

Effective communication method for non-native: MCE and MMEEBB applied a deep learning software

Iolanda Borges Carneiro, Luciano Vieira Lima, Andressa da Silva Costa Belo

Abstract — The objective of this work is to present an effective method of communication in the English language for non-native speakers with the use of Globish using software application project proposes to create personalized learning models based on specific themes or subjects, thus meeting the particular needs of each individual with regard to communication in English. The research is based on the use of a new methodological approach to teaching and learning based on the Theory of Categories and Maps of Knowledge that, applied to the Exponential.

Index Terms— Communication; Software; Globish; MCE; MMEEBB; Methodology; Not native;

1 INTRODUCTION

The use of English as a globally used language between individuals is not something new. Globalization required the establishment of a language for the realization of business and communications between peoples. What is new, today, and is being discussed by scholars are the differences between English spoken by natives and the spoken by non-natives and the difficulties of understanding by the natives of what is spoken by the non-native.

The discussion on the understanding of the English language between natives and non-natives was addressed by the BBC reporter, Lennox Morrison, in December 2016, in a subject entitled 'With non-native English speakers overcoming native speakers, it is up to English speakers to learn to speak their language within a global community'. The differential of this survey is that researchers and scholars emphasize the importance of the native learning to establish this communication and not the other way around. In it the reporter exemplifies the difficulty of natives in understanding English of non-natives, approximately 1.75 billion worldwide and that by 2020 can reach two billion non-native speakers of English according to the British Council. In addition to describing various situations about this difficulty of understanding, the reporter highlights by citing various experts and scientists that there are in the world an incredible variety of types of English which non-natives use to communicate and succeed in communicating, otherwise Americans and Become a minority in this relationship. Morrison [1] further adds that even though culture is a cultural shock for natives to the existence of so many types of English, they need to adapt so that they can finally dialogue with the rest of the world. The intercultural consultant based in Munich, Germany, Robert Gibson, is undergoing a radical change in the English language.

"The trend is not to have one or two standard English, like American English and British English, but having many different types of English. English is also developing within organizations. In business, they have their own style of English that is not necessarily understood by native speakers. We are moving away from saying that there is a standard English that you need to conform to say that there are different standards of English for different situations" [1]

Not so far from this difficulty, Brazil recently hosted the 2016 Olympic Games in the city of Rio de Janeiro (RJ). During the course of the interviews, it was possible to note the inefficacy of English-language communication among Brazilian non-native reporters in Brazil with native athletes. However, it should be noted that communication in the English language among Brazilians (non-native) with other foreign athletes, also non-native, was often established, without many problems. It is not only from this observation, but from other possible verifications occurring in dialogues between non-natives, to affirm the existence, in these dialogues, of the features of the Global English-Globish [2], which consequently better ensures the establishment of communication for effective communication. "The globalization of English has reinforced a tendency towards uniformity, countering natural tendencies in the opposite direction. Some fields, such as communication, business and science, have long used specialized vocabularies to maintain intelligibility in English." [2]

The issue of effective communication between non-native speakers and native speakers of English is widely needed, given the number of non-native speakers of the English language who communicate with non-native speakers in relation to the international communication established between native speakers of different languages Nations of the English language, such as: Americans and Australians that reaches only 4%. This discrepancy can be seen when you look at the chart below (Figure 2).

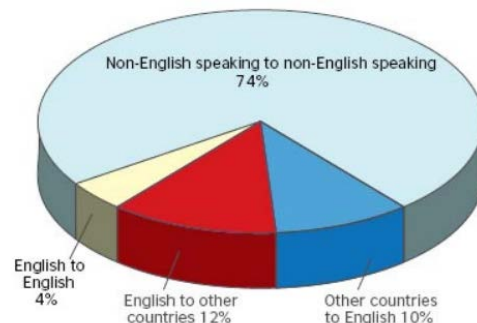


Fig. 2 - The number of native and non native English speakers

1.1 The use of the globish for the establishment of communication

Contrary to what one thinks and what one preaches, speaking English is a great challenge, especially for Brazilians. Lima (2013) and Pereira (2015) point out that the greatest problems in spoken communication between the interlocutors are: the separation of words through the first consonant aspirated in each word, which can interfere in the understanding of words; The differentiation in context if a word is a verb or operator and schwa, the most common English / ə /, very short, pronounced sound similar to the / som / sound. The schwa is a very low sound, but if not pronounced correctly can make the understanding between the agents of the dialogue unfeasible.

