



Chat Bot for E-safety Learning

Rogelio Cohello^{*}, Karin Rojas, Roberto Esparza, Jorge Mayhuasca
Federico Villareal National University, Lima, Peru

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Abstract

This research aims to implement a chat bot that fulfills the function of increasing users' knowledge about electronic security. The intention of implementing this bot is also focused on the availability of the people interested in giving great flexibility in learning.

Keywords: Chat bot, artificial intelligence, methodology, electronic security.

1. Introduction

Nowadays, people with more educational preparation have a higher percentage of getting a job than someone with no preparation. This is because many people do not have access to education either for lack of money, motivation, access to information, preparation, among others.

(Shanshan and Evans, 2019) Artificial intelligence (AI) conversational chat bots have gained popularity over time, and have been widely used in the fields of e-commerce, online banking health, and digital wellness, among others. The technology has the potential to provide personalized service to a wide range of consumers. (p. 79) Learning chat bots provide specific information according to their training.

2. The problem

It is socially justified because this artificial intelligence was used for learning, which aims to increase the knowledge of the people who use it, this will serve as a guide for other researchers to propose similar or better projects in the future.

With the context of the described problem reality was developed and evaluated as a general problem: What is the effect of the use of chat bot for e-safety learning? This led to the following specific problems:

- PE1: Does the chat bot increase e-safety awareness?
- PE2: Does the chat bot motivate e-safety learning?
- PE3: Does the chat bot satisfy the need to learn about e-safety?

^{*}Corresponding author

Email address: rcohello@unfv.edu.pe (Rogelio Cohello)

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The general objective is to determine the effect of using chat bot for e-safety learning. The objectives determined as specific are as follows:

- SO1: Measure the increase in e-safety awareness
- SO2: To measure motivation to learn about e-safety.
- SO3: Measure the satisfaction of the need for e-safety learning.

The general hypothesis is; the use of chat bot positively aids e-safety learning. The specific hypotheses are the following:

- HE1: The use of chat bot increases e-safety awareness.
- HE2: The use of the chat bot motivates learning about e-safety.
- HE3 Chat bot use satisfies the need to learn about e-safety.

In order to obtain the results of the evaluation is being considered in the evaluation of pretest and post test a minimum score of 0 and a maximum score of 20. At the end of the post test, the chat bot will proceed with the questions of motivation and satisfaction respectively to finish evaluating the impact that the bot is having on people.

3. Method

This research was developed under the framework of applied type since we have executed existing theories and with it we have been able to give solution to the raised problem.

Pre-Experimental design is used applying pre-test and post-test, which will be executed to the stimulus that in this case were the people who made use of the chat bot, they were asked a series of questions randomly in order to measure their initial knowledge on the subject, after that started the course by providing the concepts to the previously raised questions and new ones that make up the course, At the end of the course, a second test or post-test was carried out, again randomly presented questions that have been presented in the course and with the answers that the user will give us we can measure whether or not there was a variation in the grade obtained, in this way we evaluate all the people and obtain an overall average that allows us to sustain our hypothesis of increased knowledge.

The increase in knowledge is determined by the difference between the averages of the sum of the pre-test scores with the average obtained with the sum of the post-test scores after the use of the chat bot.

3.1 Type and design of research

This research project uses theories and methods of learning, as well as technology to be able to have a virtual advisor who can interact with users, so it is applied.

This research project is of quantitative type because it is going to treat the results numbers of the evaluations to be able to demonstrate the hypotheses, having the experimental design because the results are manipulated to be able to analyze them and of pre-experimental classification because its degree of control will be minimal.

4. Results

This chapter details the results obtained from the research. IBM SPSS software was used to process the data and each indicator.

Indicator: Increased knowledge

The increase in knowledge is evaluated with a Pre-Test and Post-Test:

Pre-test descriptive results of the pre-test for the knowledge increase indicator, it was verified that an average score of 9.38 out of 20 was obtained, where the minimum score is 0 and the maximum score is 18:

Table 1: Pre-Test Descriptive Table

		Descriptive	
		Statistician	Standard error
Media		9,38	,770
95% confidence interval for the mean	Lower limit	7,81	
	Upper limit	10,94	
Average cut to 5%.		9,46	
Medium		10,00	
Variance		18,952	
Standard deviation		4,353	
Minimum		0	
Maximum		18	
Range		18	
Interquartile range		6	
Asymmetry		-,351	,414
Kurtosis		-,230	,809

The following table shows the significance in the normality test applying Shapiro-Wilk, taking into account that it is considered a normal distribution when the significance value is greater than 0.05, in this case it was verified that the significance value amounts to 0.272 so it is considered normal distribution. In the case processing summary, we validate that we get 32 samples in total being processed

Table 2: Pre-test Case Processing Summary

	Case Processing Summary					
	Cases					
	Valid		Lost		Total	
	N	Percentage	N	Percentage	N	Percentage
PRE	32	100,0%	0	0,0%	32	100,0%

As a result of the processed data, the histogram of the obtained values is obtained, having a mean of 9.38, that is to say, this is the average of marks obtained in the pre-test, and a standard deviation of 4.353 and with 32 samples obtained

