An Analytical Overview on Digitization of Language and Communication- From Humanities to Technological Advancement

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ABSTRACT

Teaching and learning has undergone manifold changes. In today's digital world the story of printing sounds anterior. The history of writing goes back to the time of the development of expression in the form of marks or proto-writing. This marks and symbols limited communication. The ideas were presented using ideography (symbol to present idea or concepts) or early mnemonics (memory device that aids in sequence information retention). This was as late as 7th century BC. The technique of writing has progressed variedly in different civilization. The need and urge to save the culture and tradition must have given the push to learn to read and write to the cavemen. The gradual process of making marks and proto-writing became an inspiration that lead them to this art of giving materialistic shape to the words they spoke. A tradition, that was seen on the terracotta tablets, papyrus, amate, paper and now finding its place in database. The pace, though sometimes appears to be slow but in a short span of two thousand years has witnessed a drastic makeover. Language digitization is nothing new but a way of documenting the language to save the data present in the forms of book and several manuscripts. No doubt it has not taken that wider outlook, where it is predicted by the world linguists that two third of the language of this world will become extinct by the end of this century. The pursuit here is to save what we can at the moment but the language which is not in the database of the linguists is most vulnerable one.

Keywords

digitization, language and technology, printing, communication.

Introduction (Times New Roman, bold, 12)

Learning and teaching in 21st century has changed three fold in past couple of decades. No facet of our life is left uninfluenced or untouched by the changing technology. Initially the recording of the language was done by using symbols-pictograms and ideograms. "The history of language and technology is not as old as the history of language, but is exactly as old as the history of recorded language". (Language and Technology) Many a language in the history has become dead today simply because people have stopped speaking these languages. Some languages which are not spoken by people are Sumerian, or Akkadian, or Hittite. Charles Barber in his book The Story of Language has said that all living languages change. Though, the rate of change varies from time to time, and from language to language. Some of the languages have changed so rapidly that they have become classic in many ways. "Nobody today speaks classical Latin as spoken by Julies Caesar or classical Greek as spoken by Pericles, or the old Icelandic spoken by heroes of the Norse sagas." (Barber, 54) So these languages are dead though they did not die completely but have changed into something else. There are speakers of Greek but it has changed from how it was spoken in the Athens of Pericles.

We can better understand the change in language with an illustration given by Baber with reference to Joseph Addison's Spectator in the year 1711. Though there is little difference in grammar, syntax or vocabulary but Addison uses 'sung' where we would use 'sang' in sentences like, "The next Stop to our Refinement, was the introducing of Italian Actors into our Opera; who sung their Parts in their own Languages, at the same Time that our Countrymen performed theirs in our native Tongue". In this sentence we see that even the use of capital letter is done in a different way as compared to the contemporary use or it may be an example of ardent use.

"By about 1700, the main changes in the pronunciation that made up the Great Vowel shift were all completed…However, the standardized spelling which became … "(Barber 207)

Objective

The motive behind writing this paper was to bring about awareness on how fast the world's minor languages are disappearing. The majority of the web content is in English. So, what will be the future of other languages? In a study it was revealed that more than thirty thousand language of this world will be extinct by the end of this century. The bigger concern now is to save these dying languages from being extinct by converting them digitally. The paper talks about how the

civilization has seen three fold changes with the help of printing and how we can further use the technology to save the languages of the world.

Literature Review

The beginning of print

The availability of writing material and implements is taken for granted in modern world, but the material used too has a history as the writing itself. At one point of time large block of stone were used for writing which has survived the ages and are prove of the history of writing. Though from preservation point of view stones may establish itself as the means of permanence but earlier in the history of writing they were fairly heavy and people were in search of extra handy text. "Around the Tigris and Euphrates rivers smooth river clay abounds. Between 4000 B.C. and 3500 B.C. the Sumerian people who lived in this region found a way to use this clay as a writing material. To start with, they used picture language, not unlike the writing of Egypt. Over time, in an evolution we can trace in surviving evidence, the Sumerians simplified their pictures into basic patterns of a few lines". (Moore)