From these difficulties Jean Paul Nerrière and David Hon developed a new form of communication of the English language, the Globish or Global English, considered a global language with regard to the communication of the English language focused on communication between non-natives and between natives with no natives. It is a simplified variation of English that establishes a limited number of words with schwa without stopping using the grammatical rules that language requires.

The difference between the use of native English and Globish is easily perceived when the speech of non-native speakers is compared to that of native speakers. An example of this differentiation is available on youtube in a video in which two boys transmit the same information, one using classic English and the other the Globish. (Video available at <https://www.youtube.com/watch?v=1XYY5s2kV5U>)

2 COMMUNICATE IN ENGLISH WITH THE USE OF MCE AND MMEEBB PROCEDURE FOR PAPER SUBMISSION

The studies in this research consider as basis the communication. Here, communication is considered as an act of communicating an information, an idea, order, request or any other need that is understood by the listener, the person to whom it is addressed, the person to whom the request is made. "Communication is not a process of listening and speaking but of listening and communicating" [4].

Speaking a language is understood as the ability to use that language with all its phonetic and grammatical particularities in a manner such as a native, which is not unlikely for a non-native. It is intended that the individual can communicate correctly and not speak correctly.

2.1 Mapas de Conhecimento Estruturado para efetivação da comunicação em inglês com o uso do Globish

Based on the basic fundamentals of Globish, which demonstrated that with the use of only 1500 words it is possible to maintain an efficient communication process between non-native and native, as well as between non-native of different countries, this work establishes the use of a methodology [5], as well as the technique to obtain a perennial memory of what was learned through the Exponential Effective Memorization Method in the Binary Base (MMEEBB) [5].

2.1.1 Factor theory

The basis of every process according to Lima [6] is to recognize that the individual has to want to learn, it is no use to want to teach if there is not the interest in learning. Luciano explains this from the Theory of Categories. In order to understand better, Lima [6] makes a simple comparison between learning to make sandwich in Store A and Store B to understand how from the Theory of Categories that includes Functions Theory it is possible to establish the Structured Knowledge Map.

In store A the cheddar is sliced, in store B the cheddar is placed by the dispenser. Each place has a different way of making sandwiches. And to make the sandwich you need to know what is cheddar, sesame bread, sesame, tomato, onion. It is necessary to have an understanding of the basic components for production, the things that will be used at work. These things that are manipulated in a category have the object name, that is, what is manipulated. Already the way to manipulate objects, the way objects are manipulated is called morphism. According to Costa [4], morphisms exert actions on objects. So in the production of the sandwich store A has a way of doing and store B has another. It is possible to even question that individuals have their own ways of making sandwiches, the morphism itself, but if it is to work in store A it will have to do as shop A stipulates. The cheddar sandwich in store A is one way, in store B of another. So it is necessary to mold to the required form, this is called mapping the knowledge, that is, mapping the knowledge of an individual to the knowledge of the store. So the cheddar, which of the individual was in cream, in store A is in paste, in store B in slice. The object correspondence was made here. Each object of the individual corresponds to an object in the store, it is mapping the way of recognizing the object. Since the way to put the cheddar in the sandwich is different, then the individual has to map the form of it in the form of store A or store B, for example. If the individual does not know what cheddar is, he does not know what sesame bread is, how can you establish this communication functor? There's no way. So the communication will not be effective, the teaching will not be effective because there are missing objects and morphisms in the category / subcategory of the student or receiver in relation to the category of the teacher or issuer. It is at this moment that detects this minimum of knowledge where the teaching will begin. You begin to be taught what sesame, what is cheddar, bread, plate, objects, concepts necessary for you to understand what a sandwich is made of. Then the way the sandwich is made, the morphism, the knowledge. In case of this work in the form of the one who teaches. In order to establish communication between the store and the individual, the individual had to know what were the objects and the morphisms with which one goes to work. In the case of English, when teaching verbs for the student, instead of picking up a complete category of the teacher with all the verbal tenses, which have many more objects and morphisms, the teacher maps the student through the Qualitative Assessment Table - TAQ (SILVA, 2016) to check the smallest undisclosed subcategory. In this example, it can be considered that the Simple Present Tense, is the maximum knowledge that the student has in the subject, which

corresponds to the smallest possible knowledge. This ensures that the student has all the necessary objects and morphisms so that an initial communication can be established with the student and finally transmitting new knowledge. The student must have in his subcategory all the objects and morphisms present in the subcategory of the one who teaches. If one does not have the objects and morphisms, how could communication be established? Communication is not effective, teaching does not happen because objects and morphisms are missing, concepts and knowledge are lacking.

