Milner, 2003;
Pacey, 1992; Warschauer, 1998) on how technology and indigenous languages affect each other can be utilised to promote adoption as well as indigenous language revitalization, the latter being urgently needed as evidenced by the inability to obtain any study participants from the younger generation; (4) indigenous peoples should be included in the processes of technology development and dissemination as argued by Kinuthia in Dyson et al., (2007) in order to implement solutions particular to their situations, by for example increasing the internet content in Runyakitara; and (5) a bilingual approach should be utilised to promote both adoption and indigenous language revitalization as documented in Dyson et al., (2007).

REFERENCES