In the beginning of Seventeenth century there was triumph of scientific outlook in England and it had an invasive influence on language and the way it was used in last three centuries. Latin had given way English as the language of science and scholarship. "The rise of scientific writing in English helped to establish a simple referential kind of prose as the central kind in modern English." (Barber 210) The basic development in the writing could be traced back to the time when the writer used wood as pencils to write on clay. They simply made some wedge-shaped lines to produce symbols to indicate or wrap each and every purpose and thoughts which they wanted to write about by drawing few vertical and horizontal lines. These were the initial technological development in the history of language. Writing on clay and stone did not establish as a practical idea. Suppose they wanted to write long stories then the collection of the writing materials would have become very challenging. So a look out was made which would have been more convenient and portable.

"Compared with tablets, papyrus is fragile, yet an example is extant from 2500 BC; and stone inscriptions that are even older portray scribes with rolls. This amazing survival is partly the result of the dry climate of Egypt, in which some papyrus rolls survived unprotected for centuries while buried in the desert sands". (Tucker, History of Publishing) The Egyptians used frayed ended reed to form a brush to write on the papyrus. Later the reed was split to give it the shape of a nib which enabled to control the flow of ink to the tip. The ink was made with a mixture of gum and natural coloring agents.

The history of writing in India is traced back to 7000 BC. "The Rig Veda is according to astronomical grounds, more than five thousand years old. The verses of the Rig Veda form a code that, properly interpreted, reveals an amazing amount of astronomical knowledge, which is unbelievable when we consider their antiquity - 1500 B. C. being a conservative estimate. In fact, the Rig Veda shorn of its allegory and metaphorical camouflage is the oldest textbook of modern astronomy". (Hinduism)

Printing is relatively recent invention as compared to the history of writing, which stretches over many hundred years. In 9th century AD print by means of portable clay-tablets emerged in China, however the modern typesetting from which the western tradition derives began in 1436 in Germany. It was started by the printing press of Johannes Gutenberg. The letters in this printing press were made of wood which were replaceable but later the metal over took the wooden letters. Initially the wooden printing press were limited in number. But later with the help of metal press Gutenberg was able to take multiple prints and it cut down the time of printing too. In 1452, the Latin version of bible was fashioned by Gutenberg A relatively faster technological developed started from the late 19th century onwards. The invention of phonograph gave way to recording technology which later evolved into the gramophones or records. With the open reel decks and compact cassette recorders arrived the magnetic tape along with the radio which gave new methods for renovate the physical sounds to electromagnetic waves. Physical properties of sound to produce a variable electric current found its way through the telephony. This brought about variation corresponding to the vibration which the user heard as an approximation of human speech.

As was said by Moore the modern technologist had limited experiences of the past but they were further industrialized for mostly the same reason. The purpose of new technology was to reduce the

precincts of time and distance. In some cases time is not very decisive, after sending the message we can wait for the response without the hovering thought of it being delayed. But there are certain circumstances where this wait is not potential and we want the response to be immediate. So, the need for advanced technology becomes the priority or the demand of the time.

Technology for Print

After the invention of printing press for many years books were produced in manuscript than printed but it was an expensive way of producing books. The technology became faster and accurate with the pass of time over the centuries. Page set up were made possible with greater availability of the type. In 19th century it became possible for the writers to publish their works serially with relatively cheap installments and enabled in bringing the printed texts to the wider readers.

The printing brought about a massive change on influence over language in the west. Firstly, it became instrumental in spreading the literacy far and wide. Secondly, it became the key for even hegemony. In 1755, Dr. Johnson's dictionary was published along with that came Robert Lowth's authoritarian book of grammar, which facilitate lot in setting up some definite structures as principles. The technology used for printing the books was very expensive which restricted it to few publishing houses and made it a very tedious job of checking the text before they were printed in bulk following the standard form of language which was different from the language of everyday use. For squatter text as handout or leaflet, smaller as well as less expensive presses were approached. There were chances for use of non-standard forms. In the most contemporary time the modern computers have made publishing an easy method.

