

The Effects of Foreign Language in Distance Education

THIAGO DE CASTRO SINISCARCHIO

DAIELLY MELINA NASSIF MANTOVANI

FACULDADE DE ECONOMIA, ADMINISTRAÇÃO E CONTABILIDADE DA UNIVERSIDADE DE SÃO PAULO - FEA

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Introduction

Distance education according to Kaplan and Haenlein (2016) is any form of providing education to students who are separated by a distance (i.e., who are not physically present in the same space) and in which the pedagogical material is planned and prepared by an educational institution. The same author traces the beginning of this form of education, which appeared in its first form as printing materials evolving to television and finally to the internet, the most popular form today.

Furthermore, according to Bates (2006), there are several reasons why governments, the private sector and individuals have chosen the distance education:

- Economic Competitiveness: The government and the private sector have recognized the importance of e-learning to create advantaged educated workforce that will bring more competitiveness into the markets
- Lifelong learning: During the career of an employee, the distance education brings relevance and flexibility needed to an adult continues their studies and trainings. Also, most people are likely to change careers two or three times, thus the need of continuing training is increasing.
- Social Equity and Access: The distance education provides a second chance to those that for economic or social reasons could not have the same opportunities to access the higher education system or that dropped it before finish
- Better Education: Several theories shows that e-learning facilitates the process of learning in comparison to traditional-classroom education.
- Cost Effectiveness: Distance education have proved that can provide to a large number of students a lower cost in comparison with the traditional education.
- Geography: Distance education can delivery education to communities that finds difficult provide a full range of quality education to all the individuals

In Brazil according to INEP (2015), there is 2.781.480 places being offered in distance education: 50.924 by public institutions and 2.730.556 by private institutions which 684.639 are offered in bachelor courses. Nevertheless, there is a gap between the supply of and the demand for it, with 1.125.010 opened places. Subsequently in 2016 the enrollment in distance higher education courses increased by 20%, with a decrease in classroom courses by 3,7%.

Furthermore, in recent years, higher education institutions (HEI) have been strongly competing with each other in price and quality. This effect is mainly due to cuts of public policies in financing private courses and the increase of spots in distance courses (CUNHA, 2018). In addition, HEIs have been dealing with big local and global challenges such as comprehending the needs and expectations of their students and of the market (MANTOVANI, 2012).

It is relevant to talk about internet access when the subject is distance education. In the last decade in Brazil there was an increase of 446% in houses with internet, passing from 13,6% of the total houses with internet to 57,8% in 2014. Although the increase was relevant, at developed countries this number is much higher, with an average of 83,8%. In Brazil the mainly factor for the increment of internet access is due to cell phones connections, which corresponds to 29,93% of total connections in 2015, in 2013 this number was in 11,66% of the total access (SANTOS,2016).

When the data is broken down by income classes, it is noticed that the higher income class, the higher is the access of internet: 92,1% to those with an income higher than 10 minimum wages the internet access and 32,7% for those with income less than ¼ of minimum

wage showing the great inequality of access. Regarding the education about 7,4% of people with less than 1 year of study used internet in the previous year and for those with more than 15 years of study, the percentage was 92,3% (SANTOS,2016).

This work seeks identify the brunt of a foreign language in the attentional engagement (mind wandering), learning retention and finally in subjective evaluations of higher education students, based on the experiments of Wilson et al. (2018). As a result, the final product of this work can be used to improve the design of distance courses, which will increase retention of students and a higher engagement, thus bringing a better strategic product.

Massive Open Online Courses (MOOCS)

In more recent years many online courses have appeared with the goal to increase social inclusion in the formal education. Salman Amin "Sal" Khan, known for having made the open platform that reached 20.000 videos and have been translated into several languages (WIKIPEDIA, 2018). Khan academy, the organization created by Khan changed the traditional education, the interface also added game like rewards to create a competition environment within the site, thus kids could vie for points, badges and awards (THOMPSON, 2011).

