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Article

Big Data in Language Education: Keyword Trends in YouTube's English Learning Videos

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Abstract: The main goal of this paper is to analyze 120 YouTube videos in connection with *English Learning*. With respect to word length, it is interesting to note that the four-word expression has the highest frequency (159 tokens) and the highest proportion (0.14). A major point to note is that YouTubers think of the so-called *word* as an essential one for English learning. A further point to note is that topic 10 was the most widely used by YouTubers, followed by topic 2 (topic 7), topic 5, and topic 9, in that order. Talking about the frequency of 120 YouTube videos, the word *English* was the most widely used one, followed by *video*, *shorts*, *practice* (*sentence*, *word*), and *learning* (*vocabulary*), in that order. Finally, this paper argues that the words *education*, *video*, *practice*, *word*, *speaking*, *news*, *class*, *study*, *vocabulary*, *lesson*, *sentence*, etc. are linked to *English* and *learning*. It is concluded that these words linked to *English* and *learning* indicate essential prerequisites for English learning.

Keywords: English learning, topic, keyword, YouTube, big data, visualization.

INTRODUCTION

The main purpose of this paper is to analyze 120 YouTube videos in connection with *English learning*. We collected 120 YouTube videos (on 12, 10) in terms of the YouTube data collector and analyzed them in terms of the software package NetMiner. First, we provide information on the frequency of word length. Second, we look into the frequency of words related to *English learning*. Third, we provide 10 topics which were much used in 120 YouTube videos. Each topic is constituted by 5 keywords used frequently in 120 YouTube videos. By analyzing 10 topics and their keywords, one can see what YouTubers think about *English learning*. Fourth, we consider how many times a particular word appear in 120 YouTube videos. That is to say, we examine the frequency of documents in which a word occurs. Finally, we provide the visualization of 26 words related with *English learning*. The organization of this paper is as follows. In section 3.1, we argue that the four-word expression has the highest frequency (159 tokens) and the highest proportion (0.14). In section 3.2, we further argue that YouTubers think of the so-called *word* as an indispensable keyword for English learning. In section 3.3, we contend that topic 10 was the most widely used by YouTubers, followed by topic 2 (topic 7), topic 5, and topic 9, in that order. In section 3.4, we maintain that the word *English* was the most widely used one, followed by *video*, *shorts*, *practice* (*sentence*, *word*), and *learning* (*vocabulary*), in that order. In section 3.5, we show that the words *education*, *video*, *practice*, *word*, *speaking*, *news*, *class*, *study*, *vocabulary*, *lesson*, *sentence*, etc. are linked to *English* and *learning*. This in turn suggests that they are all indispensable factors for English learning.

METHODS

The main goal of this paper is to analyze 120 YouTube videos collected on 12, 10, 2022 in connection with *English learning*. We collected them in terms of the YouTube data collector and analyzed them in terms of NetMiner. The main purpose of this paper is to answer the following questions: Can we provide the frequency of word length? Can we provide the frequency of words related with *English learning*? What are topics which are formed by main keywords? Can we provide information on the frequency of documents? Finally, can we provide the visualization of words related to *English learning*?

RESULTS

Word Length

The goal of this section is to provide the frequency of word length. Table 1 shows word length, its frequency, its proportion, and its cumulative proportion:

Table 1: Word length

Value	Frequency	Proportion	Cumulative Proportion
2.0	27	0.024	0.024
3.0	71	0.063	0.086
4.0	159	0.14	0.227
5.0	158	0.139	0.366
6.0	133	0.117	0.483
7.0	117	0.103	0.586
8.0	83	0.073	0.66
9.0	72	0.063	0.723
10.0	37	0.033	0.756
11.0	31	0.027	0.783
12.0	20	0.018	0.1201
13.0	37	0.033	0.833
14.0	19	0.017	0.85
15.0	23	0.02	0.87
16.0	9	0.008	0.878
17.0	11	0.01	0.888
18.0	12	0.011	0.899
19.0	15	0.013	0.912
20.0	11	0.01	0.922
21.0	9	0.008	0.929
22.0	11	0.01	0.939
23.0	10	0.009	0.948
24.0	7	0.006	0.954
25.0	10	0.009	0.963
26.0	5	0.004	0.967
27.0	4	0.004	0.971
28.0	3	0.003	0.974
29.0	6	0.005	0.979
30.0	1	0.001	0.98
31.0	1	0.001	0.981
33.0	1	0.001	0.981
35.0	2	0.002	0.983
36.0	1	0.001	0.984
37.0	6	0.005	0.989
38.0	4	0.004	0.993
41.0	1	0.001	0.994
46.0	1	0.001	0.995
47.0	1	0.001	0.996
49.0	1	0.001	0.996
54.0	1	0.001	0.997
58.0	1	0.001	0.998
65.0	1	0.001	0.999
86.0	1	0.001	1
Total	1134	1	

It is interesting to note that the four-word expression has the highest frequency (159 tokens) and the highest proportion. More interestingly, its proportion and their cumulative proportion is 0.14 and 0.227, respectively. It is also interesting to point out that the five-word expression is the second highest (158 tokens). Its proportion is 0.139 and its cumulative proportion is 0.366. It should be pointed out, on the other hand, that the six-word expression ranks third (133 tokens). Additionally, the seven-word expression ranks fourth (117 tokens). Its proportion is 0.103 and its cumulative proportion is 0.586. It is worthwhile noting that the eight-word expression is the fifth highest (83 tokens). Finally, it must be noted that the nine-word expression ranks sixth (72 tokens). Its proportion and its cumulative proportion is 0.063 and 0.723, respectively. We thus conclude that the four-word expression has the highest frequency (159 tokens) and the highest proportion (0.14).

Frequency of words related to English learning

In this section, we aim to examine the frequency of words which are closely related to *English learning*. Table 2 shows the frequency of main words related to *English learning*:

Table 2: Frequency of words

Words	Part of Speech	Frequency
Channel	Noun	10
Daily	Adjective	41
English	Noun	364
Learn	Noun	34
Learning	Noun	19
Use	Noun	11
channel	Noun	19
class	Noun	74
education	Noun	16
english	Noun	56
grammar	Noun	17
language	Noun	21
learning	Noun	28
lesson	Noun	11
meaning	Noun	51
news	Noun	10
practice	Noun	59
sentence	Noun	114
shorts	Noun	38
speaking	Noun	21
study	Noun	13
use	Noun	113
video	Noun	79
vocabulary	Noun	71
word	Noun	196
youtubeshorts	Noun	10

As illustrated in Table 2, the word *English* was the most widely used one (364 tokens). Quite rightly, the word *English* has the highest frequency (364 tokens) and the highest proportion. It is worthwhile pointing out that *word* is the second most widely used one (196 tokens). This in turn suggests that YouTubers think of *words* as the most important keyword for English learning. It is natural that the word *sentence* ranks third (114 tokens), which implies that YouTubers think of the word *sentence* as essential. Quite interestingly, YouTubers believe that videos for English learning are also indispensable. Thus, the word *video* is the fifth highest among keywords. It should be noted, on the other hand, that the word *vocabulary* is the seventh highest. This in turn suggests that many YouTubers also think of vocabularies as important for English learning. That's why the words *vocabulary* and *word* rank high. It is worthwhile pointing out that the word *class* ranks sixth (74 tokens). This in turn implies that many YouTubers believe that the so-called *class* is necessary for English learning. Finally, it should be pointed out that the word *practice* is the eighth highest, which in turn suggests that many YouTubers also judge it as necessary. We thus conclude that many YouTubers think of words as the most important for English learning.