By the last decade of 20th century the English publishing went through a sturdy difference amid the printer and the publisher. Language form is determined by the publisher by highlighting where the printer's proofs need modification. The publisher was accountable for the content and answerable if it was subversive or defamatory. The printer and typesetter were the skilled artisan, often predisposed, related to the setting up of the printing page, setting the type, and sometime for assembling them and fastening the pages together. Role of the publishers' has changed drastically with the use of modern computers which has replaced the skilled artisans with advanced software technologies. In today's time information technology perform the task of mass printing.

Technologies for communicating

To overcome the limitations of time and distance, modern communication technologies have been widely developed. Though in certain cases the late traveling of the message was not a critical issue but there were other areas in which quick communication was required as in case of battles, signals were communicated by showing flags or blowing of trumpets. These were not very reliable method and it further evolved when the messenger carried the written message on horseback or by the young men who were fast runner. Complex system of using flags, as signals for battles in sea were later taken over by heliograph and radio.

World has changed three fold since then so has technology. Significant changes in the workplace are the result of new and advanced technology. For the past generation, technological inventions and improvements seem to be introduced every week. The trend is guaranteed to continue. Technology and its impact on the 21st century workplace has resulted in rapid changes.

Technological advancement in the language

The Humanoids development made a real drastic change in the language too. The voice recognition techniques and speech recognition techniques create a visible enhancement. Alexa and Siri are two assistants which work on the voice command. Now they were developed to be multilingual.

Natural Language Processing has created a big impact on the language in recent years. It can be described as a subset of linguistic artsy, computer science and information Technology along with the main subsection of Artificial Intelligence which concerns the interaction between the computer and human (natural) language understandability. It basically creates a crater for the analyzation of large amount of language data .

It changes the course of challenges in natural language processing frequently involving the speech and voice recognition and natural language understanding and generation.

There are two main types of systems acquire language competences in a similar means. Statistical (or data-driven) approaches obtain linguistic knowledge from vast collections of

example texts. There are certain systems only require text in a single language as training data. The parallel texts in two (or more) languages have to be accessible for training machine translation systems. The machine learning algorithm then learns patterns of how words, phrases and complete sentences are translated. The data driven approach requires billions of sentences to boost performance excellence. This is the reason why the search engines companies are so anxious in collecting as much as the written materials as much as possible. There is a great advantage of statistics is that the machine learns quickly in a incessant series of training cycles, even though quality can vary arbitrarily. Now the second approach to language technology, and to machine translation in particular, is to build rule-based systems. Experts in the fields of linguistics, computational linguistics and computer science first have to encode grammatical analyses (translation rules) and compile vocabulary lists (lexicons). As it's a very time intense and labor intensive.

Changing Workplace Rules

Telecommunication has become possible due to technology. Virtual offices have made it possible to communicate business across the globe. Technology has led to flexible work schedules and is getting popular because so many duties and responsibilities can be accomplished by an employee from home or while an individual is traveling. Initially the telecommuting arrangements started as a test in private sector and on recognizing the revolution it brought in development and researches the government sector also followed the suit in its effort to be competent with other industries and in attracting the qualified candidates. Initially gramophones were used to capture the spoken voice. Later this technology emerged for recording musical performance and still later for playback. The software version of dictionary made it quite easy to understand the issues regarding phonetics.

Globalization of Language and Technology

Language had a gigantic influence on the globalization and development of technology or vice-versa. Moreover, businesses can establish satellite offices in practically any country no matter how remote, as far as there is Internet access. The struggle for providing Internet access to developing nations will propagate, facilitating development in areas formerly deprived of business opportunities due to unavailability of communication devices. "The other side of the coin is the international marketing of technology researched by George Washington University technology professor Robert W. Rycroft. He makes an interesting observation about multinational countries engaged in international marketing of technology products. This practice has been coined as "technology exploitation." By this observation, it is the desire to push products that is creating wider globalization efforts instead of globalization efforts creating a need for advanced technology". (Moore)

Why digitize the language?

The libraries are disappearing slowly. Things are turning digital very fast. The effort should now be to convert the writings and books available in any language should be converted into digital platform. Mostly when people browse things online they relate more when it's written in their own language. Effort should be made by the governments and institution to come forward in preserving the minor languages of the world. And the best way is to do so is to convert every little that is available of any language into digital sources. This will help in giving life to the dying languages. Emily Taylor said, "We are talking about inclusion, diversity and the richness of the language," and that is an area where the web environment needs to catch up".