Khan Academy was the second not-for-profit venture to offer online courses. Previously, in 2012, Harvard University and the Massachusetts Institute of Technology together announced the creation of edX, which has more than 130 partners worldwide nowadays and whose mission is: increase access to high-quality education for everyone, everywhere; enhance teaching and learning on campus and online; advance teaching and learning through research (EDX, 2018). According to Parry (2012) edX is a live laboratory for studying how people learn, how the minds works and also understand how people forget what they have learnt and how to prevent it.

Analogously MOOCs gathered attention in 2011 with an open course directed by the research professor of Stanford University Sebastian Thrun and Google Director of Research Peter Norvig, which resulted in an Artificial Intelligence online course that had more than 160.000 participants enrolled. Along with the success of the new course, Thrun built a new for-profit platform called Udacity that joined another platform called Coursera (for-profit also), a partnership between respectful Universities such as Princeton, Stanford, University of California Berkeley, University of Michigan, and University of Pennsylvania (MAHRAJ, 2012).

Despite of the differences of approaches of each MOOC, their individual mission has a convergence idea of spreading learning to improve people's lives, Coursera, for exemple, seeks "to empower people with education that will improve their lives, the lives of their families, and the communities they live in" (MAHRAJ, 2012).

Distance Education in Brazil

In 2016, in Brazil there had 1,5 million of people enrolled in distance courses which represents 18,6% the total of enrollments. This number has evolved from 60.000 of students, that represented 4,2% of the total of enrollments at the year of 2004. Along with this increase, the number of institutions that offers distance courses also grew, in 2009 there were 131 institutions and then it raised to 206 institutions in 2016, an average of 10 new institutions offering distance course per year (LAJOLO, 2018).

This modality raised according to Lajolo (2018) because of two mainly reasons: the flexibility to watch the class, since they can watch wherever they are and the lower price in comparison with presence education. Currently in Brazil, it can be found courses 65% cheaper than the presence course. The difference between the prices is owing to ease of boosting it

through the whole country. Furthermore, it is necessary to take into account, when analyzing tuition prices, economy and development inequalities among the regions of Brazil; that is, someone in Amazonas could not afford the same tuition as someone in São Paulo. It is also relevant to say that the price has diminished throughout the years: in 2009 the average tuition was \$348 and in 2018 it decreased to \$265 (LAJOLO, 2018).

There are 3 student profiles that stand out: the young student that does not have means to go to the university; professionals that are already in the job market but cannot go to the university; older people that want new professional perspectives. Further, when it comes to age, there was a diminishing of the average age throughout the years, from 1995 to 2000, the average age of the students was 42 years old and nowadays it is 28 years old against the average of 21 years old for presence courses (LAJOLO, 2018).

Barriers in learning in distance education

Galusha (1998) divides the barriers against distance education into different categories. Firstly, there are the costs and motivators, the financial costs of study, the disruption with family life and the lack of support of the employer are some of the factors that hinder the success of learners of distance education.

Secondly, feedbacks and teacher contact are hindrances that affect the performance of students. The lack of face to face presence makes it difficult for students to self-evaluate and this link if not replaced by electronic or telephone communication can become a barrier which makes students more likely to drop out of the course.

Subsequently there are student support and services such as providing tutors, academic planners and schedulers, and technical assistance that helps the students to graduate on time.

A fourth problem identified is the alienation and isolation, which is one of the biggest problems. The student wants to be part of a community and doing the studies away from this community strips the social relations that can be found in traditional environments of learning. There is also the problem of borrowing books, obtaining study materials and contacting the academic staff which affects the confidence of the student in his own abilities.

The lack of experience of newer distance students must be taken into account when the faculty is designing the course. The new student lacks experience and might drop the course early than an experienced student.

Finally, training must be considered in the designing of distance courses. The use of technology might deviate students from the lack of technological skills. Also, the faculty staff must be trained to operate the technology behind the course to better guide the student.

Then, our hypotheses are:

H1a: With less help for comprehension students will score less, comprehend less and find the class less interesting.