The effectiveness of the transmitted knowledge is, mathematically, called Funtor, that through the mapping of categories (emitter / receiver - teacher / student) allows to identify the equivalent objects and morphisms in them so that the process of knowledge transmission can actually happen. The teacher then adds the necessary information to continue with the teaching.

“The student has to adapt to the teacher. Each object (concept) in the student category corresponds to an object (concept) in the teacher category that will map the form of the student to recognize the object in the teacher category. The student has to shape himself in the form of the teacher. It is the mapping of the knowledge of the student in the knowledge of the teacher [5]”.

Thus, the general structure of the Theory of Categories comprises the Functions Theory [6], which is composed of categories that are the agents involved, by the objects, that is, what is manipulated (concept, things, objects). The morphisms, the way in which objects are manipulated, exert actions on the objects (knowledge) and functors, that is the realization of the new knowledge that will be transmitted (Figurer 3).

Categories: agents involved (who learns and who teaches)
Objects: bread, plate, cheddar, sesame (the necessary concepts)
Morphism: how the sandwich is made (the knowledge)
Funtor: the effectiveness of the knowledge to be transmitted.



Fig 3 Funtores Representation - make sandwich

Knowledge transfer will only be achieved when the student

has a subcategory with minimum objects and morphisms established by the teacher [6]. The determination of this lower subcategory is free of doubts and is based on the identification of the Radius of Knowledge and Area of Ignorance, a method tested and developed by Prof. Luciano Vieira Lima, Ph.D. in Electrical Engineering - Artificial Intelligence of Electrical Engineering University and the Faculty of Education / Communication and Journalism of the Federal University of Uberlândia (UFU), responsible for the mathematical proof of the method.

But why not start from scratch? This would be impractical, since it is necessary to consider the minimum of knowledge already consolidated by the student (Figure 4). “Everything depends on what one wishes to teach and for whom, on the degree of knowledge and conceptual maturity of the same [7]”.

In the case of this research, it is based on the assumption that the receiver or student already has a pre-knowledge regarding the English language. What is determined, however, is the interest theme of this receiver. Since the intention is to establish communication, an entrepreneur, for example, even with previous knowledge of English, is anxious to establish a communication focused on business, with nomenclatures, terms and content consistent with the subject, which knowledge possessed is not possible. Then from the already acquired knowledge mapped by the Category Theory, we establish knowledge rays and areas of ignorance that are gradually augmented from the confirmation of acquisition knowledge and suppression of doubts from the area of previous ignorance. The following knowledge would then start from this minimum radius of knowledge [6].

All ignorance generated by lightning can be eliminated, it is fundamental that the first knowledge to be transmitted is as light as possible. Satisfaction is proportional to the lack of ignorance and not to the excess of knowledge [7]. The less doubts remain for a person to learn, the less ignorance left in the teaching-learning process, regarding a particular subject, the more satisfied and fulfilled this person will be.

Once the objects and morphisms are understood it is possible to illustrate how the Mapping would be applied in a situation in the English language.

2.2 Learn and do not forget: effective exponential memorization method in the binary base

The capacity of human memory has been the subject of a scientist's study for centuries. Learning new knowledge and memorizing them can be a great challenge for human ability. Following the MCEs, advancing one knowledge at a time is critical to the grasp of information, ensuring that no occurrence of cognitive overload.

2.2.1 The Exponential Memorization Method in the Binary Base - MMEEBB

The MMEEBB presents the Effective Memorization Curve (CME) (Figure 3) established by the Interval of Learning Reinforcement (IRA), in days, where: $IRA = 2n$ and $n = [0.1, 2, 3.4 \dots 14]$.

- Iolnda Borges Carneiro is currently pursuing masters degree program in Technologies, Education and Communication at Federal University of Uberlândia (UFU) - MG, Brazil. E-mail: iolanda.carneiro11@gmail.com.
- Dr. Luciano Vieira Lima, teacher of the Laboratory of Natural and Artificial Intelligence of the Department of Electrical Engineering of the Federal University of Uberlândia (UFU), Brazil. E-mail: vieira@ufu.br
- Master's degree in electrical engineering, Federal University of Uberlândia (UFU), Brazil. E-mail: andressajdsc@gmail.com