Topics and their keywords

In this section, we provide ten topics and their keywords:

Table 3: Topic information

	1st Keyword	2nd Keyword	3rd Keyword	4th Keyword	5th Keyword
Topic-1	question	gk	answer	fluency	exam
Topic-2	complaylist	Learning	level	shorts	day
Topic-3	practice	ENGLISH	conversation	beginner	language
Topic-4	English	odia	use	Odia	class
Topic-5	English	short	Tamil	speaking	youtube
Topic-6	education	instagram	india	art	motivation
Topic-7	word	english	meaning	shorts	use
Topic-8	video	learning	kid	Learn	skill
Topic-9	sentence	kaise	use	practice	video
Topic-10	English	course	Bengali	Spoken	Learn

As exemplified in Table 3, there are ten topics that were much used by YouTubers. It is important to note that topic 3 is constituted by 5 keywords such as *practice*, *English*, *conversation*, *beginner*, and *language*. This in turn implies that many YouTubers judge *practice* as the most important. Note that as can be seen from Table 3, the 1st keyword is *practice*. It is interesting to point out that in topic 1, the 1st keyword is the word *question*. This may indicate that many YouTubers think of it as the most important. Quite interestingly, five keywords such as *video*, *learning*, *kid*, *Learn*, and *skill* constitute topic 8. In this topic, the 1st keyword is *video*, which suggests that many YouTubers judge it as the most necessary. It is significant to note that as the 1st keyword, the word *English* was the most widely used by YouTubers, whereas the 2nd keyword, *learning* and *English* were equally the most used ones. It should be pointed out, on the other hand, that as the 3rd keyword, the word *use* was the most used one, whereas the 4th keyword, the word *shorts* was the most used one

Now let us turn to the frequency of documents:

Table 4: Frequency of documents

	# of documents
Topic-1	5
Topic-2	11
Topic-3	3
Topic-4	4
Topic-5	9
Topic-6	2
Topic-7	11
Topic-8	7
Topic-9	8
Topic-10	20

It is important to note that topic 10 was the most widely used one. More specifically, it occurred in 20 YouTube videos. As observed earlier, topic 10 is constituted by the keywords *English*, *course*, *Bengali*, *Spoken*, and *learn*. It is worth pointing out that topic 2 and topic 7 were the second most frequently used ones. They appeared in 11 YouTube videos. Topic 2 is formed by the keywords such as *complaylist*, *learning*, *level*, *shorts*, and *day*, whereas topic 7 is constituted by *word*, *English*, *meaning*, *shorts*, and *use*. It is noteworthy that topic 5 was the third most widely used one. That is to say, it occurred in 9 YouTube videos. Finally, topic 9 occurred in 8 YouTube videos. It ranks fourth among 10 topics. Note that topic 9 include the keywords *sentence*, *kaise*, *use*, *practice*, and *video*. It can thus be concluded that topic 10 was the most widely used one, followed by topic 2 (topic 7), topic 5, and topic 9, in that order.

Degree

The goal of this section is to provide information on degree (the frequency of videos):

Table 5: Degree

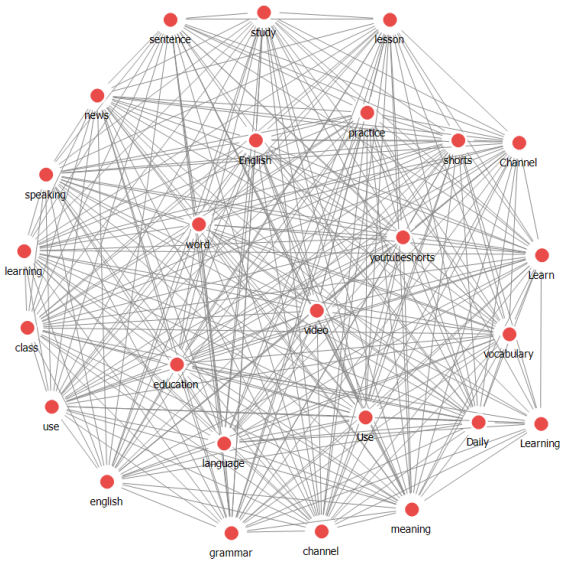
Number	Word	Frequency
1	English	65
2	video	29
3	shorts	26
4	practice	22
5	sentence	22
6	word	22
7	learning	21
8	vocabulary	21
9	english	19
10	use	18
11	Learn	17
12	speaking	16
13	Daily	15
14	course	15
15	meaning	14
16	class	13
17	Hindi	11
18	Learning	11
19	Sentences	11
20	short	11
21	Practice	10
22	Use	10
23	education	10
24	skill	10
25	channel	9
26	corn	9
27	conversation	9
28	day	9
29	grammar	9
30	instagram	9
31	lesson	9
32	translation	9
33	youtube	9
34	Link	8
35	bolna	8
36	classis	8
37	language	8
38	level	8
39	study	8
40	Basic	7
41	life	7
42	news	7
43	research	7
44	youtubeshorts	7
45	Channel	6
46	LEARN	6
47	Spoken	6
48	Subscribe	6
49	Translation	6
50	beginner	6

