

ENGLISH: THE INTERNATIONAL LANGUAGE OF SCIENCE AND TECHNOLOGY

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ABSTRACT: *This paper observed the dominant role of English as International language of science and technology. Various factors that facilitated the dominance of the language in science and technology were observed. The most technologically advanced nations of the world were also observed with various languages used in each of the countries. The paper also observed the language of instruction and research in the fifty most technologically advanced universities in the world. The paper concluded by projecting that English language shall attain the status of the world language in the next fifty years.*

KEYWORDS: English language, Science, Technology

INTRODUCTION

History of English

Language and culture, according to Foyewa (2012), are believed to be as two sides of a coin. The English language reflects the culture of the Europeans. It is a *West Germanic language* originated from the Anglo-Frisian dialects. It was brought to Great Britain by Germanic invaders or settlers (North West Germanic and Netherlands). Therefore, the language of the Germanic people gave rise to the English language. The old English was later influenced by German, Dutch, Latin and Ancient Greek during the Renaissance period. The language can be said to have undergone a lot of influences over the last two thousand years. The influences came from the world powerful language – The Greek, the Latin, the Dutch and the German. This made it easy for the language to have positive influence on giant world languages later in life. (www.englishclub.com).

History of Science

Buchanan (2015) opined that the history of science is the study of the historical development of science and scientific knowledge including both natural sciences and social sciences. Science, according to him, is the study of empirical, theoretical and practical knowledge about the natural world. The study of science, until the 19th century, according to Deng (2015), was referred to as natural philosophy while the English word ‘scientist’ is relatively recent and was first coined by William Whewell in the 19th century. Prior to that time, people investigating nature called themselves *natural philosophers*.

Technology on the other hand, according to dictionary.reference.com, is the branch of knowledge that deals with the creation and the use of technical means and their interaction with life, society and environment drawing upon such subjects as industrial arts, engineering, applying science and

pure science. It is the scientific and or industrial process of inventing, creating objects or machines that make living easier. (www.historyoftechnology.org).

English as International Language of Science

English, according to Drubin and Kellogg (2012), is now used almost exclusively as the language of science. Though up till now, the world Scientist Association has not officially declared the language as the official language of science, but almost all activities in science and technology are carried in the language.

Deng (2015) posits that five percent (5%) of people worldwide are native speakers. This means that ninety five per cent (95%) of worldwide speakers of English are non native speakers. However, there is daily increase in the learning and the use of the language among other countries where the language was initially ascribed the status of “foreign language”. There are lots of factors responsible for the sudden interest in the use of English language worldwide.

Among these are:

1. **The origin of English:** English has its origin from German, Greek, Latin and Dutch. This made it easier to learn by the speakers of the four languages. Linguistic similarities in English and the four languages facilitate the learning of English language by the speakers of those languages. Apart from this, most lexical items in English are borrowed from other languages, including French. This makes the learning and understanding of English language easy by the speakers of other languages.
2. **The rising power of America:** The activities of the United State of America helped tremendously in populating the English language in many ways:
 - (a) *Increase in the United States science graduates:* The National Science Foundation, according to Deng (2015) calculates that two hundred and ninety- three (293) American graduated with a research doctoral in 1902. By 1990s, according to him, the country produced more than 30,000 new science Ph.D.s a year. More than a million new American researchers in the 20th century. All these projects were written and published in English language. This has helped to make the language an indisputable lingua franca in science.
 - (b) *The fall of the USSR –* The role played by the United States of America in bringing an end to the Union of Soviet and Socialist Republic (USSR) also helped in the spread of English language. The USSR was established on December 20, 1922 comprising Federation of Russia, Belorussia and Transcaucasia federation. It later grew into the world most powerful and influential state. The war against the communist government of the USSR led by the USA government resulted to the collapse of the union in 1991. This gave more recognition to the USA and English language in the world.
 - (c) *Google:* In 1995, Larry Page (22years old) and Sergey Brin (21years old) met at Stanford University, and by 1996, they began a collaborative work on a search engine called BackRub. BackRub operates on Standford Servers. Google.com was registered

on September 15, 1997 as a domain. The language of Google is English. Most world Science and technology researchers make use of the Google. This also helped in the spread and dominance of English in the field of science and technology. (www.google.com).

(d) *The facebook and other social networks* – most social networks were developed by Americans. They were majorly developed as a means of social interaction. However, they were developed in English language.

3. **World Attitudes towards English language:** There are one hundred and ninety-six (196) countries in the world including Taiwan (Till this moment, People's Republic of China considers Taiwan as a breakaway, province of China). Currently, 192 countries are members of the United Nations. The official language of the United Nations is English, though interpretations are made into German, Chinese, Spanish, French and Finnish. The activities of the United Nations helped in the spread of English language worldwide.