H1b: More proficient students will score higher than less proficient students.

Methodology

The participants were chosen according to their prior knowledge in the foreign language (English) due to the limited number of students who know a foreign language other than English in Brazil, as well as the prior knowledge in the subject of the video, in this case to evaluate all the knowledge acquired in the online class. All participants were students of management and accounting from a Brazilian University, and have some level of previous knowledge in English.

There were 3 lecture conditions in the experiment, which can be seen in the figures (Figure 1) below:

1. audio and subtitles in English;
2. audio in English and subtitles in Portuguese;
3. only audio in English

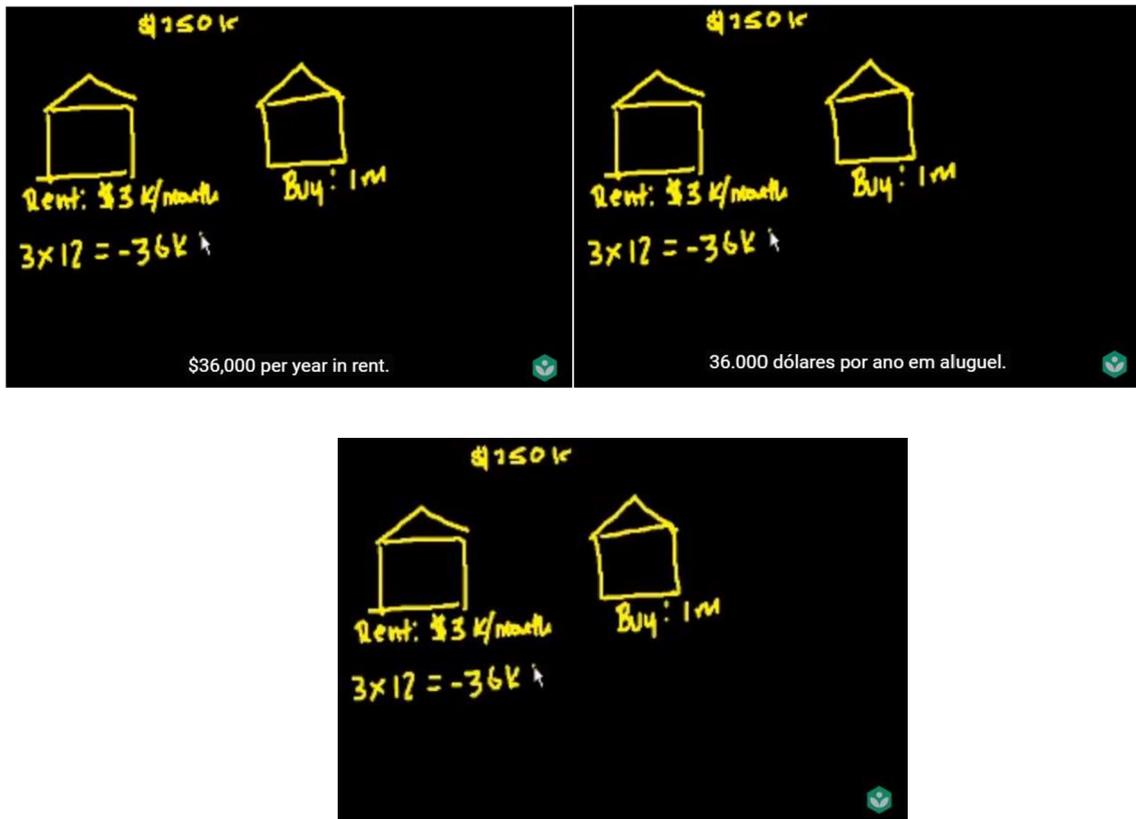


Figure 1. Khan-Academy Videos

Source: https://www.youtube.com/watch?v=YL10H_EcB-E&index=10&list=PL9ECA8AEB409B3E4F

The video used in the experiment is about personal finance planning and requires basic knowledge with simple finance mathematics. It explains the advantage in renting a house instead of buying it. The video is made by Khan Academy and has thereabout 10 minutes. It can be found in YouTube (link above).