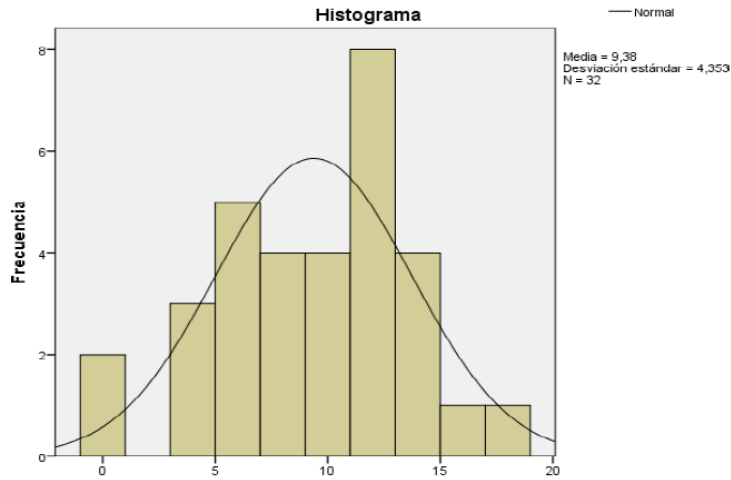


Figure 1: Pre-Test Histogram

Post-Test

In the case of the descriptive results of the post-test for the knowledge increase indicator, it is possible to verify that an average score of 15.47 is obtained over the score of 20, in this case the minimum score is 8 and the maximum score is 20

Table 1: Post-Test Descriptive Table

		Descriptive	
		Statistician	Standard error
Media		15,47	,500
95% confidence interval for the mean	Lower limit	14,45	
	Upper limit	16,49	
Average cut to 5%.		15,59	
Medium		16,00	
Variance		7,999	
Standard deviation		2,828	
Minimum		8	
Maximum		20	
Range		12	
Interquartile range		4	
Asymmetry		-,640	,414
Kurtosis		,297	,809

In the normality table for the post-test, applying Shapiro-Wilk, it was verified that a significance of 0.060 was obtained, that is to say, greater than 0.050, so it is considered that this test is also considered to have a normal distribution.

Table 2: Post-Test Normality Tests

Normality tests			
Shapiro-Wilk			
	Statistician	gl	Sig.
POST	,936	32	,060

In the case processing summary, we validate that we get 32 samples in total being processed

Table 3: Case processing summary

Case Processing Summary						
	Cases				Total	
	Valid		Lost			
	N	Percentage	N	Percentage	N	Percentage
POS	32	100,0%	0	0,0%	32	100,0%

With the processing of the collected results, the histogram of the post-test values is obtained where the mean of the post-test scores is 15.47%, with a standard deviation of 2.828 out of 32 samples obtained

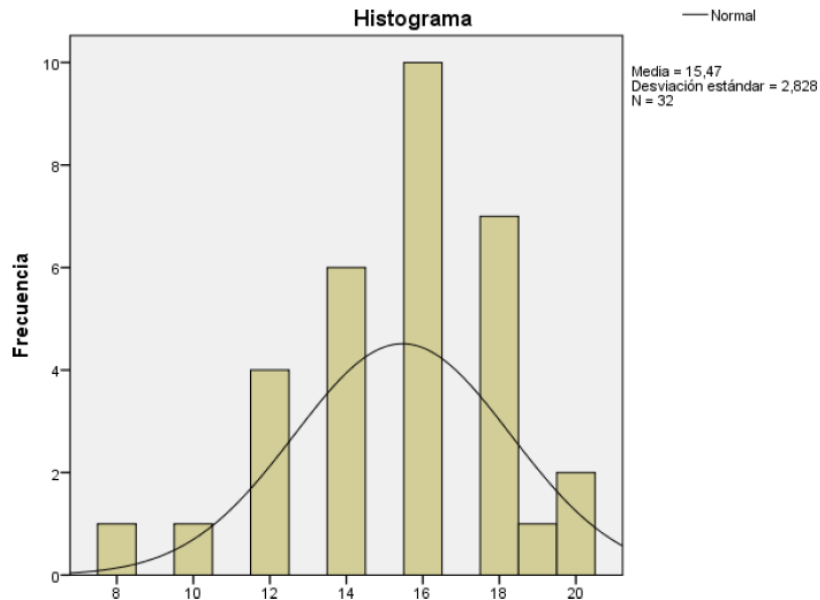


Figure 2. Post-Test Histogram

Comparing the data obtained in both tests, which was applied to 32 users, it was verified that in the pre-test an average of 9.38 out of a score of 20 was obtained and in the post- test an average score of 15.47 out of 20 was obtained, thus validating the increase in average knowledge of 6.09 on an ordinal scale and percentage of 30.45%.