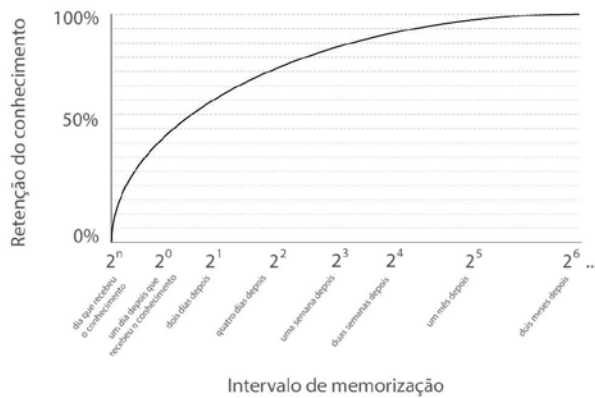


Fig 3 - Effective Memorization Curve

The CME has as one of its foundations the Learning Curve Theory, initially proposed by Hermann Hebbinghaus in 1885 in the psychology of learning, but tested and validated in the learning course only in 1936 by Theodore Paul Wright in the aeronautics industry. The CME is based on the concept that the time needed to remember the learning of a task is disregarded as the individual makes effective memories. In the case of learning, there is a decrease in the cost of recall and in the effort to relearn a particular knowledge. "With each recall process, there is a 20% decrease in the effort to relearn. If at first there is a cognitive effort of 100%, in a first review there will be an effort of only 80%, in a third review there will be a decrease of 20% of the effort over the 80%. Thus, after several tests, analysis with control groups and analysis of the equations, the IRA rate was reached so that the memories kept 100% of memorization (effective memorization) from intervals of reinforcement of learning (IRA) equal to 2^n , with $n = 6$ [7]

3. SOFTWARE APPLICATION PROJECT USING MCE AND MMEEBB TO TEACH COMMUNICATE NON-NATIVES

The software application project proposes to create personalized learning models based on specific themes or subjects, thus meeting the particular needs of each individual with regard to communication in English. It is software with implementation of Learning Machines with techniques of deep learning. A specialist and intelligent application to determine the best adjustments in Globish tools and techniques for effecting communication between humans and machines that from a training system uses MCE methodology, and the Binary Base Effective Exponential Memorization Method - MMBBEE. Settings can be made by IP ID or Access to the database in Globish.

3.1 How it works

Let's take the example an individual named X. He wants to learn English, because taking a trip to a lecture on Functional Mathematics in China. First is needed consider that he will learn to communicate in Globish.

Then we must consider that the lecture will have specific words, specific to functional mathematics that do not allow change or modification. A set of 100 or 150 words particular to the theme that will not allow us to change. Thus the speaker should initially memorize the words of the Globish and the 100 words of the theme.

From a voice recognition system that allows select a Globish database and have added to the system 100 words of the lecture, the individual A accesses the system initially marking the Globish option because the system may have the native English database.

Once the marking is done, the system will present to the individual structures of words and phrases so that you can hear, read and repeat what was said. The system recognizes what has been said and verifies whether what the individual has spoken is correctly pronounced according to the Globish. The software, which can be adapted to platforms like Messenger Facebook, Overnote, Skype and other, for example, makes interaction with the individual, as a virtual assistant (chatting, interacting, performs actions and obeys commands) that will talk and interact with the user always and more gradually in a deep learning process that involves artificial intelligence, following the methodology of Knowledge Maps structure by inserting words, increasing the homeopathic structures already applying MMEEBB ensure that memorization.

3.2 Why is it important?

From the development of an application for English recognition (Figure 4), easily accessed by the appInventor 2 platform currently supported by MIT (Massachusetts Institute of Technology) with data from the Google cloud.

The application allowed performing some experiments to compare the efficiency of use of Globish and English using phonetic particularities, to verify that what is said is what is understood by the application.

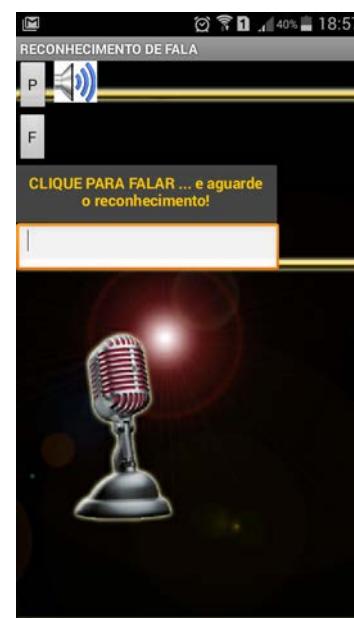


Fig 4 Print screen of appInventor create at author cellphone

The questioning arose since with the internet of things (IoT) can not focus on communication only between human interlocutors. It is necessary to consider that the development and the technological evolutions are more and more inserted in the daily life of the people and that the interaction between humans and machines is growing constantly. The request of tasks, searches, information and even the accomplishment of activities can and are done by voice command.