According to the proposition of Smallwood and Schooler (2006) mind wandering is a situation in which executive control shifts away from a primary task to the processing of personal goals. In addition, mind wandering may encompass situations in which individuals temporarily fail to notice that their immediate goal of task completion has been temporarily displaced by another concern (SMALLWOOD; SCHOOLER, 2006).

Mind wandering was assessed using thought-probes at predetermined points throughout the lecture. Mind wandering probes were presented as a question in the questionnaire, at which point participants indicated if they were distracted from the lecture. The proportion of Mind Wandering probes were used to estimate the proportion of time spent MW. For example, if a participant responds yes to 50% of the probes, he was estimated to be Mind Wandering 50% of the time. Following the lecture, the participants were presented with a test indicating how interest they found the lecture in a scale ranging from uninterested to very interested. Comprehension was assessed using a multiple-choice test, which measures memory for facts from the lecture, following the lecture and then calculated as proportion of correct responses.

Finally, there was an assessment to provide a judgment of learning, then the participants estimated the grade they expected to have in the test prior to the comprehension test, thus we could measure the degree to which learners may be aware of their learning. Our sample totalized 229 students (55 students watched to video with no subtitles; 83 watched to the video with Portuguese subtitles; 89 students watched to the video with English subtitles).

Results and Conclusion

All the answers were collected in classrooms during one week, using a print version of the questionnaire. The duration of the application was 15 minutes and it was made at the end of each class. The different size of each sample (without subtitle, English subtitle and Portuguese subtitle) was due to the classes different sizes. Therefore, it was decided to print all the questionnaires to gather a superior number of responses, since not all the students had a computer available or cell phone internet access during data gathering. Table 1 shows proficiency data and prior experience abroad.

	Without subtitle	Portuguese subtitle	English subtitle
Fluent	30,34%	32,14%	25,00%
Advanced	47,19%	48,21%	48,81%
Intermediate	16,85%	19,64%	21,43%
Basic	5,62%	0,00%	4,76%
Participated on International Exchange	34,83%	26,79%	25,00%

Table 1. Language proficiency in the sample

The level of comprehension of English is high to all modalities. As we can see in the table above, all the modalities showed in average 75% of the participants with English advanced or fluent. Moreover, the international exchange of the students is relevant with an average of 28% of the students.

Table 2 shows average scores for each dimension, as we can observe, no subtitle group had lower scores comparing to the groups who had subtitles.

Descriptive Statistics					
Video		Comprehensio n	interesting	attention	Grade
No subtitle	Mean	6,8876	6,7931	6,6180	6,8989
	Standard Dev.	2,37141	2,48314	2,43789	1,53034
	Min	,00	,00	,00	1,00
	Max	10,00	10,00	10,00	9,00
Sub portuguese	Mean	7,5595	7,7857	7,3452	7,3929
	Standard Dev.	1,53160	2,22294	1,83995	1,46458
	Min	3,00	2,00	1,00	3,00
	Max	10,00	10,00	10,00	9,00
Sub English	Mean	7,1964	7,3214	7,2500	6,9107
	Standard Dev.	1,76243	2,48711	2,08239	1,62119
	Min	1,00	1,00	1,00	3,00

	Max	10,00	10,00	10,00	9,00
Total	Mean	7,2096	7,2907	7,0393	7,0830
	Standard Dev.	1,96453	2,41933	2,16496	1,54099
	Min	,00	,00	,00	1,00
	Max	10,00	10,00	10,00	9,00

Table 2. Descriptive statistics

As expected, the participants' evaluations had a negative impact to the modality without subtitle with an average of 6,88 following by English subtitles and Portuguese subtitles. The p-value used in the ANOVA was 0,10 and it is significant at this level ($p=0,0793$, $p<0,1$).

The interest for the class was aligned with the subjective evaluation, therefore the modality without subtitles scored lower than English subtitles and Portuguese subtitles. The test is significant at a p-value of 0,01 ($p=0,009$; $p<0,01$).