Eighty-three (83) countries of the world, according to www.nationonline.org, have English as their official language. Likewise, it is spoken in other one hundred and four (104) countries as either second or foreign language. This has helped tremendously in the spread of the language.

4. **International Science Association:** International awards, meetings and activities in the field of science and technology are carried out in English language. The following international associations, among others, perform their activities using English language as the medium of communication:

- (a) The International Society for the Psychology of Science
- (b) The International Society for the History, Philosophy and Society for Literature, Science and the Arts (SLSA)
- (c) The International Society for Psychology of Science and Technology (ISPST)

The associations recommend that cross national and international researches should be conducted in English language.

English and Most Technologically Advanced Countries of the World

1. **Japan:** Japan is believed to be the most technologically advanced country on planet. It specializes in the production of robotics, electronics, automobiles, metals and earthquake engineering. (www.Richestlifestyle.com)

Language: Japanese is the official language. There are other fifteen (15) languages recognized by the constitution of the country. English is studied as a foreign language.

2. **Singapore:** Singapore dedicates a large proportion of its GDP to research and development especially in the field of medicine, food and military. This has made the country to be the second most advanced nation of the world.

Language: Singlish, English, Malay, Tamil and Standard Mandarin are the official language in Singapore. However, the most widely spoken language is English. (www.singaporexpat.com).

3. United States of America: Known for space technology, atomic bomb, space exploration, pharmaceuticals, defense system and communication. The US has the most powerful and technologically advanced military in the world. It has produced world biggest technology companies like Google, Facebook, Apple, Intel, IBM, Microsoft and so on.

Language: English is both the official and the national language of the United States of America.

4. United Kingdom: Erbar (2014) averred that the United Kingdom has been developing ever since the industrial age. It is believed to be the origin of industrialization. However, there are some areas the kingdom has not improved technologically.

Language: English is the native and official language of the United Kingdom.

5. Canada: Canada, according to Erbar (2014), is not just technologically advanced but excels in every field. Its diverse economy, highly educated population and responsible government gave room for technology to flourish. Canada has a highly developed biotechnology and space exploration. It introduced the wireless interact machines.

Language: English, French, German and Dutch are all spoken in Canada with a greater percentage speaking English language.

6. Netherlands: Despite the Netherlands small size, it is very popular for its scientific researches and developments in the field of technology. High-tech companies in Netherlands produce telecommunication system, electronic measurements. The nation invented compact disc, artificial kidney, pendulum clock, telescope and microscope.

Language: Dutch is the official language while English is the second language. English is also the language of research and science. French and German are also spoken in Netherlands, (Sharma, 2015). www.lifengadget.com.

7. China: Despite its population that stands at one-seventh of the world population and being at the front of the pack a century ago when it developed gunpowder, China according to Tardy (2004), is just reclaiming its spot as a technologically advanced nation. The believe is that most of its product cannot withstand the test of time.

Language: Mandarin is the official and national language in China. English is learnt as a foreign language.

8. Sweden: Sweden government gives prior attention to research. This accorded the country the opportunity to develop itself and be in the front position in world pharmaceutical industry.

Language: Finnish is the major language spoken in Sweden, followed by Estonian. Latin is the official language while English is ascribed the status of ‘foreign language’ however, there

is daily increase in the number of speakers of English language in the country. (www.visitsweden.com.swedenfacts).

9. Australia: Australia is known to be in the front field of mining, biotechnology, and food industry.

Language: English is the official language in Australia spoken by 82% of the population. The remaining 18% speak Italian, Greek, Cantonese, Arabic, Mandarin and Vietnamese.

10. Finland: The country is known for high-tech projects and health care facilities. It gave birth to Nokia which was a world leader in mobile communication for many years.

Language: Finnish and Swedish are the official languages in Finland. 70% of the population speak English as a foreign language. Leppanen et al (2011) projected that English will replace Finnish in Finland by 2027.

11. South Korea: South Korea is fast gaining ground among the technologically advanced nations of the world through companies like LG, Hyundai, Samsung and so on.

Language: Korean is the official language, English is taught as a second language.

12. Israel: Israel is one of the top five in space science. The country is also known for her innovation in defense industry. Israel developed the first Unmanned Aerial Vehicle (UAV) with real time surveillance. Israel is among the few nations that have modern car infrastructure.

Language: Modern Hebrew is the national language while Hebrew, Arabic and English are the official languages. Caplan (2013), however, affirmed the fear that English may soon erode Hebrew in Israel universities as English is acknowledged throughout the world. Other languages spoken in Israel include Aramaic and German.

13. Germany: Germany has been in the forefront of technology over the years. However, taste for her products is daily decreasing. Its automobile technology includes brands like Mercedes-benz, Audi, BMW, Volkswagen and Porsche.

Language: Standard German is the official language. Other languages spoken in Germany include; Danish, Frisian, Romany and Sorbi; French and Italian. English is taught as a foreign language in Germany universities and Colleges (Swiss Education System: www.edic.ch).