Table 5 indicates the frequency of videos in which a particular word appear. It is significant to note that the word *English* appeared 65 YouTube videos. This in turn indicates that it was the most widely used one in 65 YouTube videos. It is interesting to note, on the other hand, that the word *video* was the second most widely used one. Quite interestingly, it appeared in 29 YouTube videos. This in turn indicates that many YouTubers believe that videos are an effective way to learn English. It is worth pointing out that the word *practice* occurred in 22 YouTube videos, which in turn indicates that many YouTubers judge it as essential. It must be pointed out, on the other hand, that the word *sentence* was the fourth most widely used one. Quite interestingly, it appeared in 22 YouTube videos. Likewise, *word* occurred in 22 YouTube videos and was the fourth most frequently used one. This in turn suggests that the so-called *word* is considered as essential by YouTubers. The word *vocabulary* is more or less the same as *word*. It occurred in 21 YouTube videos and was the seventh most widely used one. To sum up, the word *English* was the most widely used one, followed by *video*, *shorts*, *practice* (*sentence*, *word*), and *learning* (*vocabulary*), in that order. It is worthwhile noting that the word *Practice* occurred in 10 YouTube videos, that the word *conversation* occurred in 9 YouTube videos, and that the word *news* appeared in seven YouTube videos. From all of this, it is evident that they are all necessary for English learning.

Visualization of words

The main goal of this section is to provide the visualization of which words are closely related to *English learning*. Figure 1 shows the visualization of words related to *English learning*:

Figure 1: Visualization of English learning



As exemplified in Figure 1, 26 words are closely related to one another. Words linked to *English* and *learning* are *education*, *video*, *practice*, *word*, *speaking*, *news*, *class*, *study*, *vocabulary*, *lesson*, *sentence*, etc. This in turn implies that they are closely related to *English learning* and important factors for it. For the visualization of synonyms, see Kang (2022a, 2022b, 2022c, 2022d). To sum up, figure 1 provides us with the picture of which factors are closely related to *English learning*.

CONCLUSION

To sum up, we have analyzed 120 YouTube videos in connection with *English learning*. In section 3.1, we have shown that the four-word expression has the highest frequency (159 tokens) and the highest proportion (0.14). In section 3.2, we have argued that YouTubers think of the so-called *word* as the most important keyword for *English learning*. In section 3.3, we have further argued that topic 10 was the most widely used by YouTubers, followed by topic 2 (topic 7), topic 5, and topic 9, in that order. In section 3.4, we have maintained that the word *English* was the most widely used one, followed by *video*, *shorts*, *practice* (*sentence*, *word*), and *learning* (*vocabulary*), in that order. In section 3.5, we have shown that the words *education*, *video*, *practice*, *word*, *speaking*, *news*, *class*, *study*, *vocabulary*, *lesson*, *sentence*, etc. are linked to *English* and *learning*. This in turn implies that they are indispensable factors for *English learning*.

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