The students also classified themselves distracted (mind wandering) of the class when it comes to the modality without subtitles. Portuguese subtitles and English subtitles scored similarly. The results are significant with a p-value of 0,10 ($p=0,061$; $p<0,1$).

The grade acquired after seeing the video was similarly to the modalities without subtitles and with English subtitles and are lower than Portuguese subtitles. These results are significant with a p-value of 0,10 ($p=0,068$; $p<0,1$). Hypothesis H1a was accepted.

Mind wandering was also consistent with the previous results: the video without subtitle resulted in a difference of 10% regarding the others modalities, meaning that the students were aware of the video 10% of the time more. The result is significant with a p-value of 0,01 ($p=0,006$; $p<0,01$).

The ANOVA (Table3) represents the level of English as dependent variable. The significant variables at a level of 0,05 are the expected grade in the test, the interest in the class and the final grade. The attention was left out of the model. This means that the level of the foreign language has relation with those variables and students with higher levels of foreign language will be more interested. What is relevant to say is that attention is not related to the level of comprehension in the foreign language. Hypothesis H1b was accepted.

ANOVA

		Soma dos Quadrados	df	Quadrado Médio	F	Sig.
mind_wand	Entre Grupos	,083	3	,028	,464	,708
	Nos grupos	13,475	225	,060		
	Total	13,558	228			
Compreensão	Entre Grupos	107,122	3	35,707	10,396	,000
	Nos grupos	772,817	225	3,435		
	Total	879,939	228			
Interesting	Entre Grupos	46,888	3	15,629	2,732	,045
	Nos grupos	1275,922	223	5,722		
	Total	1322,811	226			
Attention	Entre Grupos	14,123	3	4,708	1,004	,392
	Nos grupos	1054,523	225	4,687		
	Total	1068,646	228			
Grade	Entre Grupos	18,795	3	6,265	2,697	,047
	Nos grupos	522,628	225	2,323		
	Total	541,424	228			

** $p<0,01$; * $p<0,05$

Table 3. ANOVA results

In the regression model with the final grade as dependent variable (R-square=34,3%) the relevant variables are the interest for the class and the expected grade in the test. Thus the higher interest and the higher expected grade, the higher grade will be. The result is significant with a p value of 0,01 (Table 4).

Coefficients ^a								
Modelo	Coeficientes não padronizados		Coeficientes padronizados	t	Sig.	Estatísticas de colinearidade		
	B	Modelo padrão	Beta			Tolerância	VIF	
1	(Constante)	3,828	,325		11,796	,000		
	compreensao	,450	,043	,568	10,361	,000	1,000	1,000
2	(Constante)	3,575	,330		10,827	,000		
	Comprehension	,357	,053	,451	6,752	,000	,651	1,535
	Interesting	,127	,043	,198	2,970	,003	,651	1,535

a. Variável dependente: nota

Table 4. Regression coefficients

Conclusions

As Information and Communication Technologies evolved resources for distance learning became more abundant and space and time barriers for learning were overcome. On the other side, we must consider the lessons characteristics and students profile need to match. MOOCs are being considered a low-cost tool for disseminating high quality education, but most of the courses are taught in English and regarding Brazilian students, language may still be a problem. Most of the students from the university studied had a good level of proficiency in English, however results were more favorable as subtitles in Portuguese were available. It means, real scenario may be worse beyond Brazil.

This fact makes us reflect on the real needs for our education in the country in order to put us as good competitors in the world. As suggestion for further studies, it will be better understood the phenomena of a foreign language if it were applied in the real context of a class, in which the student were in the same environment that he is used to do, as the present study was applied in a presence context in which all the students were in the same classroom and the video was shorter in comparison with an online course.

Furthermore, it is also necessary understand with an explanatory and psychological approach the roots of the effects of a foreign language. Thus, deep interviews or focus groups after the experiments would bring more explanations about the problem.

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