14. Russia: Right from the time of USSR, Russia has been recognized as one of the technologically developed nations of the world. It launched the first human made object to reach the surface of the moon. It is also known for its activities in heavy machinery and defense system. It is a country where missile system and atomic bombs are produced.

Language: Russian is the official language. There are over one hundred (100) minority languages speaking across Russia. Though the USSR is dead, Russia is living. The unending war on nuclear issues between USA and Russia is giving room for the spread of English language in Russia.

English and Fifty (50) Most Technologically Advanced Universities in the World**Introduction**

After reviewing the activities of hundreds of thousands of candidates and universities performance in 2014, the international body responsible for the award came up with the following fifty (50) universities. They are ordered from the least to the greatest. The present writer is interested in the languages used as medium of instruction in those universities (source: www.greatvaluecollege.net)

<i>Position</i>	<i>Name of University</i>	<i>Location</i>	<i>Points</i>	<i>Language of Instruction</i>
50	Wofford College, Spartanburg South California	USA	2	English
49	Athabasca University Athabasca, Alberta	Canada	3	English
48	University of Missouri-Columbia	USA	3	English
47	Hamilton College, Clinton New York	USA	4	English
46	Colgate University, Hamilton, NY	USA	4	English
45	University of California, Sandiego, California	USA	5	English
44	Pomona College, Claremont California	USA	6	English
43	University of Richmond, Richmond, Virginia	USA	6	English
42	Harvey Mudd College, Claremont, California	USA	6	English
41	Technical University of Dortmund, Dortmund	Germany	7	German
40	Utah State University Logan, Utah	USA	8	English
39	Ben-Gurion University of Negar, Beer-Shera	Israel	9	Hebrew, Arabic, English
38	University of Massachusetts	Boston	10	English
37	Brigham Young University Provo Utah	USA	10	English
36	Rochester Institute of Technology, Rochester, New York	USA	11	English
35	Aalborg University, Aalborg	Denmark	12	Danish
34	Wake Forest University, Winston-Salam, North Carolina	USA	12	English
33	Delf University of Technology,	Netherlands	15	Dutch & English
32	Australian National University Canberra, ACT	Australia	16	English
31	Al-Farabi Kazakh National University (Asia)	Kazakhstan	16	Kazakh
30	University of Texas, Austin	USA	16	English
29	National University of Singapore	Singapore	17	Singlish & English
28	University of Melbourne, Melbourne	Australia	18	English
27	Auckland University of Technology, Auckland	New Zealand	18	Maori
26	Montana State University, Bozema Montana	USA	19	English
25	University of Waterloo, Waterloo Ontario	Canada	21	English

24	University of Tokyo, Bunkyo, Tokyo	Japan	22	Japanese
23	Academy of Art University, San Francisco, California	USA	23	English
22	Washington University, St. Louis Missouri,	USA	25	English
21	University of Bologna, Bologna	Italy	27	Italian
20	University of Sussex, Brighton and Hove, England	UK	29	English
19	University of Toronto, Toronto Ontario	Canada	31	English
18	Nanyana Technological University	Singapore	34	Singlish & English
17	University of Michigan, Ann Arbor Michigan,	USA	36	English
16	Technisch Universitat Munchen (TUM)	Germany	37	German
15	Princeton University, Princeton New Jersey	USA	54	English
14	Technion-Israel Institute of Technology Haifa,	Israel	56	Hebrew and English
13	Purdue University, West Lafayette Indiana	USA	65	English
12	Oxford University, Oxford England	UK	91	English
11	Gorgia Institute of Technology, Atlanta Georgia	USA	93	English
10	Cambridge University, Cambridge England	UK	104	English
9	Stanford University, Palo Alto, California	USA	105	English
8	University of California, Los Angeles	USA	119	English
7	Carnegie Mellon University Pittsburgh, Pennsylvania	USA	121	English
6	Massachusetts Institute of Technology Cambridge, Massachusetts	USA	121	English
5	Imperia College, London-England	UK	125	English
4	Cornell University, Ithaca, New York	UK	144	English
3	California Institute of Technology, Pasadena, California	USA	146	English
2	Swiss Federal Institute of Technology Zurich	Switzerland	228	German/French
1	Ecole Polytechnique Federale de Lausanne, Lausanne	Switzerland	242	German/French

CONCLUSION

This paper observed English as an international language of science and technology. The history of English in the development of science and technology was technically observed. English is the language of instruction in most world universities. Basically, ideas are conceived, birth and developed in science and technology through the instrumentality of the language.

The dominance of English language in the field of science and technology was as a result of the dynamic nature of the language. It accommodates all forms of language. With the rate at which English is dominating every sphere of life in most nation of the world, a time is coming when the language shall attain the status of world language.

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