Many researchers would benefit from this revival. There are examples of tribal languages which are the store house of knowledge of nature. If this information is made available to the researchers they may find out too many information stored in those old and ancient texts. Tribals are best known for their association with nature. They have deeper understanding of the things that are in close proximity of their life style. Ol Chiki script of Santali, one of the 22 official languages of India, is gaining popularity. Even dying languages such as Gondi are getting a new lease of life thanks to an open source tool developed by a set of software professionals.

Responses for the changes in digitization

In today's world it is a ultimate fact that the digitization has changed the perspective or outlook of the language. The print and the new technical methods have changed the utilization of

language architecture. The below table shows the responses of how much the deliverables in language has changed. With regard to this we did a little survey and the observation which we got can be seen as remarkable changer.

OBSERVATIONS	YES %	NO %
symbols pictogram and ideograms were first database of language	72	28
science helped in developing the language	69	31
Art of writing in India is older than it is in West	93	7
Language becomes extinct when we stop talking in it	55	45
important for language to change to remain living	55	45
printing helped in prolonging the lives of language	90	10
printing increased the literacy rate world over	90	10
Globalization became possible due to fast scientific changes in communication	93	7
technology has helped us in modelling our ideas in better	97	3
learning and teaching in 21st century changed	90	10

These observation given a rise to an analysis that the learning and teaching of the language a has changed with the time and the technology has a great impact on modelling and expressing our ideas in a much better . Fig 1 has depicted the graphical representation of the analysis. It can not be neglected that the social media platforms has also given a much larger platform for the language deliverables. The below graphical representation make one thing very sure about that the learning and teaching process in the 21century changes with all means. The technology helped the fraternity in modelling new ideas an for a better tomorrow.
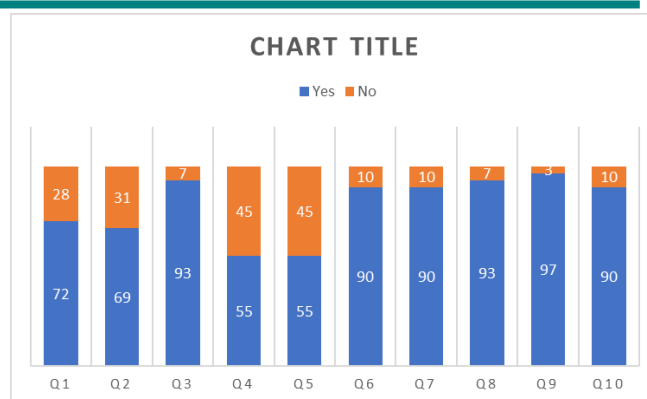

Fig 1: Graphical representation of analysis

Conclusion

Computers and information technology has become a significant part of our lives, it is highly suspicious that there will be a return to conventional techniques of carrying out business. The most important advantage of technology is competence. The influence of technology may not always be obvious but the language form used in one regional multiplicity may move into other regions. Technology has helped us in modeling our ideas in varied ways. From the ancient technology of using pictographs for understanding the meaning of 'cat' to the Google and other such search engines, technology has enabled us today to use this diverse methods of transmission for information and easy learning. Electronic media has enabled us to communicate across the globe with in an instant. The technology has challenged the notions of fixity and authority making it conducive to new patterns of spelling, pronunciation, punctuation and use of symbols

References

[1] A Tribute to Hinduism. Hindu Wisdom.info. Web. 12 March, 2015. (http://www.hinduwisdom.info/Advanced_ Concepts.htm)

[2] Barber, Charles. The Story of Language. 2nd ed. Bungay: Suffolk. The Chaucer Press, Ltd. 1965. Print

[3] Moore, Andrew.Language and Technology.Andrew Moore's teaching resource site. 5 March. Web. 16 March 2015.<http://www.universalteacher.org.uk/ lang/languageandtechnology.htm#overtim e)>

[4] Tucker, David H. .History of Publishing.Web. 15 March. <http://www.britannica.com/EBchecked/topic/482597/history-of publishing/28600/The-Egyptian-papyrus-roll>