Table 4: Comparison of Pre and Post Test

Pre and Post Test Comparison					
N	Average	Ordinal increment	Percentage	Percentage increase	
Pre-Test	32	9.38	6.09	46.9%	30.45%
Post-Test	32	15.47		77.35%	

Taking into consideration that the data obtained in the Pre-Test and Post-Test are normally distributed, the T-Student test was applied where it is evident that the T value is -6.9430, which is validated to be better than <0.05, it is detailed in table 11:

Table 5: Paired samples test

Paired samples test									
Matched Differences									
		Media	Standard deviation	Mean standard error	95% confidence interval of the difference		t	gl	Sig. (bilateral)
					Lower	Top			
Par 1	PRE - POST	-6,094	4,967	,878	-7,884	-4,303	-6,940	31	,000

We found that the bilateral significance is 0.000, definitely less than 0.05, so we can confirm that there is a difference between the Pre-Test and Post-Test.

Due to the increase shown between the Pre-Test and Post-Test, and the reliability of the instruments, the null hypothesis is discarded and the alternative hypothesis for this indicator is accepted. Consequently, the chat bot for learning about e-safety did increase knowledge.

The frequency is found using SPSS:

Statistics		
V6		
N	Valid	38
	Lost	0

The sample of 38 records obtained from the people who answered the motivation questionnaire is taken.

5. Discussion

Taking into account the specific hypothesis 1 where it is indicated that the use of the chat bot increases the knowledge about electronic security is evaluated taking into consideration the results obtained, for the development of the pre-test a minimum note of 0 and a maximum of 18 was obtained, when developing the post-test, the minimum note of 8 and the maximum of 20 is obtained, when comparing

the results obtained it is evident that the hypothesis was correct. For (Peche, 2018), in the beginning has an average grade of 12.3 out of 20 and after the use of his software increased to 17 out of 20, having an average percentage increase of 23.5%, in his case as in the case of this project reflects the increase in knowledge.

Continuing with the increase of motivation, it is obtained that more than 50% of samples give result that they are motivated, comparing with (Peche, 2018) after his conclusion of motivation indicates that after the first evaluation he obtains a motivation of 25%, lower than what he expected, after the execution and implementation of his software increases to 80%, that is to say 65% increase is obtained in his case the motivation was also positive.

Taking into account the hypothesis of increased satisfaction, we can see from the results shown that there is an acceptance of more than 50% satisfaction.

Having these results, it is considered that the general hypothesis is fulfilled, since after having positive results the chat bot for e-safety learning has a positive impact, again taking into account (Peche, 2018), it also gets a positive increase after the use of its software where it got an acceptance.

We can see that the Azure platform, in which this bot was developed, is very complete, on the one hand we have the possibility to perform the programming as such, and on the same platform you can generate a database that stores all the data obtained as well as the knowledge base that will have, and finally, on the same platform allows metrics of interactions, connected users, and so on, making it a very complete platform that better exploiting the resources would not need another to interpret them.

6. Conclusions

- 1) Nowadays, everything related to electronic security is having more acceptance, it is no longer rare to go to a store and see some cameras installed or a fire detection system, that is why the importance of the development of this bot so the dimensions that we took for the evaluation were the increase of knowledge, increase of motivation and increase of satisfaction, which were measured according to the structured. After the evaluations and the results obtained, the hypotheses raised for each dimension are proven, concluding that the chat bot for learning about electronic security has had a positive effect among the people who have used it.
- 2) The dimension of knowledge increase has been affected, after the results obtained in Pre-Test has an average of 9.38 and for Post-Test is obtained 15.47% in 32 samples obtained, thus showing an increase in the knowledge of users after developing the chat bot for learning about electronic security.
- 3) For the dimension of increased motivation, a survey was conducted at the end, where it is verified that users give a rating of 2.63% for not at all motivated, 5.26% for not very motivated, 23.68% for normal, 31.58% for motivated and 36.84% for very motivated. Comparing the values obtained we validate that more than 50% of the results give a positive value of motivation, that is to say that they are motivated, thus giving that the hypothesis raised for this dimension was correct.
- 4) Finally, for the dimension of increased satisfaction, it was carried out in

the same way as the previous dimension with a survey and the same users, for this dimension verified that a null qualification is obtained for the item of Not at all satisfied, 10.53% in little satisfied, 15.79% in normal, 42.11% in satisfied and 31.58% for very satisfied. The results obtained are compared and it can be observed that more than 50% of the results give a positive value, that is to say that they are satisfied, thus verifying that the hypothesis raised with the increase in satisfaction is correct.

7. Recommendations

After having done this project, as well as developing the bot we have noticed situations that could be improved and have a greater uptake and be able to feed more development:

1. The chat bot should be available to all people in general interested in learning about e- safety.
2. It is important to do further research on the level of learning and new ways of teaching as a more didactic course will make more people feel interested.
3. Involve a specialist in education in order to improve teaching techniques and make the course more attractive.
4. It is recommended to be able to take an advanced programming course and to be able to fully exploit the tools and services that Azure has.
5. Azure is a platform that has very good services, but they are paid, it is advisable to manage a monetary fund to improve both the code, the structure and services that we can acquire from Azure.
6. To be in constant contact with technology, to be able to see how to implement new tools that allow to have a greater reach of users and interaction with them.

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