3.3 Results

The verification of the English language by the application has proved to be arbitrary to the speech, which allows to support the fragility of voice recognition systems for non-native users of English and how these systems must then consider the identification of the IP of the machines and the variants of the English language, As Globish, since 88% of the global population does not have English as a native language, only 12% [3].

3. CONCLUSION

It must be determined that teaching English is different from learning to communicate through it. Based on this understanding, it is possible to establish parameters so that one can learn to communicate through English eliminating or avoiding the use of some language peculiarities that can be considered as communication difficulties for Brazilian individuals, for example, who have this difficulty elucidated in Root of the language that has the Portuguese of Brazil origin in the Romanesque, the Latin languages, different from the English and German originating from the Germanic. Therefore the use of a new or variant of the English language, the Globish, may be considered essential for communication in English to non-native speakers.

With the principle of using the Globish, the success of this process is guaranteed by the application of Structured Knowledge Maps that will allow to verify the starting point of each individual to start the study in order to start the work in a ray without ignorance, advancing step by step Step or ray to guarantee satisfaction of the individual when verifying the establishment of communication, since according to Lima (2016) "satisfaction is not the excess of knowledge, but the lack of ignorance." In order to guarantee efficiency in the parallel process, the Exponential Effective Memorization Method in the Binary Base - double MMEEBB will be used, which guarantees the fixation of what has been learned to effect the communication.

In addition, this work will allow the development of a Globish learning application through the MCEs and the double MMEEBB so that the establishment of communication in English can be achieved. This product, which can be used in mobile or other technologies, by individuals interested in estab-

lishing communication in the English language, will allow the individual to be screened by mapping their knowledge of the language to determine the radius of ignorance, and then initiate the suppression Of areas of ignorance with previously developed and defined knowledge for this purpose.

Thus, this research seeks not only to implement with new methodologies the establishment of communication in the English language, but also to bring to light the difficulties of the language that go unnoticed, in order to be able to have a broader understanding of what English is and actually contribute to That communication is ultimately established by individuals..

ACKNOWLEDGMENT

This work was supported in part by Fundação de Amparo à Pesquisa do estado de Minas Gerais - Fapemig.

REFERENCES

- [1] MORRISON, Lennox. With non-native English speakers outnumbering native speakers, it's up to Anglophones to learn how to speak their language within a global community. BBC, 16 dez 2016. Disponível em: <<http://www.bbc.com/capital/story/20161215-you-need-to-go-back-to-school-to-relearn-english>>. Acessado em: 18 dez 2016.
- [2] NORTHUP, David. How english became a global language. United Stades, New York: Palgrave Macmillan, 2013. p. 4. Disponível em: <https://he.palgrave.com/resources/sample-chapters/9781137303066_sample.pdf> . Acesso em: 3 set. 2016.
- [3] NERRIÈRE, Jean-Paul; HON, David. Globish the world over. International Globish Institute, 2009. Disponível em : <http://www.jpnglobish.com/file/Globish_Sample.pdf>. Acesso em: 20 ago. 2016.
- [4] COSTA, Nayara da Silva; LIMA, Luciano Vieira. A method for preparing experts in computer engineering subjects Global. Congress on Engineering and Technology Education, 2005.
- [5] Verbal information granted by Luciano Vieira Lima, in the discipline AVAs - Virtual Learning Environments - 2015 and in a master's orientation meeting [nov. 2016] for the master student Iolanda Carneiro. UFU - FEELT - Uberlândia, MG, Brazil.
- [6] FERREIRA, Daniela Carvalho Monteiro; Page 2 JÚNIOR, Hécio Camargo; SCHIOVATO, Nayara da Silva Costa. Structured knowledge maps: proposal of a new methodological approach to teaching and learning. Journal of Education: Educere et Educare, Unioeste, Campus of Cascavel, jul / dez, 2014, v. 9, p. 505-514. 505-514.
- [7] LIMA, Sandra F de O.; BARBOSA, Rubens F. ; LIMA, Luciano V.; JÚNIOR, Hécio C. Mapas de Conhecimento: Uma Ferramenta de Aprendizagem Por Meio de Card Informativo Como Instrumento de Ensino. Revista Unopar Científica Ciências Humanas e Educação, Londrina, jan, 2013, v. 14, n. 1, p. 5-14)
- [8] Verbal information granted by Luciano Vieira Lima, in the discipline AVAs - Virtual Learning Environments - 2015 and in a master's orientation meeting [may 2017] for the master student Iolanda Carneiro. UFU - FEELT - Uberlândia, MG, Brazil.